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"THIRD QUARTER THIRD YEAR GROUNDWATER MONITORING LETTER REPORT FOR BUILDING 81 TANKS 81 A, B AND C NAS CECIL FIELD FL"
12/15/2008
TETRA TECH NUS INC

TETRA TECH

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December 15, 2008

Project Number 112G01264

Mr. David Grabka
Remedial Project Manager
Technical Review/Federal Facilities
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Reference: CLEAN IV Contract Number N62467-04-D-0055
Contract Task Order 0102

Subject: Groundwater Monitoring Report, 3rd Quarter, 3rd Year (October 2008)
Building 81, Tanks 81 A, B, and C (4th Quarter, 1st Year since revised NAMP)
Naval Air Station Cecil Field
Jacksonville, Florida

Dear Mr. Grabka:

Tetra Tech NUS, Inc. (TtNUS) is pleased to submit this Quarterly Groundwater Monitoring Report for the referenced Contract Task Order for Building 81, Tanks 81 A, B, and C. This Groundwater Monitoring Report was prepared for Naval Facilities Engineering Command Southeast (NAVFAC SE) under the Comprehensive Long-Term Environmental Action Navy (CLEAN) IV Contract Number N62467-04-D-0055.

The primary objective of current activities at this site is to conduct quarterly monitoring of groundwater associated with the shallow and intermediate zones of the surficial aquifer. The sampling program is being conducted in accordance with the Natural Attenuation Monitoring Plan (NAMP) submitted to the Florida Department of Environmental Protection (FDEP) on November 21, 2007, based on Chapter 62-770.690, Florida Administrative Code. The parameters of the NAMP were discussed and agreed upon during the September 2007 Base Realignment and Closure (BRAC) Cleanup Team (BCT) meeting and were implemented during the October 2008 event. The Natural Attenuation Monitoring Plan Approval Order (NAMPAO) was received on June 27, 2008. The NAMPAO is provided in Attachment A. This report summarizes the field operations and analytical results for the subject site for the sampling event conducted on October 22 and 23, 2008. The work was performed in general accordance with FDEP Standard Operating Procedures (SOPs) under DEP-SOP-001/01.

## FIELD OPERATIONS

Groundwater samples were collected from existing wells CEF-081-04I, CEF-081-08SR, CEF-081-09S, CEF-081-14S, CEF-081-15S, CEF-081-16S, CEF-081-17S, CEF-081-18I, CEF-081-19I, CEF-081-21I, and CEF-081-22I on October 22 and 23, 2008. Monitoring well locations are provided on Figure 1. The samples were placed on ice and subsequently hand-delivered under chain of custody to Columbia Analytical Services in Jacksonville, Florida, for analysis. The laboratory analyzed the samples for isopropylbenzene using United States Environmental Protection Agency Method SW-846 8260B.
Prior to obtaining groundwater samples, synoptic water levels and total well depths were measured and recorded on a site-specific groundwater measurement sheet for all wells located around former

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Building 81. On October 22, 2008, depth to water ranged from 4.19 feet below top of casing (btoc) (CEF-081-12S) to 6.69 feet btoc (CEF-081-21I). Depth to water measurements, top of casing elevations, and groundwater elevations are presented in Table 1. General sampling protocols were in accordance with FDEP SOPs and TtNUS SOP SA-1.1.

## RESULTS

The groundwater elevation data and flow directions for the shallow zone of the surficial aquifer are shown on Figure 2. Based on the data, the inferred direction of shallow zone groundwater flow is predominantly to the north with flow components to the northeast and northwest. Groundwater elevation data and flow direction for the intermediate zone are shown on Figure 3. Based on the data, the inferred general direction of intermediate zone groundwater flow is northwest.

The only constituent of concern (COC) identified in the revised NAMP and NAMPAO is isopropylbenzene. COC concentrations reported by the laboratory for the groundwater samples collected during this sampling event were compared to the FDEP Groundwater Cleanup Target Level (GCTL) and Natural Attenuation Default Concentration. The data and standards are presented in Table 2, and the results are presented on Figure 4.

During the October 2008 sampling event, isopropylbenzene was detected at 1.5 micrograms per liter (µg/L), greater than its GCTL of 0.8 µg/L, in perimeter well CEF-081-22I. Concentrations of isopropylbenzene decreased to less than the GCTL since the last round of sampling in well CEF-081-19I. Groundwater samples collected from CEF-081-19I in July 2008 had isopropylbenzene concentrations of 1.1 µg/L. In all other wells, isopropylbenzene was either not detected or was detected at estimated concentrations less than the GCTL. Groundwater analytical data are provided as Attachment B.

Because of the low level of the GCTL, TtNUS resampled only CEF-081-22I on November 10, 2008, to confirm that this perimeter well had an exceedance of the isopropylbenzene GCTL for two consecutive sampling events. The November confirmation sampling results were consistent with the October results, determining that the only remaining exceedance of isopropyl benzene was at CEF-081-22I.

## CONCLUSIONS AND RECOMMENDATIONS

The shallow groundwater flow direction in October 2008 was consistent with previous sampling events. Intermediate zone groundwater flow was estimated to be to the northwest during the October 2008 sampling event, which is consistent with the previous sampling event but inconsistent with historical groundwater flow estimates.

Isopropylbenzene was detected at a concentration greater than its GCTL in one perimeter well, CEF-081-22I, during the October 2008 sampling event. This well was installed at the site in June 2007 to delineate the intermediate plume, but this is the second consecutive exceedance of the GCTL in this well. Isopropylbenzene concentrations in monitoring well CEF-081-19I decreased to less than the GCTL since the previous sampling event, for the first time it was installed in November 2006. The extent of isopropyl benzene contamination in the intermediate zone is no longer delineated. As discussed during the November 2008 BCT meeting, the installation of a monitoring well downgradient of CEF-081-22I based on the proposed DPT and mobile laboratory event is recommended.

The shallow wells monitored per the NAMPAO (CEF-081-08SR, CEF-081-09S, CEF-081-14S, CEF-081-15S, CEF-081-16S, and CEF-081-17S) have shown concentrations of isopropyl benzene below its GCTL

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for four consecutive quarterly events. Based on these results, TtNUS recommends discontinuing sampling these wells during future quarterly sampling events.

Groundwater flow in the intermediate zone has been generally to the west-northwest, and wells CEF-081-18I and CEF-081-21I have had isopropyl benzene concentrations less than the GCTL for three consecutive quarterly sampling events. Based on the locations of CEF-081-18I and CEF-081-21I and the lack of isopropyl benzene in these wells, the discontinuation of the sampling of these wells is also recommended. The intermediate wells recommended for sampling during the quarterly monitoring events are the existing wells of CEF-081-04I, CEF-081-19I, and CEF-081-22I, and the well proposed for installation downgradient of CEF-081-22I.

If you have any questions regarding this submittal, please feel free to contact Kara Wimble at (904) 730-4669, extension 217, or via e-mail at Kara.Wimble@tetratech.com.

Sincerely,

Robert Simcik, P.E.
Task Order Manager
P.E. Number 61263

Kara F. Wimble
Project Scientist

Enclosures (9)

c: A. Sanford, NAVFAC SE (1 copy)
S. Naik, CH2M Hill (electronic only)
M. Perry, TtNUS (unbound)
D. Humbert, TtNUS (letter only)
M. Speranza, TtNUS (letter only)
M. Jonnet, TtNUS (Cecil DMS)
J. Logan, TtNUS
R. Simcik, TtNUS (Bookcase File)
J. Johnson, TtNUS (Information Repository)
CTO 0102 Project File

**CERTIFICATION**

The information contained herein is based on the investigation data and information obtained from previously submitted reports. If conditions are determined to exist that differ from those described, the undersigned engineer should be notified to evaluate the effects of any additional information on the information described in this report. This Quarterly Groundwater Monitoring Report, 3rd Quarter, 3rd Year (October 2008) is the fourth quarterly report since the revised NAMP was submitted for Building 81, Tanks 81 A, B, and C at former Naval Air Station Cecil Field, Jacksonville, Florida, and should not be construed to apply to any other site.

ROBERT SIMCIK
No. 00061263
STATE OF FLORIDA
PROFESSIONAL ENGINEER

December 15, 2008
Robert Simcik, P.E.
P.E. License Number 61263

# TABLES

**Table 1**
**Groundwater Elevation Data**

Groundwater Monitoring Report, 3rd Quarter, 3rd Year - October 2008
Building 81, Tanks 81 A, B, and C
Naval Air Station Cecil Field
Jacksonville, Florida


| Monitoring Well Identification | Well Depth (feet btoc) | TOC Elevation (feet above msl) | January 11, 2002 | | May 23, 2002 | | January 7, 2003 | |
|---|---|---|---|---|---|---|---|---|
| | | | Depth to Water (feet btoc) | Water-Level Elevation (feet above msl) | Depth to Water (feet btoc) | Water-Level Elevation (feet above msl) | Depth to Water (feet btoc) | Water-Level Elevation (feet above msl) |
| CEF-80-3S | 15.12 | 77.68 | 4.74 | 72.94 | 5.22 | 72.46 | 5.07 | 72.61 |
| CEF-80-13S | 14.90 | 78.17 | 4.96 | 73.21 | 5.48 | 72.69 | 5.51 | 72.66 |
| CEF-81-2S | 15.00 | 78.41 | NM | NM | 6.02 | 72.39 | NM | NM |
| CEF-81-8SR | 12.94 | 77.61 | 4.62 | 72.99 | 5.06 | 72.55 | 5.14 | 72.47 |
| CEF-81-9S | 12.74 | 77.72 | 4.73 | 72.99 | 5.19 | 72.53 | 5.16 | 72.56 |
| CEF-81-10S | 12.99 | 78.46 | 5.45 | 73.01 | 5.98 | 72.48 | 5.68 | 72.78 |
| CEF-81-11S | 12.88 | 78.47 | 5.46 | 73.01 | 5.97 | 72.50 | 5.56 | 72.91 |
| CEF-81-12S | 11.68 | 77.37 | 4.37 | 73.00 | 4.81 | 72.56 | 4.91 | 72.46 |
| CEF-81-13S | 12.14 | 77.91 | 4.92 | 72.99 | 5.36 | 72.55 | 5.27 | 72.64 |
| CEF-81-14S | 13.00 | 78.30 | NI | NI | 5.85 | 72.45 | 6.13 | 72.17 |
| CEF-81-1I | 29.25 | 77.73 | 4.77 | 72.96 | 4.77 | 72.96 | 5.65 | 72.08 |
| CEF-P25-1S | 12.00 | 77.57 | NM | NM | 5.17 | 72.40 | 6.00 | 71.57 |
| CEF-81-2I | 30.00 | 77.42 | NI | NI | NI | NI | NI | NI |
| CEF-81-3I | 30.00 | 77.78 | NI | NI | NI | NI | NI | NI |
| CEF-81-4I | 30.00 | 77.54 | NI | NI | NI | NI | NI | NI |
| CEF-81-5I | 30.00 | 77.84 | NI | NI | NI | NI | NI | NI |
| CEF-81-1D | 55.00 | 77.77 | NI | NI | NI | NI | NI | NI |
| CEF-81-15S | 15.00 | 78.03 | NI | NI | NI | NI | NI | NI |
| CEF-81-16S | 15.00 | 78.53 | NI | NI | NI | NI | NI | NI |
| CEF-81-17S | 15.00 | 78.35 | NI | NI | NI | NI | NI | NI |
| CEF-81-18I | 35.00 | 78.33 | NI | NI | NI | NI | NI | NI |
| CEF-81-19I | 35.00 | 78.15 | NI | NI | NI | NI | NI | NI |
| CEF-81-20I | 35.00 | 77.63 | NI | NI | NI | NI | NI | NI |
| CEF-81-21I | 35.00 | 78.78 | NI | NI | NI | NI | NI | NI |
| CEF-81-22I | 35.00 | 78.35 | NI | NI | NI | NI | NI | NI |

**Table 1**
**Groundwater Elevation Data**

Groundwater Monitoring Report, 3rd Quarter, 3rd Year - October 2008
Building 81, Tanks 81 A, B, and C
Naval Air Station Cecil Field
Jacksonville, Florida


| Monitoring Well Identification | Well Depth (feet btoc) | TOC Elevation (feet above msl) | February 18, 2005 | | January 5, 2007 | | February 5, 2007 | |
|---|---|---|---|---|---|---|---|---|
| | | | Depth to Water (feet btoc) | Water-Level Elevation (feet above msl) | Depth to Water (feet btoc) | Water-Level Elevation (feet above msl) | Depth to Water (feet btoc) | Water-Level Elevation (feet above msl) |
| CEF-80-3S | 15.12 | 77.68 | 6.61 | 71.07 | NM | NM | NM | NM |
| CEF-80-13S | 14.90 | 78.17 | 7.09 | 71.08 | NM | NM | NM | NM |
| CEF-81-2S | 15.00 | 78.41 | 7.34 | 71.07 | 9.84 | 68.57 | NM | NM |
| CEF-81-8SR | 12.94 | 77.61 | 6.57 | 71.04 | 8.97 | 68.64 | 8.44 | 69.17 |
| CEF-81-9S | 12.74 | 77.72 | 6.78 | 70.94 | 9.15 | 68.57 | 8.70 | 69.02 |
| CEF-81-10S | 12.99 | 78.46 | 7.52 | 70.94 | 9.83 | 68.63 | NM | NM |
| CEF-81-11S | 12.88 | 78.47 | 7.48 | 70.99 | 9.81 | 68.66 | NM | NM |
| CEF-81-12S | 11.68 | 77.37 | 6.21 | 71.16 | 9.65 | 67.72 | 6.77 | 70.60 |
| CEF-81-13S | 12.14 | 77.91 | 6.91 | 71.00 | 7.34 | 70.57 | 6.65 | 71.26 |
| CEF-81-14S | 13.00 | 78.30 | 7.41 | 70.89 | 9.79 | 68.51 | 9.44 | 68.86 |
| CEF-81-1I | 29.25 | 77.73 | 6.79 | 70.94 | 9.19 | 68.54 | 8.86 | 68.87 |
| CEF-P25-1S | 12.00 | 77.57 | 6.52 | 71.05 | 9.03 | 68.54 | 8.69 | 68.88 |
| CEF-81-2I | 30.00 | 77.42 | 6.54 | 70.88 | 8.94 | 68.48 | 8.62 | 68.80 |
| CEF-81-3I | 30.00 | 77.78 | 6.95 | 70.83 | 9.34 | 68.44 | 9.05 | 68.73 |
| CEF-81-4I | 30.00 | 77.54 | 6.74 | 70.80 | 9.09 | 68.45 | 8.77 | 68.77 |
| CEF-81-5I | 30.00 | 77.84 | 7.01 | 70.83 | 9.33 | 68.51 | 9.01 | 68.83 |
| CEF-81-1D | 55.00 | 77.77 | 6.83 | 70.94 | NM | NM | 8.97 | 68.80 |
| CEF-81-15S | 15.00 | 78.03 | NI | NI | 9.51 | 68.52 | 9.15 | 68.88 |
| CEF-81-16S | 15.00 | 78.53 | NI | NI | 10.05 | 68.48 | 9.73 | 68.80 |
| CEF-81-17S | 15.00 | 78.35 | NI | NI | 9.82 | 68.53 | 9.48 | 68.87 |
| CEF-81-18I | 35.00 | 78.33 | NI | NI | 9.79 | 68.54 | 9.50 | 68.83 |
| CEF-81-19I | 35.00 | 78.15 | NI | NI | 9.61 | 68.54 | 9.31 | 68.84 |
| CEF-81-20I | 35.00 | 77.63 | NI | NI | 9.09 | 68.54 | 8.77 | 68.86 |
| CEF-81-21I | 35.00 | 78.78 | NI | NI | NI | NI | NI | NI |
| CEF-81-22I | 35.00 | 78.35 | NI | NI | NI | NI | NI | NI |

**Table 1**
**Groundwater Elevation Data**

Groundwater Monitoring Report, 3rd Quarter, 3rd Year - October 2008
Building 81, Tanks 81 A, B, and C
Naval Air Station Cecil Field
Jacksonville, Florida


| Monitoring Well Identification | Well Depth (feet btoc) | TOC Elevation (feet above msl) | June 21, 2007 | | September 19, 2007 | | December 17, 2007 | |
|---|---|---|---|---|---|---|---|---|
| | | | Depth to Water (feet btoc) | Water-Level Elevation (feet above msl) | Depth to Water (feet btoc) | Water-Level Elevation (feet above msl) | Depth to Water (feet btoc) | Water-Level Elevation (feet above msl) |
| CEF-80-3S | 15.12 | 77.68 | NM | NM | NM | NM | NM | NM |
| CEF-80-13S | 14.90 | 78.17 | NM | NM | NM | NM | NM | NM |
| CEF-81-2S | 15.00 | 78.41 | NM | NM | 8.84 | 69.57 | 8.1 | 70.31 |
| CEF-81-8SR | 12.94 | 77.61 | 8.07 | 69.54 | 7.94 | 69.67 | 7.12 | 70.49 |
| CEF-81-9S | 12.74 | 77.72 | 8.35 | 69.37 | 8.15 | 69.57 | 7.34 | 70.38 |
| CEF-81-10S | 12.99 | 78.46 | 9.32 | 69.14 | 8.79 | 69.67 | 8.16 | 70.30 |
| CEF-81-11S | 12.88 | 78.47 | NM | NM | 8.79 | 69.68 | 8.14 | 70.33 |
| CEF-81-12S | 11.68 | 77.37 | 6.31 | 71.06 | 7.68 | 69.69 | 5.18 | 72.19 |
| CEF-81-13S | 12.14 | 77.91 | 8.66 | 69.25 | 6.19 | 71.72 | 5.41 | 72.50 |
| CEF-81-14S | 13.00 | 78.30 | 9.12 | 69.18 | 8.81 | 69.49 | 8.04 | 70.26 |
| CEF-81-1I | 29.25 | 77.73 | 8.58 | 69.15 | 8.23 | 69.50 | 7.52 | 70.21 |
| CEF-P25-1S | 12.00 | 77.57 | NM | NM | 8.05 | 69.52 | 7.31 | 70.26 |
| CEF-81-2I | 30.00 | 77.42 | 8.32 | 69.10 | 7.97 | 69.45 | 7.28 | 70.14 |
| CEF-81-3I | 30.00 | 77.78 | NM | NM | 8.40 | 69.38 | 7.64 | 70.14 |
| CEF-81-4I | 30.00 | 77.54 | NM | NM | 8.12 | 69.42 | 7.41 | 70.13 |
| CEF-81-5I | 30.00 | 77.84 | 8.73 | 69.11 | 8.37 | 69.47 | 7.67 | 70.17 |
| CEF-81-1D | 55.00 | 77.77 | NM | NM | NM | NM | NM | NM |
| CEF-81-15S | 15.00 | 78.03 | NM | NM | 8.51 | 69.52 | 7.75 | 70.28 |
| CEF-81-16S | 15.00 | 78.53 | 9.45 | 69.08 | 9.09 | 69.44 | 8.34 | 70.19 |
| CEF-81-17S | 15.00 | 78.35 | 9.20 | 69.15 | 8.87 | 69.48 | 8.1 | 70.25 |
| CEF-81-18I | 35.00 | 78.33 | 9.20 | 69.13 | 8.85 | 69.48 | 8.11 | 70.22 |
| CEF-81-19I | 35.00 | 78.15 | 9.02 | 69.13 | 8.65 | 69.50 | 7.98 | 70.17 |
| CEF-81-20I | 35.00 | 77.63 | 8.50 | 69.13 | 8.11 | 69.52 | 7.41 | 70.22 |
| CEF-81-21I | 35.00 | 78.78 | 9.73 | 69.05 | 9.40 | 69.38 | 8.65 | 70.13 |
| CEF-81-22I | 35.00 | 78.35 | 9.31 | 69.04 | 8.90 | 69.45 | 8.28 | 70.07 |

**Table 1**
**Groundwater Elevation Data**

Groundwater Monitoring Report, 3rd Quarter, 3rd Year - October 2008
Building 81, Tanks 81 A, B, and C
Naval Air Station Cecil Field
Jacksonville, Florida


| Monitoring Well Identification | Well Depth (feet btoc) | TOC Elevation (feet above msl) | March 31, 2008 | | July 21, 2008 | | October 22, 2008 | |
|---|---|---|---|---|---|---|---|---|
| | | | Depth to Water (feet btoc) | Water-Level Elevation (feet above msl) | Depth to Water (feet btoc) | Water-Level Elevation (feet above msl) | Depth to Water (feet btoc) | Water-Level Elevation (feet above msl) |
| CEF-80-3S | 15.12 | 77.68 | NM | NM | NM | NM | NM | NM |
| CEF-80-13S | 14.90 | 78.17 | NM | NM | NM | NM | NM | NM |
| CEF-81-2S | 15.00 | 78.41 | 6.66 | 71.75 | 6.29 | 72.12 | 5.76 | 72.65 |
| CEF-81-8SR | 12.94 | 77.61 | 5.63 | 71.98 | 4.26 | 73.35 | 4.64 | 72.97 |
| CEF-81-9S | 12.74 | 77.72 | 5.56 | 72.16 | 4.14 | 73.58 | 4.68 | 73.04 |
| CEF-81-10S | 12.99 | 78.46 | 6.85 | 71.61 | 6.42 | 72.04 | 5.97 | 72.49 |
| CEF-81-11S | 12.88 | 78.47 | 6.83 | 71.64 | 5.36 | 73.11 | 5.91 | 72.56 |
| CEF-81-12S | 11.68 | 77.37 | 5.03 | 72.34 | 3.24 | 74.13 | 4.19 | 73.18 |
| CEF-81-13S | 12.14 | 77.91 | 5.62 | 72.29 | 3.66 | 74.25 | 4.81 | 73.10 |
| CEF-81-14S | 13.00 | 78.30 | 6.73 | 71.57 | 6.24 | 72.06 | 5.94 | 72.36 |
| CEF-81-1I | 29.25 | 77.73 | 6.18 | 71.55 | 5.76 | 71.97 | 5.35 | 72.38 |
| CEF-P25-1S | 12.00 | 77.57 | 5.87 | 71.70 | 5.46 | 72.11 | 5.01 | 72.56 |
| CEF-81-2I | 30.00 | 77.42 | 5.91 | 71.51 | 5.51 | 71.91 | 5.09 | 72.33 |
| CEF-81-3I | 30.00 | 77.78 | 6.35 | 71.43 | 5.93 | 71.85 | 5.56 | 72.22 |
| CEF-81-4I | 30.00 | 77.54 | 6.12 | 71.42 | 5.72 | 71.82 | 5.29 | 72.25 |
| CEF-81-5I | 30.00 | 77.84 | 6.33 | 71.51 | 5.92 | 71.92 | 5.49 | 72.35 |
| CEF-81-1D | 55.00 | 77.77 | NM | NM | NM | NM | NM | NM |
| CEF-81-15S | 15.00 | 78.03 | 6.42 | 71.61 | 5.96 | 72.07 | 5.64 | 72.39 |
| CEF-81-16S | 15.00 | 78.53 | 7.05 | 71.48 | 6.62 | 71.91 | 6.27 | 72.26 |
| CEF-81-17S | 15.00 | 78.35 | 6.83 | 71.52 | 6.34 | 72.01 | 6.04 | 72.31 |
| CEF-81-18I | 35.00 | 78.33 | 6.83 | 71.50 | 6.44 | 71.89 | 6.04 | 72.29 |
| CEF-81-19I | 35.00 | 78.15 | 6.67 | 71.48 | 6.29 | 71.86 | 5.89 | 72.26 |
| CEF-81-20I | 35.00 | 77.63 | 6.09 | 71.54 | 5.67 | 71.96 | 5.25 | 72.38 |
| CEF-81-21I | 35.00 | 78.78 | 7.39 | 71.39 | 7.11 | 71.67 | 6.69 | 72.09 |
| CEF-81-22I | 35.00 | 78.35 | 6.99 | 71.36 | 6.61 | 71.74 | 6.21 | 72.14 |

TOC = Top of casing.
btoc = Below top of casing.
NM = Not measured.
NI = Not installed.
msl = Mean sea level.

**Table 2**
**Groundwater Analytical Data**

Groundwater Monitoring Report, 3rd Quarter, 3rd Year - October 2008
Building 81, Tanks 81 A, B, and C
Naval Air Station Cecil Field
Jacksonville, Florida


| Parameter | GCTL | NADC | CEF-081- | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 01I | | | 04I | | | | | | | | 08SR |
| | | | 02/18/05 | 02/05/07 | 06/06/07 | 02/18/05 | 09/19/07 | 12/17/07 | | 04/01/08 | 02/18/05 | 07/22/08 | 10/23/08 | 02/05/07 |
| | | | | | | | | Sample | Duplicate | | | | | |
| **VOCs (µg/L)** | | | | | | | | | | | | | | |
| Ethylbenzene | 30 | 300 | 0.5 U | 0.3 U | 0.30 U | 1.5 | NA | NA | NA | NA | 0.5 U | NA | NA | 0.3 U |
| Isopropylbenzene | 0.8 | 8 | 0.69 J | 0.36 J | 0.10 U | **1.7** | **2.3** | **1.6** | **1.5** | **2.7** | 0.5 U | 0.77 J | 0.32 J | 0.1 U |
| Toluene | 40 | 400 | 0.5 U | 0.2 U | 0.20 U | 0.50 U | NA | NA | NA | NA | 0.5 U | NA | NA | 0.2 U |
| Benzene | 1 | 10 | 0.5 U | 0.2 U | 0.20 U | 0.50 U | NA | NA | NA | NA | 0.5 U | NA | NA | 0.2 U |
| MTBE | 20 | 200 | NA | 0.2 U | 0.20 U | NA | NA | NA | NA | NA | NA | NA | NA | 0.2 U |

| Parameter | GCTL | NADC | CEF-081- | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 08SR | | | | | | 09S | | | | | |
| | | | 06/07/07 | 09/20/07 | 12/19/07 | 04/01/08 | 07/22/08 | 10/22/08 | 02/18/05 | 02/05/07 | 06/08/07 | 09/19/07 | 12/17/07 | 04/01/08 |
| **VOCs (µg/L)** | | | | | | | | | | | | | | |
| Ethylbenzene | 30 | 300 | 0.20 U | NA | NA | NA | NA | NA | 0.6 J | 0.3 U | 0.30 U | NA | NA | NA |
| Isopropylbenzene | 0.8 | 8 | **2.1** | 0.21 U | 0.093 U | 0.36 U | 0.14 U | 0.14 U | **2.8** | **2.29** | 0.10 U | **1.3** | 0.67 J | 0.36 U |
| Toluene | 40 | 400 | 0.29 J | NA | NA | NA | NA | NA | 0.5 U | 0.2 U | 0.25 J | NA | NA | NA |
| Benzene | 1 | 10 | 0.20 U | NA | NA | NA | NA | NA | 0.5 U | 0.2 U | 0.20 U | NA | NA | NA |
| MTBE | 20 | 200 | 0.20 U | NA | NA | NA | NA | NA | NA | 0.2 U | 0.20 U | NA | NA | NA |

**Table 2**
**Groundwater Analytical Data**

Groundwater Monitoring Report, 3rd Quarter, 3rd Year - October 2008
Building 81, Tanks 81 A, B, and C
Naval Air Station Cecil Field
Jacksonville, Florida


| Parameter | GCTL | NADC | CEF-081- | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 09S | | 13S | | | | 14S | | | | | |
| | | | 07/22/08 | 10/22/08 | 02/21/05 | 02/06/07 | 06/08/07 | | 02/18/05 | 02/06/07 | 06/07/07 | 09/20/07 | 12/18/07 | 04/01/08 |
| | | | | | | | Sample | Duplicate | | | | | | |
| **VOCs (µg/L)** | | | | | | | | | | | | | | |
| Ethylbenzene | 30 | 300 | NA | NA | 0.5 U | 0.3 U | 0.30 U | 0.30 U | 0.5 U | 0.3 U | 0.30 U | NA | NA | NA |
| Isopropylbenzene | 0.8 | 8 | 0.14 U | 0.56 J | 0.5 U | 0.1 U | 0.10 U | 0.10 U | **3.3** | **0.95 J** | 0.21 J | 0.21 U | 0.093 U | 0.36 U |
| Toluene | 40 | 400 | NA | NA | 0.5 U | 0.24 J | 0.20 U | 0.52 J | 0.5 U | 0.2 U | 0.22 J | NA | NA | NA |
| Benzene | 1 | 10 | NA | NA | 0.5 U | 0.2 U | 0.20 U | 0.20 U | 0.5 U | 0.2 U | 0.20 U | NA | NA | NA |
| MTBE | 20 | 200 | NA | NA | NA | 0.2 U | 0.20 U | 0.20 U | NA | 0.2 U | 0.20 U | NA | NA | NA |

| Parameter | GCTL | NADC | CEF-081- | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 14S | | 15S | | | | | | | | 16S | |
| | | | 07/22/08 | 10/23/08 | 11/21/06 | 02/06/07 | 06/07/07 | 09/19/07 | 12/18/07 | 4/1/2008 | 07/22/08 | 10/22/08 | 11/21/06 | 02/06/07 |
| **VOCs (µg/L)** | | | | | | | | | | | | | | |
| Ethylbenzene | 30 | 300 | NA | NA | 0.3 U | 0.3 U | 0.30 U | NA | NA | NA | NA | NA | 0.3 U | 0.3 U |
| Isopropylbenzene | 0.8 | 8 | 0.14 U | 0.14 U | 0.1 U | 0.1 U | **1.3** | **1.0** | 0.093 U | 0.36 U | 0.14 U | 0.14 U | 0.1 U | 0.1 U |
| Toluene | 40 | 400 | NA | NA | 0.2 U | 0.21 J | 0.33 J | NA | NA | NA | NA | NA | 0.2 U | 0.2 U |
| Benzene | 1 | 10 | NA | NA | 0.2 U | 0.2 U | 0.20 U | NA | NA | NA | NA | NA | 0.2 U | 0.2 U |
| MTBE | 20 | 200 | NA | NA | 0.2 U | 0.2 U | 0.20 U | NA | NA | NA | NA | NA | 0.2 U | 0.2 U |

**Table 2**
**Groundwater Analytical Data**

Groundwater Monitoring Report, 3rd Quarter, 3rd Year - October 2008
Building 81, Tanks 81 A, B, and C
Naval Air Station Cecil Field
Jacksonville, Florida


| Parameter | GCTL | NADC | CEF-081- | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 16S | | | | | | | | 17S | | | |
| | | | 06/07/07 | 09/20/07 | 12/18/07 | 03/31/08 | 07/22/08 | 10/23/08 | 06/07/07 | 09/20/07 | 12/18/07 | 03/31/08 | 07/22/08 | 10/23/08 |
| **VOCs (µg/L)** | | | | | | | | | | | | | | |
| Ethylbenzene | 30 | 300 | 0.30 U | NA | NA | NA | NA | NA | 0.30 U | NA | NA | NA | NA | NA |
| Isopropylbenzene | 0.8 | 8 | 0.10 U | 0.21 U | 0.093 U | 0.36 U | 0.14 U | 0.14 U | 0.10 U | 0.21 U | 0.093 U | 0.36 U | 0.14 U | 0.41 |
| Toluene | 40 | 400 | 0.20 U | NA | NA | NA | NA | NA | 0.20 U | NA | NA | NA | NA | NA |
| Benzene | 1 | 10 | 0.20 U | NA | NA | NA | NA | NA | 0.20 U | NA | NA | NA | NA | NA |
| MTBE | 20 | 200 | 0.20 U | NA | NA | NA | NA | NA | 0.20 U | NA | NA | NA | NA | NA |

| Parameter | GCTL | NADC | CEF-081- | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 18I | | | | | | | | 19I | | | |
| | | | 11/22/06 | | 02/05/07 | | 9/20/2007 | 12/17/2007 | 4/1/2008 | 07/22/08 | 10/23/08 | 11/22/06 | 02/06/07 | 06/08/07 |
| | | | Sample | Duplicate | Sample | Duplicate | | | | | | | | |
| **VOCs (µg/L)** | | | | | | | | | | | | | | |
| Ethylbenzene | 30 | 300 | 0.3 U | 0.3 U | 0.3 U | 0.3 U | NA | NA | NA | NA | NA | 0.7 J | 1.18 | 1.3 |
| Isopropylbenzene | 0.8 | 8 | **1** | **1.2** | **1.26** | **1.19** | **1.5** | **0.92 J** | 0.54 J | 0.30 J | 0.41 | **2.8** | **5.32** | **4.2** |
| Toluene | 40 | 400 | 0.5 J | 0.2 U | 0.23 J | 0.2 U | NA | NA | NA | NA | NA | 0.2 U | 0.2 U | 0.20 U |
| Benzene | 1 | 10 | 0.2 U | 0.5 U | 0.2 U | 0.20 U | NA | NA | NA | NA | NA | 0.2 U | 0.20 U | 0.2 U |
| MTBE | 20 | 200 | 0.2 U | NA | 0.2 U | 0.20 U | NA | NA | NA | NA | NA | 0.2 U | 0.20 U | 0.2 U |

**Table 2**
**Groundwater Analytical Data**

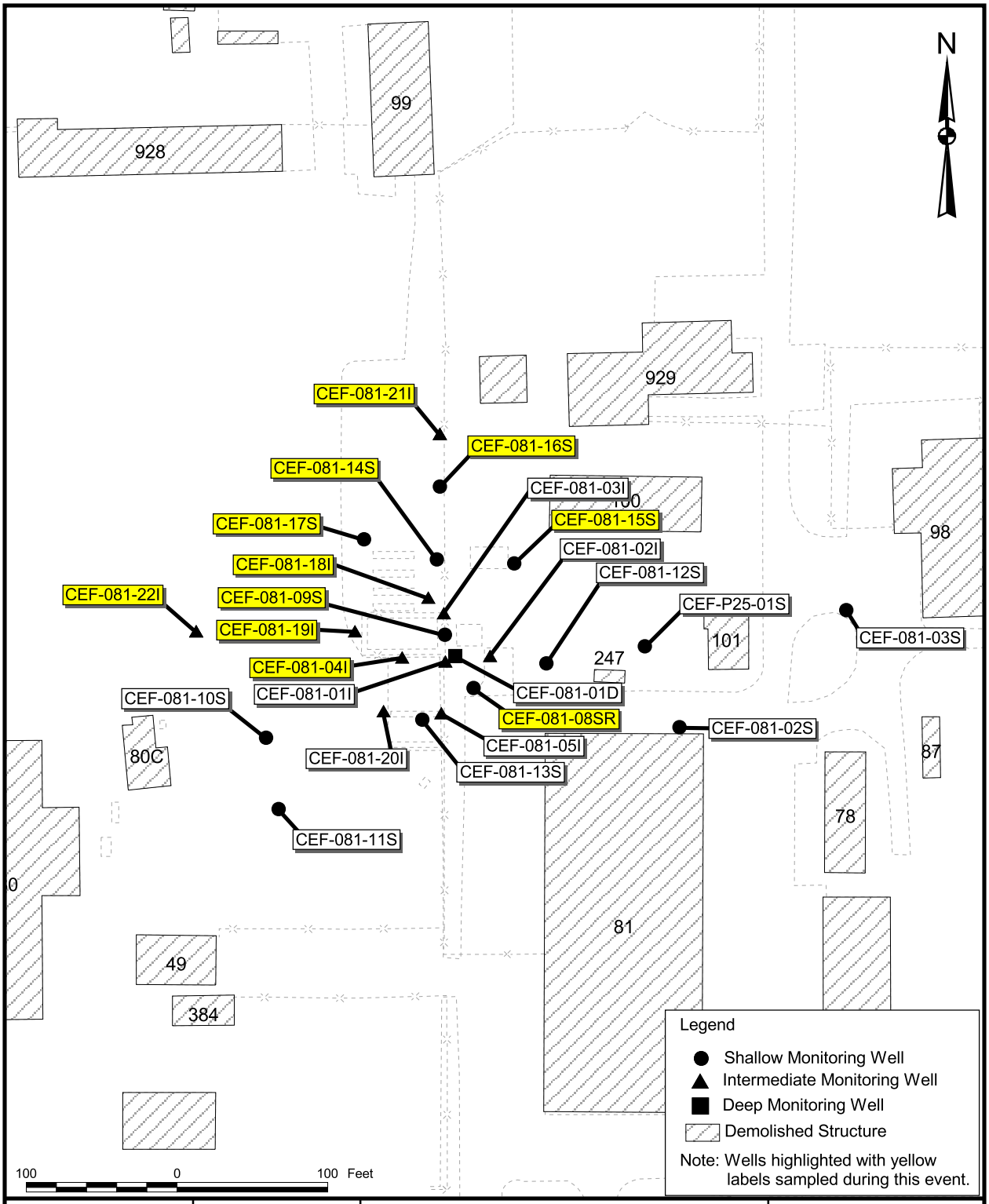
Groundwater Monitoring Report, 3rd Quarter, 3rd Year - October 2008
Building 81, Tanks 81 A, B, and C
Naval Air Station Cecil Field
Jacksonville, Florida


| Parameter | GCTL | NADC | CEF-081- | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 19I | | | | | | 20I | | | 21I | | |
| | | | 09/20/07 | | 12/17/2007 | 3/31/2008 | 07/22/08 | 10/23/08 | 11/22/06 | 02/06/07 | 06/08/07 | 06/07/07 | 09/21/07 | 12/18/2007 |
| | | | Sample | Duplicate | | | | | | | | | | |
| **VOCs (µg/L)** | | | | | | | | | | | | | | |
| Ethylbenzene | 30 | 300 | NS | NA | NA | NA | NA | NA | 0.3 U | 0.3 U | 0.30 U | 0.30 U | NA | NA |
| Isopropylbenzene | 0.8 | 8 | **2.8** | **2.8** | **3.3** | **2.8** | **1.1** | 0.77 J | 0.2 J | 0.1 U | 0.10 U | 0.10 U | 0.21 U | 0.093 U |
| Toluene | 40 | 400 | NA | NA | NA | NA | NA | NA | 0.3 J | 0.37 J | 0.20 U | 0.53 J | NA | NA |
| Benzene | 1 | 10 | NA | NA | NA | NA | NA | NA | 0.2 U | 0.20 U | 0.2 U | 0.20 U | NA | NA |
| MTBE | 20 | 200 | NA | NA | NA | NA | NA | NA | 0.2 U | 0.20 U | 0.2 U | 0.20 U | NA | NA |

| Parameter | GCTL | NADC | CEF-081- | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 21I | | | 22I | | | | | |
| | | | 03/31/08 | 07/22/08 | 10/23/08 | 6/7/2007 | 9/19/2007 | 12/18/2007 | 3/31/2008 | 07/22/08 | 10/23/08 |
| **VOCs (µg/L)** | | | | | | | | | | | |
| Ethylbenzene | 30 | 300 | NA | NA | NA | 0.93 J | NA | NA | NA | NA | NA |
| Isopropylbenzene | 0.8 | 8 | 0.36 U | 0.14 U | 0.14 U | 0.52J | 0.43 J | 0.32 J | 0.58 J | **0.88 J** | **1.5** |
| Toluene | 40 | 400 | NA | NA | NA | 0.43 U | NA | NA | NA | NA | NA |
| Benzene | 1 | 10 | NA | NA | NA | 0.28 J | NA | NA | NA | NA | NA |
| MTBE | 20 | 200 | NA | NA | NA | 1.8 | NA | NA | NA | NA | NA |

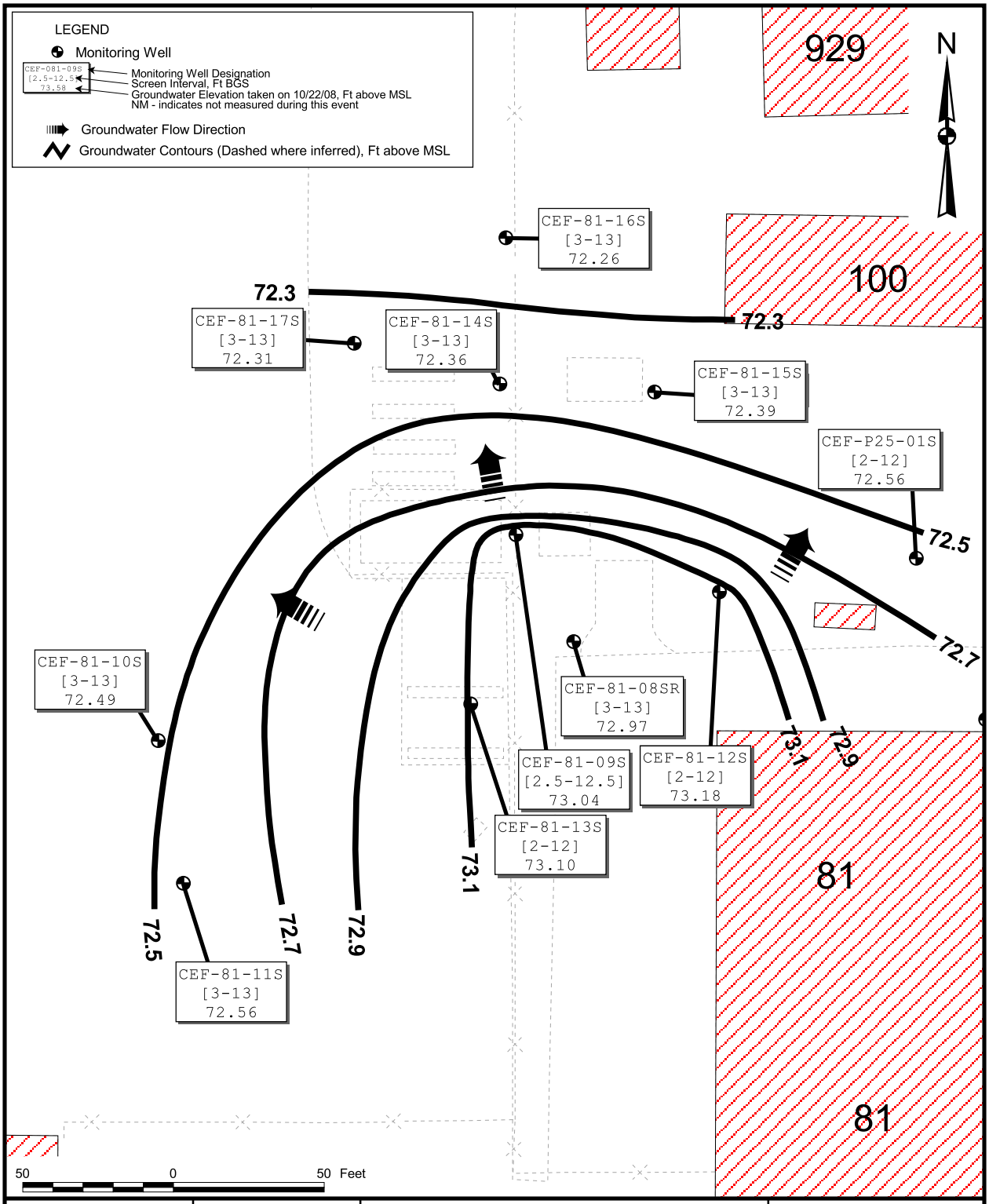
GCTL = Groundwater Cleanup Target Level.
NADC = Natural Attenuation Default Concentration.
VOCs = Volatile organic compounds.
µg/L = Micrograms per liter.
MTBE = Methyl tertiary butyl ether.
PAHs = Polynuclear aromatic hydrocarbons.
U = Not detected at detection limit shown.
J = Estimated concentration.
**Shading** indicates concentration greater than FDEP criterion
FDEP GCTLs from Chapter 62-777, Florida Administrative Code (F.A.C.)
NA = Not analyzed.

# FIGURES



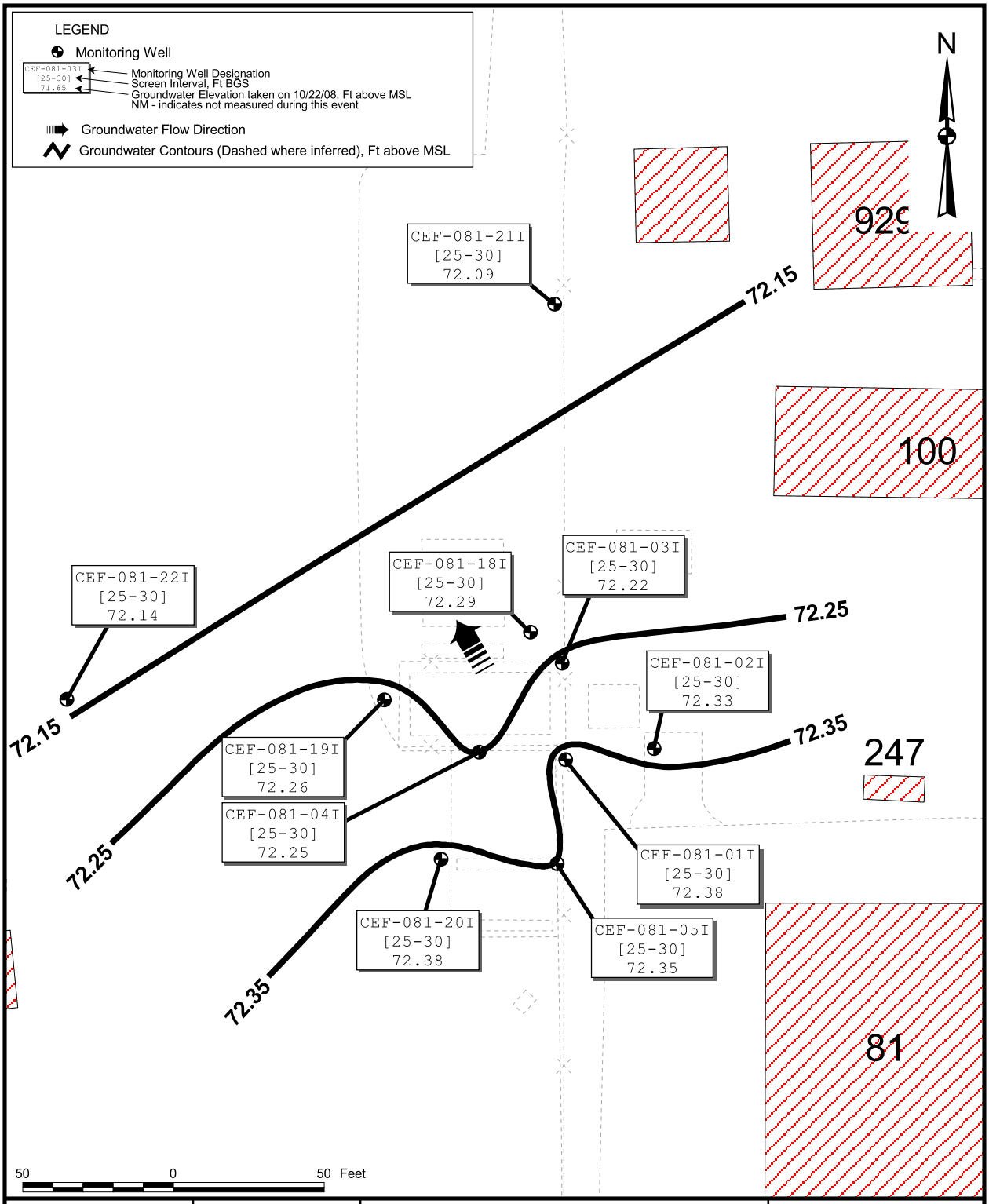

| | | | |
|---|---|---|---|
| DRAWN BY MJJ | DATE 30Aug07 | MONITORING WELL LOCATION MAP<br>TANKS 81 A, B, AND C<br>3RD QUARTER, 3RD YEAR<br>GROUNDWATER MONITORING REPORT<br>NAVAL AIR STATION CECIL FIELD<br>JACKSONVILLE, FLORIDA | CONTRACT NUMBER 1264 |
| CHECKED BY | DATE | | APPROVED BY DATE |
| COST/SCHEDULE-AREA | | | APPROVED BY DATE |
| SCALE AS NOTED | | | DRAWING NO. FIGURE 1 / REV 0 |

P:\GIS\NAS_CecilField\Tank_81abc_20080821.apr 08Dec08 MJJ Layout12



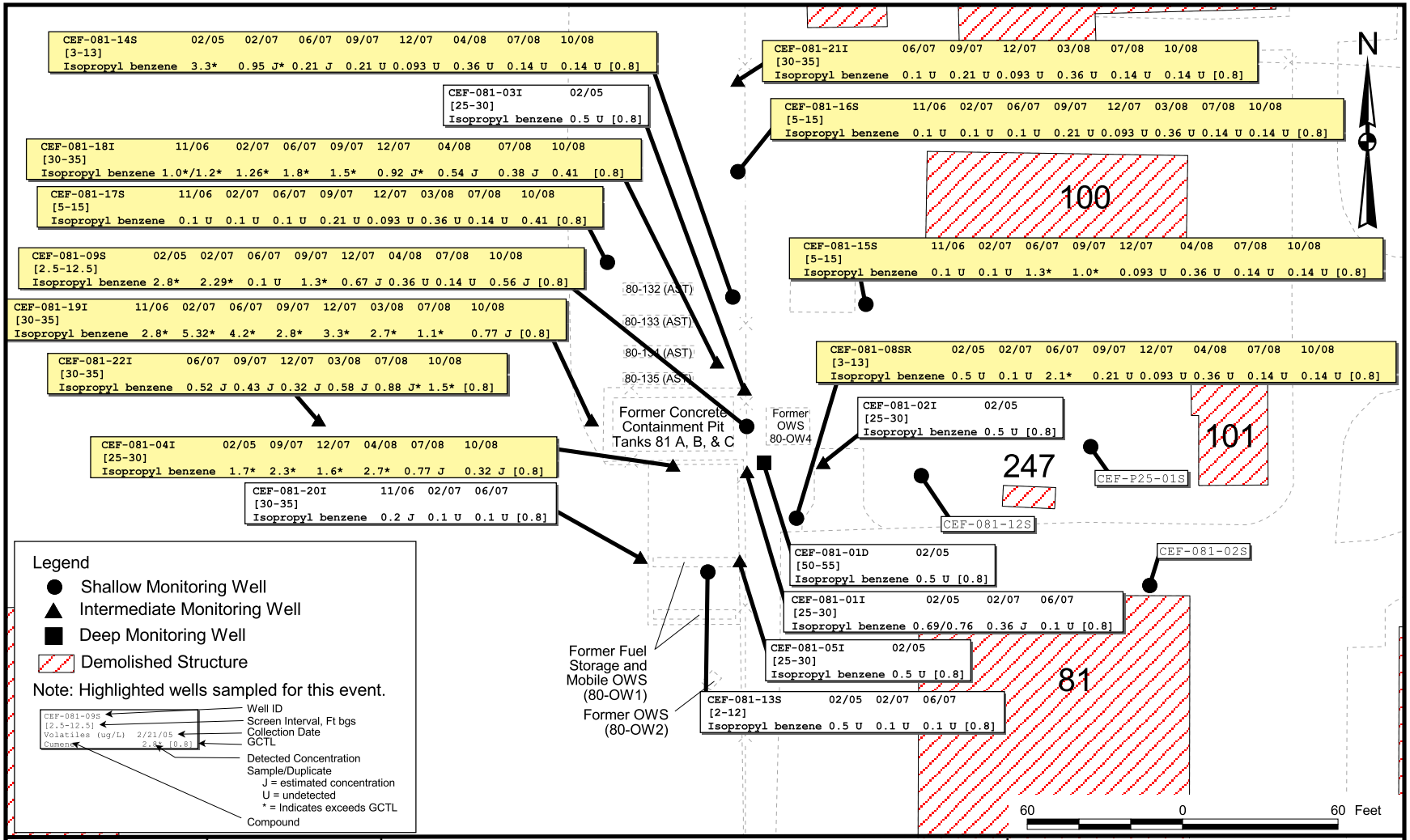

| | | | |
|---|---|---|---|
| DRAWN BY MJJ | DATE 08Dec07 | GROUNDWATER FLOW MAP (10/22/08)<br>SHALLOW ZONE<br>TANKS 81 A, B, AND C<br>3RD QUARTER, 3RD YEAR<br>GROUNDWATER MONITORING REPORT<br>NAVAL AIR STATION CECIL FIELD<br>JACKSONVILLE, FLORIDA | CONTRACT NUMBER 1264 |
| CHECKED BY | DATE | | APPROVED BY DATE |
| COST/SCHEDULE-AREA | | | APPROVED BY DATE |
| SCALE AS NOTED | | | DRAWING NO. FIGURE 2 / REV 0 |

P:\GIS\NAS_CecilField\Tank_81abc_20080821.apr 08Dec08 MJJ Layout10




| | | | |
|---|---|---|---|
| DRAWN BY MJJ — DATE 08Dec07 | | GROUNDWATER FLOW MAP (10/22/08)<br>INTERMEDIATE ZONE<br>TANKS 81 A, B, AND C<br>3RD QUARTER, 3RD YEAR<br>GROUNDWATER MONITORING REPORT<br>NAVAL AIR STATION CECIL FIELD<br>JACKSONVILLE, FLORIDA | CONTRACT NUMBER 1264 |
| CHECKED BY — DATE | | | APPROVED BY — DATE |
| COST/SCHEDULE-AREA | | | APPROVED BY — DATE |
| SCALE AS NOTED | NAVFAC | | DRAWING NO. FIGURE 3 — REV 0 |

P:\GIS\NAS_CecilField\Tank_81abc_20080821.apr 08Dec08 MJJ Layout11




| | | | |
|---|---|---|---|
| DATE<br>MJJ 07Feb08 | ANALTYICAL RESULTS<br>TANKS 81 A, B, AND C<br>3RD QUARTER, 3RD YEAR<br>GROUNDWATER MONITORING REPORT<br>NAVAL AIR STATION CECIL FIELD<br>JACKSONVILLE, FLORIDA | DRAWN BY | CONTRACT NUMBER<br>1264 |
| CHECKED BY DATE | | APPROVED BY | DATE |
| COST/SCHEDULE-AREA | | APPROVED BY | DATE |
| SCALE<br>AS NOTED | | DRAWING NO.<br>FIGURE 4 | REV<br>0 |

P:\GIS\NAS_CecilField\Tank_81abc_20081106.apr 02Dec08 MJJ Layout15

**ATTACHMENT A**

**NATURAL ATTENUATION MONITORING PLAN APPROVAL ORDER (NAMPAO)**
**JUNE 27, 2008**

# Florida Department of Environmental Protection

Bob Martinez Center
2600 Blairstone Road
Tallahassee, Florida 32399-2400

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary


June 27, 2008

BRAC PMO SE
Attn: Mr. Jim Ferro
4130 Faber Place Drive
Suite 202
North Charleston, SC 29405

RE: Natural Attenuation Monitoring Plan, Building 81, Tanks 81 A, B, and C, Naval Air Station Cecil Field, Jacksonville, Florida

Dear Mrs. Nwokike:

I have completed my review of the Site Assessment Report Addendum and Natural Attenuation Monitoring Plan, Building 81, Tanks 81 A, B, and C, Naval Air Station Cecil Field, dated May 4, 2007 and November 21, 2007, respectively (received May 8, 2007 and November 26, 2007, respectively), prepared and submitted by Tetra Tech NUS, Inc. Based upon my review, the enclosed Natural Attenuation Monitoring Plan Approval Order (NAMPAO) was signed by Mr. Doug Jones, Chief, Bureau of Waste Cleanup.

If you have any concerns regarding this letter, please contact me at (850) 245-8997.

Sincerely,

David P. Grabka, P.G.
Remedial Project Manager

DAVID P. GRABKA
LICENSE
NO. 2192
STATE OF FLORIDA
PROFESSIONAL GEOLOGIST

20 June 2008
Date

CC: Doyle Brittain, USEPA, Atlanta
John Flowe, City of Jacksonville
Mark Speranza, TtNUS, Pittsburgh
Mike Halil, CH2M Hill, Jacksonville
Mike Fitzsimmons, FDEP, Northeast District
Mark Peterson, TtNUS, Jacksonville

JJC ESN ESN

Florida Department of
Environmental Protection
Bob Martinez Center
2600 Blairstone Road
Tallahassee, Florida 32399-2400

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

June 27, 2008

**CERTIFIED MAIL**
**RETURN RECEIPT REQUESTED**

Mr. Jim Ferro
BRAC Program Management Office Southeast
4130 Faber Place Drive
Suite 202
North Charleston, South Carolina 29405

Subject: Natural Attenuation Monitoring Plan Approval Order
Building 81, Tanks 81 A, B, and C
Naval Air Station Cecil Field
Jacksonville, Duval County

Dear Mr. Ferro:

The Bureau of Waste Cleanup has reviewed the Site Assessment Report Addendum and the Natural Attenuation Monitoring Plan, dated May 4, 2007 and November 21, 2007, respectively, (received May 8, 2007 and November 26, 2007, respectively), prepared and submitted by Tetra Tech NUS, Inc., for the petroleum product discharge discovered at this site. Pursuant to Paragraph 62-770.690(5)(a), Florida Administrative Code (F.A.C.), the Florida Department of Environmental Protection (Department) approves the Natural Attenuation Monitoring Plan. Pursuant to Rule 62-770.690(8), F.A.C., you are required to complete the monitoring program outlined below. The first sampling event must be performed within 60 days of the installation of replacement monitoring well CEF-502-1SR following the excavation of contaminated soil proposed in the May 25, 2007 Dig and Haul Package for Building 502, Tank 502; or as otherwise approved in a Site Management Plan. Water-level measurements must be made immediately prior to each sampling event. The analytical results (laboratory report), chain of custody record form, cumulative summary tables as required by Subparagraph 62-770.600(8)(a)25., F.A.C. (updated as applicable), site map(s) that illustrate the most recent analytical results, and the water-level elevation information (cumulative summary table and most recent flow interpretation map), must be submitted to the Department within 60 days of sample collection.

The monitoring wells to be sampled, the sampling parameters, and the sampling frequency are as follows:

| Monitoring Wells | Contaminants of Concern | Frequency | Duration |
|---|---|---|---|
| CEF-081-04I, 17S, 08SR, 09S, 14S, 15S, 16S, 18I, 19I, 21I, and 22I | Cumene (isopropylbenzene) | Quarterly | One year |

The approved Remedial Action by Natural Attenuation monitoring period is five years. The sampling frequency will be evaluated following the submittal of the first annual report to determine whether to continue quarterly or whether a different sampling frequency may be appropriate.

If concentrations of contaminants of concern in any of the designated wells increase above the action levels listed below, the well or wells must be resampled no later than 30 days after the initial positive results are known. If the results of the resampling confirm the initial sampling results, then the monitoring report referenced in Paragraph 62-770.690(8)(d), F.A.C., must be signed and sealed by an appropriate registered professional pursuant to Rule 62-770.490, F.A.C., and must include a proposal as described in Paragraph 62-770.690(8)(e), F.A.C.

Contaminated wells:
CEF-081-09S, 19I, 08SR, 04I, 15S, 18I: 8 µg/L cumene (isopropylbenzene).
Perimeter wells (temporary points of compliance):
CEF-081-21I, 16S, 14S, 17S, 22I: .8 µg/L cumene (isopropylbenzene).

If the applicable No Further Action criteria of Rule 62-770.680, F.A.C., are met for two consecutive sampling events, a Site Rehabilitation Completion Report with a No Further Action Proposal, that summarizes the monitoring program and contains documentation to support the opinion that the cleanup objectives have been achieved, must be submitted as required in Subsection 62-770.690(10), F.A.C. If the applicable No Further Action criteria of Rule 62-770.680, F.A.C., are not met following five years of monitoring, then the monitoring report must include a proposal as described in Subsection 62-770.690(8)(f), F.A.C.

Legal Issues

The Department's Order shall become final unless a timely petition for an administrative hearing is filed under Sections 120.569 and 120.57, Florida Statutes (F.S.), within 21 days of receipt of this Order. The procedures for petitioning for an administrative hearing are set forth below.

Persons affected by this Order have the following options:

(A) If you choose to accept the Department's decision regarding the Second Quarter 2006 Operations and Maintenance Status Report, you do not have to do anything. This Order is final and effective as of the date on the top of the first page of this Order.

(B) If you choose to challenge the decision, you may do the following:

(1) File a request for an extension of time to file a petition for an administrative hearing with the Department's Agency Clerk in the Office of General Counsel within 21 days of receipt of this Order; such a request should be made if you wish to meet with the Department in an attempt to informally resolve any disputes without first filing a petition for an administrative hearing; or

(2) File a petition for an administrative hearing with the Department's Agency Clerk in the Office of General Counsel within 21 days of receipt of this Order.

Please be advised that mediation of this decision pursuant to Section 120.573, F.S., is not available.

How to Request an Extension of Time to File a Petition for an Administrative Hearing

For good cause shown, pursuant to Subsection 62-110.106(4), F.A.C., the Department may grant a request for an extension of time to file a petition for an administrative hearing. Such a request must be filed (received) by the Department's Agency Clerk in the Office of General Counsel at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida, 32399-3000, within 21 days of receipt of this Order. Petitioner, if different from BRAC Program Management Office Southeast, shall mail a copy of the request to BRAC Program Management Office Southeast at the time of filing. Timely filing a request for an extension of time tolls the time period within which a petition for an administrative hearing must be made.

How to File a Petition for an Administrative Hearing

A person whose substantial interests are affected by this Order may petition for an administrative hearing under Sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed (received) by the Department's Agency Clerk in the Office of General Counsel at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida, 32399-3000, within 21 days of receipt of this Order. Petitioner, if different from BRAC Program Management Office Southeast, shall mail a copy of the petition to BRAC Program Management Office Southeast at the time of filing. Failure to file a petition within this time period shall waive the right of anyone who may request an administrative hearing under Sections 120.569 and 120.57, F.S.

Pursuant to Subsection 120.569(2), F.S. and Rule 28-106.201, F.A.C., a petition for an administrative hearing shall contain the following information:

(a) The name, address, and telephone number of each petitioner; the name, address, and telephone number of the petitioner's representative, if any; the facility owner's name and address, if different from the petitioner; the FDEP facility number, and the name and address of the facility;
(b) A statement of when and how each petitioner received notice of the Department's action or proposed action;
(c) An explanation of how each petitioner's substantial interests are or will be affected by the Department's action or proposed action;
(d) A statement of the disputed issues of material fact, or a statement that there are no disputed facts;
(e) A statement of the ultimate facts alleged, including a statement of the specific facts the petitioner contends warrant reversal or modification of the Department's action or proposed action;
(f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the Department's action or proposed action; and
(g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the Department to take with respect to the Department's action or proposed action.

This Order is final and effective as of the date on the top of the first page of this Order. Timely filing a petition for an administrative hearing postpones the date this Order takes effect until the Department issues either a final order pursuant to an administrative hearing or an Order Responding to Supplemental Information provided to the Department pursuant to meetings with the Department.

Judicial Review

Any party to this Order has the right to seek judicial review of it under Section 120.68, F.S., by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the Department's Agency Clerk in the Office of General Counsel at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida, 32399-3000, and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The notice of appeal must be filed within 30 days after this Order is filed with the Department's clerk (see below).

Questions

Any questions regarding the Department's review of your Second Quarter 2006 Operations and Maintenance Status Report should be directed to David Grabka at (850) 245-8997. Questions regarding legal issues should be referred to the Department's Office of General Counsel at (850) 245-2242. Contact with any of the above does not constitute a petition for administrative hearing or request for an extension of time to file a petition for administrative hearing.

Sincerely,

Douglas A. Jones, Chief
Bureau of Waste Cleanup
Division of Waste Management

DAJ/dpg

cc: David Grabka, DEP – BWC
File

FILING AND ACKNOWLEDGMENT
FILED, on this date, pursuant to §120.52 Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Minnie L Nunson — June 27, 2008
Clerk (or Deputy Clerk) — Date

# ATTACHMENT B

## GROUNDWATER ANALYTICAL REPORT
## OCTOBER AND NOVEMBER 2008

# Organic Analysis:
# Volatile Organic Compounds by GC/MS

## Summary Package

### Sample and QC Results

**COLUMBIA ANALYTICAL SERVICES, INC.**

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil 81 ABC/112G01264

**Service Request:** J0805143

## Cover Page - Organic Analysis Data Package
## Volatile Organic Compounds by GC/MS

| Sample Name | Lab Code | Date Collected | Date Received |
|---|---|---|---|
| CEF-081-DUP01 | J0805143-001 | 10/22/2008 | 10/23/2008 |
| CEF-081-085R-102208 | J0805143-002 | 10/22/2008 | 10/23/2008 |
| CEF-081-09S-102208 | J0805143-003 | 10/22/2008 | 10/23/2008 |
| CEF-081-15S-102208 | J0805143-004 | 10/22/2008 | 10/23/2008 |
| Trip Blank | J0805143-005 | 10/22/2008 | 10/23/2008 |

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Scott Allen

Name: Scott Allen

Date: 10/24/08

Title: Scientist 4

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Tetra Tech NUS, Inc. | **Service Request:** | J0805143 |
| **Project:** | Cecil 81 ABC/112G01264 | **Date Collected:** | 10/22/2008 |
| **Sample Matrix:** | Water | **Date Received:** | 10/23/2008 |

## Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | CEF-081-DUP01 | **Units:** | ug/L |
| **Lab Code:** | J0805143-001 | **Basis:** | NA |
| **Extraction Method:** | EPA 5030B | **Level:** | Low |
| **Analysis Method:** | 8260B | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Isopropylbenzene | ND | U | 1.0 | 0.14 | 1 | 10/23/08 | 10/23/08 | JWG0804006 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 1,2-Dichloroethane-d4 | 90 | 71-122 | 10/23/08 | Acceptable |
| 4-Bromofluorobenzene | 90 | 75-120 | 10/23/08 | Acceptable |
| Dibromofluoromethane | 95 | 82-116 | 10/23/08 | Acceptable |
| Toluene-d8 | 99 | 88-117 | 10/23/08 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Tetra Tech NUS, Inc. | **Service Request:** | J0805143 |
| **Project:** | Cecil 81 ABC/112G01264 | **Date Collected:** | 10/22/2008 |
| **Sample Matrix:** | Water | **Date Received:** | 10/23/2008 |

## Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | CEF-081-085R-102208 | **Units:** | ug/L |
| **Lab Code:** | J0805143-002 | **Basis:** | NA |
| **Extraction Method:** | EPA 5030B | **Level:** | Low |
| **Analysis Method:** | 8260B | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Isopropylbenzene | ND | U | 1.0 | 0.14 | 1 | 10/23/08 | 10/23/08 | JWG0804006 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 1,2-Dichloroethane-d4 | 90 | 71-122 | 10/23/08 | Acceptable |
| 4-Bromofluorobenzene | 91 | 75-120 | 10/23/08 | Acceptable |
| Dibromofluoromethane | 95 | 82-116 | 10/23/08 | Acceptable |
| Toluene-d8 | 100 | 88-117 | 10/23/08 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Tetra Tech NUS, Inc. | **Service Request:** | J0805143 |
| **Project:** | Cecil 81 ABC/112G01264 | **Date Collected:** | 10/22/2008 |
| **Sample Matrix:** | Water | **Date Received:** | 10/23/2008 |

## Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | CEF-081-09S-102208 | **Units:** | ug/L |
| **Lab Code:** | J0805143-003 | **Basis:** | NA |
| **Extraction Method:** | EPA 5030B | **Level:** | Low |
| **Analysis Method:** | 8260B | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| **Isopropylbenzene** | **0.56** | I | 1.0 | 0.14 | 1 | 10/23/08 | 10/23/08 | JWG0804006 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 1,2-Dichloroethane-d4 | 90 | 71-122 | 10/23/08 | Acceptable |
| 4-Bromofluorobenzene | 92 | 75-120 | 10/23/08 | Acceptable |
| Dibromofluoromethane | 96 | 82-116 | 10/23/08 | Acceptable |
| Toluene-d8 | 100 | 88-117 | 10/23/08 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Tetra Tech NUS, Inc. | **Service Request:** | J0805143 |
| **Project:** | Cecil 81 ABC/112G01264 | **Date Collected:** | 10/22/2008 |
| **Sample Matrix:** | Water | **Date Received:** | 10/23/2008 |

## Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | CEF-081-15S-102208 | **Units:** | ug/L |
| **Lab Code:** | J0805143-004 | **Basis:** | NA |
| **Extraction Method:** | EPA 5030B | **Level:** | Low |
| **Analysis Method:** | 8260B | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Isopropylbenzene | ND | U | 1.0 | 0.14 | 1 | 10/23/08 | 10/23/08 | JWG0804006 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 1,2-Dichloroethane-d4 | 92 | 71-122 | 10/23/08 | Acceptable |
| 4-Bromofluorobenzene | 91 | 75-120 | 10/23/08 | Acceptable |
| Dibromofluoromethane | 94 | 82-116 | 10/23/08 | Acceptable |
| Toluene-d8 | 99 | 88-117 | 10/23/08 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Tetra Tech NUS, Inc. | **Service Request:** | J0805143 |
| **Project:** | Cecil 81 ABC/112G01264 | **Date Collected:** | 10/22/2008 |
| **Sample Matrix:** | Water | **Date Received:** | 10/23/2008 |

## Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | Trip Blank | **Units:** | ug/L |
| **Lab Code:** | J0805143-005 | **Basis:** | NA |
| **Extraction Method:** | EPA 5030B | **Level:** | Low |
| **Analysis Method:** | 8260B | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Isopropylbenzene | ND | U | 1.0 | 0.14 | 1 | 10/23/08 | 10/23/08 | JWG0804006 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 1,2-Dichloroethane-d4 | 92 | 71-122 | 10/23/08 | Acceptable |
| 4-Bromofluorobenzene | 94 | 75-120 | 10/23/08 | Acceptable |
| Dibromofluoromethane | 94 | 82-116 | 10/23/08 | Acceptable |
| Toluene-d8 | 100 | 88-117 | 10/23/08 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Tetra Tech NUS, Inc. | **Service Request:** | J0805143 |
| **Project:** | Cecil 81 ABC/112G01264 | **Date Collected:** | NA |
| **Sample Matrix:** | Water | **Date Received:** | NA |

## Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | Method Blank | **Units:** | ug/L |
| **Lab Code:** | JWG0804006-4 | **Basis:** | NA |
| **Extraction Method:** | EPA 5030B | **Level:** | Low |
| **Analysis Method:** | 8260B | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Isopropylbenzene | ND | U | 1.0 | 0.14 | 1 | 10/23/08 | 10/23/08 | JWG0804006 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 1,2-Dichloroethane-d4 | 90 | 71-122 | 10/23/08 | Acceptable |
| 4-Bromofluorobenzene | 92 | 75-120 | 10/23/08 | Acceptable |
| Dibromofluoromethane | 94 | 82-116 | 10/23/08 | Acceptable |
| Toluene-d8 | 99 | 88-117 | 10/23/08 | Acceptable |

**Comments:**

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil 81 ABC/112G01264
**Sample Matrix:** Water

**Service Request:** J0805143

**Surrogate Recovery Summary**
**Volatile Organic Compounds by GC/MS**

**Extraction Method:** EPA 5030B
**Analysis Method:** 8260B

**Units:** PERCENT
**Level:** Low

| Sample Name | Lab Code | Sur1 | Sur2 | Sur3 | Sur4 |
|---|---|---|---|---|---|
| CEF-081-DUP01 | J0805143-001 | 90 | 90 | 95 | 99 |
| CEF-081-085R-102208 | J0805143-002 | 90 | 91 | 95 | 100 |
| CEF-081-09S-102208 | J0805143-003 | 90 | 92 | 96 | 100 |
| CEF-081-15S-102208 | J0805143-004 | 92 | 91 | 94 | 99 |
| Trip Blank | J0805143-005 | 92 | 94 | 94 | 100 |
| Method Blank | JWG0804006-4 | 90 | 92 | 94 | 99 |
| Lab Control Sample | JWG0804006-3 | 91 | 92 | 94 | 100 |

**Surrogate Recovery Control Limits (%)**

| | | |
|---|---|---|
| Sur1 = | 1,2-Dichloroethane-d4 | 71-122 |
| Sur2 = | 4-Bromofluorobenzene | 75-120 |
| Sur3 = | Dibromofluoromethane | 82-116 |
| Sur4 = | Toluene-d8 | 88-117 |

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

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

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Tetra Tech NUS, Inc. | **Service Request:** | J0805143 |
| **Project:** | Cecil 81 ABC/112G01264 | **Date Analyzed:** | 10/23/2008 |
| | | **Time Analyzed:** | 04:42 |

**Internal Standard Area and RT Summary**
**Volatile Organic Compounds by GC/MS**

| | | | |
|---|---|---|---|
| **File ID:** | \\JACKSONVILLE1\ACQUDATA\MS52\DATA\MS528K23.B\1 | **Lab Code:** | JWG0804008-2 |
| **Instrument ID:** | MS52.i | **Analysis Lot:** | JWG0804008 |
| **Analysis Method:** | 8260B | **Column :** | DB-VRX |

| | | 1,4-Dichlorobenzene-d4 | | Chlorobenzene-d5 | | Fluorobenzene | |
|---|---|---|---|---|---|---|---|
| | | **Area** | **RT** | **Area** | **RT** | **Area** | **RT** |
| | **Results ==>** | 181,616 | 11.42 | 210,537 | 9.00 | 486,722 | 5.66 |
| | **Upper Limit ==>** | 363,232 | 11.92 | 421,074 | 9.50 | 973,444 | 6.16 |
| | **Lower Limit ==>** | 90,808 | 10.92 | 105,269 | 8.50 | 243,361 | 5.16 |
| | **ICAL Result ==>** | 185,644 | 11.42 | 212,906 | 8.99 | 503,421 | 5.66 |
| ***Associated Analyses*** | | | | | | | |
| Lab Control Sample | JWG0804006-3 | 181,351 | 11.42 | 202,873 | 8.99 | 485,404 | 5.67 |
| Method Blank | JWG0804006-4 | 182,444 | 11.42 | 202,688 | 8.99 | 478,424 | 5.66 |
| CEF-081-DUP01 | J0805143-001 | 181,855 | 11.42 | 199,104 | 8.99 | 466,593 | 5.66 |
| CEF-081-085R-102208 | J0805143-002 | 182,225 | 11.42 | 206,702 | 8.99 | 491,248 | 5.66 |
| CEF-081-09S-102208 | J0805143-003 | 184,271 | 11.42 | 205,577 | 8.99 | 486,514 | 5.67 |
| CEF-081-15S-102208 | J0805143-004 | 183,617 | 11.42 | 202,281 | 8.99 | 476,189 | 5.66 |
| Trip Blank | J0805143-005 | 183,778 | 11.42 | 212,720 | 8.99 | 501,520 | 5.66 |

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

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Tetra Tech NUS, Inc. | **Service Request:** | J0805143 |
| **Project:** | Cecil 81 ABC/112G01264 | **Date Extracted:** | 10/23/2008 |
| **Sample Matrix:** | Water | **Date Analyzed:** | 10/23/2008 |

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

| | | | |
|---|---|---|---|
| **Extraction Method:** | EPA 5030B | **Units:** | ug/L |
| **Analysis Method:** | 8260B | **Basis:** | NA |
| | | **Level:** | Low |
| | | **Extraction Lot:** | JWG0804006 |

| | Lab Control Sample JWG0804006-3 Lab Control Spike | | | |
|---|---|---|---|---|
| **Analyte Name** | **Result** | **Expected** | **%Rec** | **%Rec Limits** |
| Isopropylbenzene | 20.9 | 20.0 | 104 | 83-122 |

**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.

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Tetra Tech NUS, Inc. | **Service Request:** | J0805143 |
| **Project:** | Cecil 81 ABC/112G01264 | **Date Extracted:** | 10/23/2008 |
| **Sample Matrix:** | Water | **Date Analyzed:** | 10/23/2008 |
| | | **Time Analyzed:** | 06:01 |

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

| | | | |
|---|---|---|---|
| **Sample Name:** | Method Blank | **File ID:** | J:\MS52\DATA\MS528K23.B\1023-05.D |
| **Lab Code:** | JWG0804006-4 | **Instrument ID:** | MS52.i |
| **Extraction Method:** | EPA 5030B | **Level:** | Low |
| **Analysis Method:** | 8260B | **Extraction Lot:** | JWG0804006 |

This Method Blank applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed | Time Analyzed |
|---|---|---|---|---|
| Lab Control Sample | JWG0804006-3 | J:\MS52\DATA\MS528K23.B\1023-03.D | 10/23/08 | 05:09 |
| CEF-081-DUP01 | J0805143-001 | J:\MS52\DATA\MS528K23.B\1023-21.D | 10/23/08 | 13:25 |
| CEF-081-085R-102208 | J0805143-002 | J:\MS52\DATA\MS528K23.B\1023-22.D | 10/23/08 | 13:52 |
| CEF-081-09S-102208 | J0805143-003 | J:\MS52\DATA\MS528K23.B\1023-23.D | 10/23/08 | 14:18 |
| CEF-081-15S-102208 | J0805143-004 | J:\MS52\DATA\MS528K23.B\1023-24.D | 10/23/08 | 14:45 |
| Trip Blank | J0805143-005 | J:\MS52\DATA\MS528K23.B\1023-25.D | 10/23/08 | 15:11 |

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Tetra Tech NUS, Inc. | **Service Request:** | J0805143 |
| **Project:** | Cecil 81 ABC/112G01264 | **Date Extracted:** | 10/23/2008 |
| **Sample Matrix:** | Water | **Date Analyzed:** | 10/23/2008 |
| | | **Time Analyzed:** | 05:09 |

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

| | | | |
|---|---|---|---|
| **Sample Name:** | Lab Control Sample | **File ID:** | J:\MS52\DATA\MS528K23.B\1023-03.D |
| **Lab Code:** | JWG0804006-3 | **Instrument ID:** | MS52.i |
| **Extraction Method:** | EPA 5030B | **Level:** | Low |
| **Analysis Method:** | 8260B | **Extraction Lot:** | JWG0804006 |

This Lab Control Sample applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed | Time Analyzed |
|---|---|---|---|---|
| Method Blank | JWG0804006-4 | J:\MS52\DATA\MS528K23.B\1023-05.D | 10/23/08 | 06:01 |
| CEF-081-DUP01 | J0805143-001 | J:\MS52\DATA\MS528K23.B\1023-21.D | 10/23/08 | 13:25 |
| CEF-081-085R-102208 | J0805143-002 | J:\MS52\DATA\MS528K23.B\1023-22.D | 10/23/08 | 13:52 |
| CEF-081-09S-102208 | J0805143-003 | J:\MS52\DATA\MS528K23.B\1023-23.D | 10/23/08 | 14:18 |
| CEF-081-15S-102208 | J0805143-004 | J:\MS52\DATA\MS528K23.B\1023-24.D | 10/23/08 | 14:45 |
| Trip Blank | J0805143-005 | J:\MS52\DATA\MS528K23.B\1023-25.D | 10/23/08 | 15:11 |

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil 81 ABC/112G01264

**Service Request:** J0805143
**Date Analyzed:** 10/23/2008
**Time Analyzed:** 04:20

## Tune Summary
## Volatile Organic Compounds by GC/MS

**File ID:** \\JACKSONVILLE1\ACQUDATA\MS52\DATA\MS528K23.B\1023-01.D
**Instrument ID:** MS52.i
**Column:**

**Analysis Method:** 8260B
**Analysis Lot:** JWG0804008

| Target Mass | Relative to Mass | Lower Limit% | Upper Limit% | Relative Abundance % | Raw Abundance | Result Pass/Fail |
|---|---|---|---|---|---|---|
| 50 | 95 | 15 | 40 | 20.5 | 2765 | PASS |
| 75 | 95 | 30 | 60 | 48.4 | 6520 | PASS |
| 95 | 95 | 100 | 100 | 100.0 | 13459 | PASS |
| 96 | 95 | 5 | 9 | 7.0 | 948 | PASS |
| 173 | 174 | 0 | 2 | 0.0 | 0 | PASS |
| 174 | 95 | 50 | 120 | 81.2 | 10926 | PASS |
| 175 | 174 | 5 | 9 | 7.7 | 841 | PASS |
| 176 | 174 | 95 | 101 | 98.2 | 10730 | PASS |
| 177 | 176 | 5 | 9 | 6.5 | 699 | PASS |

| Sample Name | Lab Code | File ID | Date Analyzed | Time Analyzed | Q |
|---|---|---|---|---|---|
| Continuing Calibration Verification | JWG0804008-2 | J:\MS52\DATA\MS528K23.B\1023-0 | 10/23/2008 | 04:42 | |
| Lab Control Sample | JWG0804006-3 | J:\MS52\DATA\MS528K23.B\1023-0 | 10/23/2008 | 05:09 | |
| Method Blank | JWG0804006-4 | J:\MS52\DATA\MS528K23.B\1023-0 | 10/23/2008 | 06:01 | |
| CEF-081-DUP01 | J0805143-001 | J:\MS52\DATA\MS528K23.B\1023-2 | 10/23/2008 | 13:25 | |
| CEF-081-085R-102208 | J0805143-002 | J:\MS52\DATA\MS528K23.B\1023-2 | 10/23/2008 | 13:52 | |
| CEF-081-09S-102208 | J0805143-003 | J:\MS52\DATA\MS528K23.B\1023-2 | 10/23/2008 | 14:18 | |
| CEF-081-15S-102208 | J0805143-004 | J:\MS52\DATA\MS528K23.B\1023-2 | 10/23/2008 | 14:45 | |
| Trip Blank | J0805143-005 | J:\MS52\DATA\MS528K23.B\1023-2 | 10/23/2008 | 15:11 | |

**Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window**

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil 81 ABC/112G01264

**Service Request:** J0805143
**ICAL Date:** 10/21/2008

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

**ICAL ID:** CAL1628
**Instrument ID:** MS52.i

**Column:** DB-VRX

| Level ID | File ID | Level ID | File ID |
|---|---|---|---|
| A | \\Jacksonville1\ACQUDATA\MS52\DATA\MS528K21.B\102 | E | \\Jacksonville1\ACQUDATA\MS52\DATA\MS528K21.B\102 |
| B | \\Jacksonville1\ACQUDATA\MS52\DATA\MS528K21.B\102 | F | \\Jacksonville1\ACQUDATA\MS52\DATA\MS528K21.B\102 |
| C | \\Jacksonville1\ACQUDATA\MS52\DATA\MS528K21.B\102 | G | \\Jacksonville1\ACQUDATA\MS52\DATA\MS528K21.B\102 |
| D | \\Jacksonville1\ACQUDATA\MS52\DATA\MS528K21.B\102 | H | \\Jacksonville1\ACQUDATA\MS52\DATA\MS528K21.B\102 |

| Analyte Name | Level ID | Amt | RRF | Level ID | Amt | RRF | Level ID | Amt | RRF | Level ID | Amt | RRF | Level ID | Amt | RRF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,2-Dichloroethane-d4 | | | | | | | C | 10 | 0.174 | D | 20 | 0.176 | E | 50 | 0.177 |
| | F | 100 | 0.176 | G | 150 | 0.171 | H | 200 | 0.172 | | | | | | |
| 4-Bromofluorobenzene | | | | | | | C | 10 | 0.991 | D | 20 | 0.982 | E | 50 | 0.990 |
| | F | 100 | 0.966 | G | 150 | 0.924 | H | 200 | 0.945 | | | | | | |
| Dibromofluoromethane | | | | | | | C | 10 | 0.254 | D | 20 | 0.259 | E | 50 | 0.260 |
| | F | 100 | 0.260 | G | 150 | 0.257 | H | 200 | 0.257 | | | | | | |
| Isopropylbenzene | A | 1.0 | 2.86 | B | 2.0 | 2.69 | C | 5.0 | 2.78 | D | 20 | 3.00 | E | 50 | 2.79 |
| | F | 100 | 2.72 | G | 150 | 2.62 | H | 200 | 2.69 | | | | | | |
| Toluene-d8 | | | | | | | C | 10 | 2.41 | D | 20 | 2.41 | E | 50 | 2.30 |
| | F | 100 | 2.17 | G | 150 | 2.08 | H | 200 | 1.97 | | | | | | |
| ‡ Ethylbenzene | A | 1.0 | 3.12 | B | 2.0 | 3.00 | C | 5.0 | 3.09 | D | 20 | 3.18 | E | 50 | 2.95 |
| | F | 100 | 2.78 | G | 150 | 2.66 | H | 200 | 2.59 | | | | | | |
| ‡ Toluene | A | 1.0 | 3.06 | B | 2.0 | 2.78 | C | 5.0 | 2.97 | D | 20 | 3.04 | E | 50 | 2.80 |
| | F | 100 | 2.63 | G | 150 | 2.49 | H | 200 | 2.44 | | | | | | |
| † Chlorobenzene | A | 1.0 | 1.93 | B | 2.0 | 1.83 | C | 5.0 | 1.85 | D | 20 | 1.88 | E | 50 | 1.77 |
| | F | 100 | 1.68 | G | 150 | 1.62 | H | 200 | 1.59 | | | | | | |
| ‡ Chloroform | A | 1.0 | 0.499 | B | 2.0 | 0.469 | C | 5.0 | 0.505 | D | 20 | 0.525 | E | 50 | 0.492 |
| | F | 100 | 0.490 | G | 150 | 0.484 | H | 200 | 0.499 | | | | | | |
| † Chloromethane | A | 1.0 | 0.587 | B | 2.0 | 0.530 | C | 5.0 | 0.615 | D | 20 | 0.603 | E | 50 | 0.507 |
| | F | 100 | 0.453 | G | 150 | 0.407 | H | 200 | 0.356 | | | | | | |
| ‡ Vinyl Chloride | A | 1.0 | 0.418 | B | 2.0 | 0.380 | C | 5.0 | 0.457 | D | 20 | 0.471 | E | 50 | 0.414 |
| | F | 100 | 0.386 | G | 150 | 0.381 | H | 200 | 0.360 | | | | | | |
| † Bromoform | A | 1.0 | 0.282 | B | 2.0 | 0.294 | C | 5.0 | 0.311 | D | 20 | 0.355 | E | 50 | 0.386 |
| | F | 100 | 0.397 | G | 150 | 0.385 | H | 200 | 0.391 | | | | | | |
| † 1,1-Dichloroethane | A | 1.0 | 0.627 | B | 2.0 | 0.600 | C | 5.0 | 0.606 | D | 20 | 0.646 | E | 50 | 0.604 |
| | F | 100 | 0.601 | G | 150 | 0.587 | H | 200 | 0.604 | | | | | | |
| ‡ 1,1-Dichloroethene | A | 1.0 | 0.463 | B | 2.0 | 0.451 | C | 5.0 | 0.522 | D | 20 | 0.537 | E | 50 | 0.488 |
| | F | 100 | 0.480 | G | 150 | 0.485 | H | 200 | 0.488 | | | | | | |

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

**† SPCC Compound** **‡ CCC Compound**

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil 81 ABC/112G01264

**Service Request:** J0805143
**ICAL Date:** 10/21/2008

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

**ICAL ID:** CAL1628
**Instrument ID:** MS52.i

**Column:** DB-VRX

| Analyte Name | Level ID | Amt | RRF | Level ID | Amt | RRF | Level ID | Amt | RRF | Level ID | Amt | RRF | Level ID | Amt | RRF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ‡ 1,2-Dichloropropane | A | 1.0 | 0.349 | B | 2.0 | 0.338 | C | 5.0 | 0.348 | D | 20 | 0.368 | E | 50 | 0.348 |
| | F | 100 | 0.349 | G | 150 | 0.340 | H | 200 | 0.347 | | | | | | |
| † 1,1,2,2-Tetrachloroethane | A | 1.0 | 0.699 | B | 2.0 | 0.734 | C | 5.0 | 0.696 | D | 20 | 0.702 | E | 50 | 0.696 |
| | F | 100 | 0.662 | G | 150 | 0.628 | H | 200 | 0.623 | | | | | | |

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

† **SPCC Compound** ‡ **CCC Compound**

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil 81 ABC/112G01264

**Service Request:** J0805143
**ICAL Date:** 10/21/2008

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

**ICAL ID:** CAL1628
**Instrument ID:** MS52.i

**Column:** DB-VRX

| | | Calibration Evaluation | | | | | RRF Evaluation | | |
|---|---|---|---|---|---|---|---|---|---|
| Analyte Name | Compound Type | Fit Type | Eval. | Eval. Result | Q | Control Criteria | Average RRF | Q | Minimum RRF |
| 1,2-Dichloroethane-d4 | SURR | AverageRF | % RSD | 1.4 | | ≤ 15 | 0.174 | | |
| 4-Bromofluorobenzene | SURR | AverageRF | % RSD | 2.8 | | ≤ 15 | 0.966 | | |
| Dibromofluoromethane | SURR | AverageRF | % RSD | 0.9 | | ≤ 15 | 0.258 | | |
| Isopropylbenzene | MS | AverageRF | % RSD | 4.3 | | ≤ 15 | 2.77 | | 0.01 |
| Toluene-d8 | SURR | AverageRF | % RSD | 8.1 | | ≤ 15 | 2.22 | | |
| ‡ Ethylbenzene | MS | AverageRF | % RSD | 7.5 | | ≤ 15 | 2.92 | | 0.01 |
| ‡ Toluene | MS | AverageRF | % RSD | 8.6 | | ≤ 15 | 2.78 | | 0.01 |
| † Chlorobenzene | MS | AverageRF | % RSD | 7.0 | | ≤ 15 | 1.77 | | 0.3 |
| ‡ Chloroform | MS | AverageRF | % RSD | 3.3 | | ≤ 15 | 0.495 | | 0.01 |
| † Chloromethane | MS | AverageRF | % RSD | 18.8 | * | ≤ 15 | 0.507 | | 0.1 |
| ‡ Vinyl Chloride | MS | AverageRF | % RSD | 9.6 | | ≤ 15 | 0.408 | | 0.01 |
| † Bromoform | MS | AverageRF | % RSD | 13.6 | | ≤ 15 | 0.350 | | 0.1 |
| † 1,1-Dichloroethane | MS | AverageRF | % RSD | 3.0 | | ≤ 15 | 0.609 | | 0.1 |
| ‡ 1,1-Dichloroethene | MS | AverageRF | % RSD | 5.8 | | ≤ 15 | 0.489 | | 0.01 |
| ‡ 1,2-Dichloropropane | MS | AverageRF | % RSD | 2.6 | | ≤ 15 | 0.348 | | 0.01 |
| † 1,1,2,2-Tetrachloroethane | MS | AverageRF | % RSD | 5.7 | | ≤ 15 | 0.680 | | 0.3 |

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

**† SPCC Compound** **‡ CCC Compound**

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Results

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil 81 ABC/112G01264

**Service Request:** J0805143
**ICAL Date:** 10/21/2008
**Date Analyzed:** 10/21/2008

**Second Source Calibration Verification**
**Volatile Organic Compounds by GC/MS**

**ICAL Type:** Internal Standard
**Analysis Method:** 8260B

**ICAL ID:** CAL1628
**Units:** ug/L

**File ID:** \\Jacksonville1\ACQUDATA\MS52\DATA\MS528K21.B\1021-12.D

**Column ID:** DB-VRX

| Analyte Name | Expected | Result | Average RF | SSV RF | %D | %Drift | Criteria | Curve Fit |
|---|---|---|---|---|---|---|---|---|
| Isopropylbenzene | 50 | 51 | 2.77 | 2.83 | 2 | NA | ± 30 % | AverageRF |
| † 1,1,2,2-Tetrachloroethane | 50 | 51 | 0.680 | 0.698 | 3 | NA | ± 30 % | AverageRF |
| † 1,1-Dichloroethane | 50 | 49 | 0.609 | 0.597 | -2 | NA | ± 30 % | AverageRF |
| ‡ 1,1-Dichloroethene | 50 | 49 | 0.489 | 0.484 | -1 | NA | ± 30 % | AverageRF |
| ‡ 1,2-Dichloropropane | 50 | 50 | 0.348 | 0.352 | 1 | NA | ± 30 % | AverageRF |
| † Bromoform | 50 | 53 | 0.350 | 0.368 | 5 | NA | ± 30 % | AverageRF |
| † Chlorobenzene | 50 | 49 | 1.77 | 1.75 | -1 | NA | ± 30 % | AverageRF |
| ‡ Chloroform | 50 | 50 | 0.495 | 0.492 | -1 | NA | ± 30 % | AverageRF |
| † Chloromethane | 50 | 54 | 0.507 | 0.549 | 8 | NA | ± 30 % | AverageRF |
| ‡ Ethylbenzene | 50 | 50 | 2.92 | 2.94 | 1 | NA | ± 30 % | AverageRF |
| ‡ Toluene | 50 | 50 | 2.78 | 2.77 | 0 | NA | ± 30 % | AverageRF |
| ‡ Vinyl Chloride | 50 | 51 | 0.408 | 0.416 | 2 | NA | ± 30 % | AverageRF |

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

**† SPCC Compound** **‡ CCC Compound**

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Results

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil 81 ABC/112G01264

**Service Request:** J0805143
**Date Analyzed:** 10/23/2008

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

**ICAL Type:** Internal Standard
**Analysis Method:** 8260B

**ICAL Date:** 10/21/2008
**ICAL ID:** CAL1628
**Analysis Lot:** JWG0804008
**Units:** ug/L

**File ID:** \\JACKSONVILLE1\ACQUDATA\MS52\DATA\MS528K23.B\1023-02.D

**Column ID:** DB-VRX

| Analyte Name | Expected | Result | Min RF | Average RF | CCV RF | %D | %Drift | Criteria | Curve Fit |
|---|---|---|---|---|---|---|---|---|---|
| 1,2-Dichloroethane-d4 | 50 | 45 | | 0.174 | 0.157 | -10 | NA | ± 30 % | AverageRF |
| 4-Bromofluorobenzene | 50 | 45 | | 0.966 | 0.873 | -10 | NA | ± 30 % | AverageRF |
| Dibromofluoromethane | 50 | 47 | | 0.258 | 0.241 | -6 | NA | ± 30 % | AverageRF |
| Isopropylbenzene | 50 | 49 | 0.01 | 2.77 | 2.72 | -2 | NA | ± 30 % | AverageRF |
| Toluene-d8 | 50 | 48 | | 2.22 | 2.13 | -4 | NA | ± 30 % | AverageRF |
| ‡ Ethylbenzene | 50 | 48 | 0.01 | 2.92 | 2.80 | -4 | NA | ± 20 % | AverageRF |
| ‡ Toluene | 50 | 47 | 0.01 | 2.78 | 2.62 | -6 | NA | ± 20 % | AverageRF |
| † Chlorobenzene | 50 | 47 | 0.3 | 1.77 | 1.67 | -6 | NA | ± 30 % | AverageRF |
| ‡ Chloroform | 50 | 48 | 0.01 | 0.495 | 0.475 | -4 | NA | ± 20 % | AverageRF |
| † Chloromethane | 50 | 44 | 0.1 | 0.507 | 0.450 | -11 | NA | ± 30 % | AverageRF |
| ‡ Vinyl Chloride | 50 | 46 | 0.01 | 0.408 | 0.376 | -8 | NA | ± 20 % | AverageRF |
| † Bromoform | 50 | 53 | 0.1 | 0.350 | 0.374 | 7 | NA | ± 30 % | AverageRF |
| † 1,1-Dichloroethane | 50 | 47 | 0.1 | 0.609 | 0.568 | -7 | NA | ± 30 % | AverageRF |
| ‡ 1,1-Dichloroethene | 50 | 47 | 0.01 | 0.489 | 0.456 | -7 | NA | ± 20 % | AverageRF |
| ‡ 1,2-Dichloropropane | 50 | 48 | 0.01 | 0.348 | 0.333 | -5 | NA | ± 20 % | AverageRF |
| † 1,1,2,2-Tetrachloroethane | 50 | 48 | 0.3 | 0.680 | 0.656 | -4 | NA | ± 30 % | AverageRF |

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

**† SPCC Compound** **‡ CCC Compound**

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Results

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil 81 ABC/112G01264

**Service Request:** J0805143

**Analysis Run Log**
**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260B

**Analysis Lot:** JWG0804008
**Instrument ID:** MS52.i
**Column:** DB-VRX

| File ID | Sample Name | Lab Code | Date Analysis Started | Start Time | Q | Date Analysis Finished | Finish Time |
|---|---|---|---|---|---|---|---|
| \1023-01.D | GC/MS Tuning - Bromofluorobenzene | JWG0804008-1 | 10/23/2008 | 04:20 | | 10/23/2008 | 04:20 |
| \1023-02.D | Continuing Calibration Verification | JWG0804008-2 | 10/23/2008 | 04:42 | | 10/23/2008 | 04:42 |
| \1023-03.D | Lab Control Sample | JWG0804006-3 | 10/23/2008 | 05:09 | | 10/23/2008 | 05:09 |
| \1023-05.D | Method Blank | JWG0804006-4 | 10/23/2008 | 06:01 | | 10/23/2008 | 06:01 |
| \1023-06.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 06:28 | | 10/23/2008 | 06:28 |
| \1023-07.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 06:55 | | 10/23/2008 | 06:55 |
| \1023-08.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 07:21 | | 10/23/2008 | 07:21 |
| \1023-09.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 07:48 | | 10/23/2008 | 07:48 |
| \1023-10.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 08:14 | | 10/23/2008 | 08:14 |
| \1023-11.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 08:41 | | 10/23/2008 | 08:41 |
| \1023-12.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 09:08 | | 10/23/2008 | 09:08 |
| \1023-13.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 09:53 | | 10/23/2008 | 09:53 |
| \1023-14.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 10:19 | | 10/23/2008 | 10:19 |
| \1023-15.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 10:46 | | 10/23/2008 | 10:46 |
| \1023-16.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 11:12 | | 10/23/2008 | 11:12 |
| \1023-17.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 11:39 | | 10/23/2008 | 11:39 |
| \1023-18.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 12:05 | | 10/23/2008 | 12:05 |
| \1023-19.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 12:32 | | 10/23/2008 | 12:32 |
| \1023-20.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 12:59 | | 10/23/2008 | 12:59 |
| \1023-21.D | CEF-081-DUP01 | J0805143-001 | 10/23/2008 | 13:25 | | 10/23/2008 | 13:25 |
| \1023-22.D | CEF-081-085R-102208 | J0805143-002 | 10/23/2008 | 13:52 | | 10/23/2008 | 13:52 |
| \1023-23.D | CEF-081-09S-102208 | J0805143-003 | 10/23/2008 | 14:18 | | 10/23/2008 | 14:18 |
| \1023-24.D | CEF-081-15S-102208 | J0805143-004 | 10/23/2008 | 14:45 | | 10/23/2008 | 14:45 |
| \1023-25.D | Trip Blank | J0805143-005 | 10/23/2008 | 15:11 | | 10/23/2008 | 15:11 |
| \1023-26.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 15:37 | | 10/23/2008 | 15:37 |
| \1023-27.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 16:04 | | 10/23/2008 | 16:04 |
| \1023-28.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 16:30 | | 10/23/2008 | 16:30 |
| \1023-29.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 16:57 | | 10/23/2008 | 16:57 |
| \1023-30.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 17:23 | | 10/23/2008 | 17:23 |
| \1023-31.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 17:50 | | 10/23/2008 | 17:50 |
| \1023-32.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 18:16 | | 10/23/2008 | 18:16 |
| \1023-33.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 18:43 | | 10/23/2008 | 18:43 |
| \1023-34.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 19:09 | | 10/23/2008 | 19:09 |
| \1023-35.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 19:35 | | 10/23/2008 | 19:35 |
| \1023-36.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 20:02 | | 10/23/2008 | 20:02 |

**Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis**

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil 81 ABC/112G01264

**Service Request:** J0805143

## Analysis Run Log
## Volatile Organic Compounds by GC/MS

**Analysis Method:** 8260B

**Analysis Lot:** JWG0804008
**Instrument ID:** MS52.i
**Column:** DB-VRX

| File ID | Sample Name | Lab Code | Date Analysis Started | Start Time | Q | Date Analysis Finished | Finish Time |
|---|---|---|---|---|---|---|---|
| \1023-37.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 20:28 | | 10/23/2008 | 20:28 |
| \1023-38.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 20:55 | | 10/23/2008 | 20:55 |
| \1023-39.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 21:22 | | 10/23/2008 | 21:22 |
| \1023-40.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 21:48 | | 10/23/2008 | 21:48 |
| \1023-41.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 22:14 | | 10/23/2008 | 22:14 |
| \1023-42.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 22:41 | | 10/23/2008 | 22:41 |
| \1023-43.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 23:07 | | 10/23/2008 | 23:07 |
| \1023-44.D | ZZZZZZ | ZZZZZZ | 10/23/2008 | 23:34 | | 10/23/2008 | 23:34 |
| \1023-45.D | ZZZZZZ | ZZZZZZ | 10/24/2008 | 00:00 | | 10/24/2008 | 00:00 |
| \1023-46.D | ZZZZZZ | ZZZZZZ | 10/24/2008 | 00:26 | | 10/24/2008 | 00:26 |
| \1023-47.D | ZZZZZZ | ZZZZZZ | 10/24/2008 | 00:53 | | 10/24/2008 | 00:53 |
| \1023-48.D | ZZZZZZ | ZZZZZZ | 10/24/2008 | 01:19 | | 10/24/2008 | 01:19 |
| \1023-49.D | ZZZZZZ | ZZZZZZ | 10/24/2008 | 01:46 | | 10/24/2008 | 01:46 |
| \1023-50.D | ZZZZZZ | ZZZZZZ | 10/24/2008 | 02:12 | | 10/24/2008 | 02:12 |
| \1023-51.D | ZZZZZZ | ZZZZZZ | 10/24/2008 | 02:39 | | 10/24/2008 | 02:39 |

**Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis**

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil 81 ABC/112G01264
**Sample Matrix:** Water

**Service Request:** J0805143
**Date Extracted:** 10/23/2008

## Extraction Prep Log
## Volatile Organic Compounds by GC/MS

**Extraction Method:** EPA 5030B
**Analysis Method:** 8260B

**Extraction Lot:** JWG0804006
**Level:** Low

| Sample Name | Lab Code | Date Collected | Date Received | Sample Amount | Final Volume | % Solids | Note |
|---|---|---|---|---|---|---|---|
| CEF-081-DUP01 | J0805143-001 | 10/22/08 | 10/23/08 | 5ml | 5ml | NA | |
| CEF-081-085R-102208 | J0805143-002 | 10/22/08 | 10/23/08 | 5ml | 5ml | NA | |
| CEF-081-09S-102208 | J0805143-003 | 10/22/08 | 10/23/08 | 5ml | 5ml | NA | |
| CEF-081-15S-102208 | J0805143-004 | 10/22/08 | 10/23/08 | 5ml | 5ml | NA | |
| Trip Blank | J0805143-005 | 10/22/08 | 10/23/08 | 5ml | 5ml | NA | |
| Method Blank | JWG0804006-4 | NA | NA | 5ml | 5ml | NA | |
| Lab Control Sample | JWG0804006-3 | NA | NA | 5ml | 5ml | NA | |

**Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis**

# Organic Analysis:
# Volatile Organic Compounds by GC/MS

## Summary Package

### Sample and QC Results

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil 81 ABC/112G01264

**Service Request:** J0805172

## Cover Page - Organic Analysis Data Package
## Volatile Organic Compounds by GC/MS

| Sample Name | Lab Code | Date Collected | Date Received |
|---|---|---|---|
| CEF-081-21I-102308 | J0805172-001 | 10/23/2008 | 10/24/2008 |
| CEF-081-18I-102308 | J0805172-002 | 10/23/2008 | 10/24/2008 |
| CEF-081-04I-102308 | J0805172-003 | 10/23/2008 | 10/24/2008 |
| CEF-081-22I-102308 | J0805172-004 | 10/23/2008 | 10/24/2008 |
| CEF-081-19I-102308 | J0805172-005 | 10/23/2008 | 10/24/2008 |
| CEF-081-16S-102308 | J0805172-006 | 10/23/2008 | 10/24/2008 |
| CEF-081-17S-102308 | J0805172-007 | 10/23/2008 | 10/24/2008 |
| CEF-081-14S-102308 | J0805172-008 | 10/23/2008 | 10/24/2008 |
| Trip Blank | J0805172-009 | 10/23/2008 | 10/24/2008 |

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Al Wray

Name: Al Wray

Date: 10-30-08

Title: ANALYST

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Tetra Tech NUS, Inc. | **Service Request:** | J0805172 |
| **Project:** | Cecil 81 ABC/112G01264 | **Date Collected:** | 10/23/2008 |
| **Sample Matrix:** | Water | **Date Received:** | 10/24/2008 |

## Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | CEF-081-21I-102308 | **Units:** | ug/L |
| **Lab Code:** | J0805172-001 | **Basis:** | NA |
| **Extraction Method:** | EPA 5030B | **Level:** | Low |
| **Analysis Method:** | 8260B | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Isopropylbenzene | ND | U | 1.0 | 0.14 | 1 | 10/29/08 | 10/29/08 | JWG0804082 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 1,2-Dichloroethane-d4 | 97 | 71-122 | 10/29/08 | Acceptable |
| 4-Bromofluorobenzene | 105 | 75-120 | 10/29/08 | Acceptable |
| Dibromofluoromethane | 92 | 82-116 | 10/29/08 | Acceptable |
| Toluene-d8 | 98 | 88-117 | 10/29/08 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Tetra Tech NUS, Inc. | **Service Request:** | J0805172 |
| **Project:** | Cecil 81 ABC/112G01264 | **Date Collected:** | 10/23/2008 |
| **Sample Matrix:** | Water | **Date Received:** | 10/24/2008 |

## Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | CEF-081-18I-102308 | **Units:** | ug/L |
| **Lab Code:** | J0805172-002 | **Basis:** | NA |
| **Extraction Method:** | EPA 5030B | **Level:** | Low |
| **Analysis Method:** | 8260B | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| **Isopropylbenzene** | **0.41** | I | 1.0 | 0.14 | 1 | 10/29/08 | 10/29/08 | JWG0804082 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 71-122 | 10/29/08 | Acceptable |
| 4-Bromofluorobenzene | 101 | 75-120 | 10/29/08 | Acceptable |
| Dibromofluoromethane | 96 | 82-116 | 10/29/08 | Acceptable |
| Toluene-d8 | 98 | 88-117 | 10/29/08 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Tetra Tech NUS, Inc. | **Service Request:** | J0805172 |
| **Project:** | Cecil 81 ABC/112G01264 | **Date Collected:** | 10/23/2008 |
| **Sample Matrix:** | Water | **Date Received:** | 10/24/2008 |

## Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | CEF-081-04I-102308 | **Units:** | ug/L |
| **Lab Code:** | J0805172-003 | **Basis:** | NA |
| **Extraction Method:** | EPA 5030B | **Level:** | Low |
| **Analysis Method:** | 8260B | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| **Isopropylbenzene** | **0.32** | I | 1.0 | 0.14 | 1 | 10/29/08 | 10/29/08 | JWG0804082 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 1,2-Dichloroethane-d4 | 104 | 71-122 | 10/29/08 | Acceptable |
| 4-Bromofluorobenzene | 106 | 75-120 | 10/29/08 | Acceptable |
| Dibromofluoromethane | 101 | 82-116 | 10/29/08 | Acceptable |
| Toluene-d8 | 101 | 88-117 | 10/29/08 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Tetra Tech NUS, Inc. | **Service Request:** | J0805172 |
| **Project:** | Cecil 81 ABC/112G01264 | **Date Collected:** | 10/23/2008 |
| **Sample Matrix:** | Water | **Date Received:** | 10/24/2008 |

## Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | CEF-081-22I-102308 | **Units:** | ug/L |
| **Lab Code:** | J0805172-004 | **Basis:** | NA |
| **Extraction Method:** | EPA 5030B | **Level:** | Low |
| **Analysis Method:** | 8260B | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| **Isopropylbenzene** | **1.5** | | 1.0 | 0.14 | 1 | 10/29/08 | 10/29/08 | JWG0804082 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 71-122 | 10/29/08 | Acceptable |
| 4-Bromofluorobenzene | 105 | 75-120 | 10/29/08 | Acceptable |
| Dibromofluoromethane | 101 | 82-116 | 10/29/08 | Acceptable |
| Toluene-d8 | 98 | 88-117 | 10/29/08 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Tetra Tech NUS, Inc. | **Service Request:** | J0805172 |
| **Project:** | Cecil 81 ABC/112G01264 | **Date Collected:** | 10/23/2008 |
| **Sample Matrix:** | Water | **Date Received:** | 10/24/2008 |

## Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | CEF-081-19I-102308 | **Units:** | ug/L |
| **Lab Code:** | J0805172-005 | **Basis:** | NA |
| **Extraction Method:** | EPA 5030B | **Level:** | Low |
| **Analysis Method:** | 8260B | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| **Isopropylbenzene** | **0.77** | I | 1.0 | 0.14 | 1 | 10/29/08 | 10/29/08 | JWG0804082 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | 71-122 | 10/29/08 | Acceptable |
| 4-Bromofluorobenzene | 106 | 75-120 | 10/29/08 | Acceptable |
| Dibromofluoromethane | 98 | 82-116 | 10/29/08 | Acceptable |
| Toluene-d8 | 99 | 88-117 | 10/29/08 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Tetra Tech NUS, Inc. | **Service Request:** | J0805172 |
| **Project:** | Cecil 81 ABC/112G01264 | **Date Collected:** | 10/23/2008 |
| **Sample Matrix:** | Water | **Date Received:** | 10/24/2008 |

## Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | CEF-081-16S-102308 | **Units:** | ug/L |
| **Lab Code:** | J0805172-006 | **Basis:** | NA |
| **Extraction Method:** | EPA 5030B | **Level:** | Low |
| **Analysis Method:** | 8260B | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Isopropylbenzene | ND | U | 1.0 | 0.14 | 1 | 10/29/08 | 10/29/08 | JWG0804082 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 71-122 | 10/29/08 | Acceptable |
| 4-Bromofluorobenzene | 98 | 75-120 | 10/29/08 | Acceptable |
| Dibromofluoromethane | 98 | 82-116 | 10/29/08 | Acceptable |
| Toluene-d8 | 102 | 88-117 | 10/29/08 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Tetra Tech NUS, Inc. | **Service Request:** | J0805172 |
| **Project:** | Cecil 81 ABC/112G01264 | **Date Collected:** | 10/23/2008 |
| **Sample Matrix:** | Water | **Date Received:** | 10/24/2008 |

## Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | CEF-081-17S-102308 | **Units:** | ug/L |
| **Lab Code:** | J0805172-007 | **Basis:** | NA |
| **Extraction Method:** | EPA 5030B | **Level:** | Low |
| **Analysis Method:** | 8260B | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Isopropylbenzene | ND | U | 1.0 | 0.14 | 1 | 10/29/08 | 10/29/08 | JWG0804082 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 1,2-Dichloroethane-d4 | 97 | 71-122 | 10/29/08 | Acceptable |
| 4-Bromofluorobenzene | 106 | 75-120 | 10/29/08 | Acceptable |
| Dibromofluoromethane | 97 | 82-116 | 10/29/08 | Acceptable |
| Toluene-d8 | 98 | 88-117 | 10/29/08 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Tetra Tech NUS, Inc. | **Service Request:** | J0805172 |
| **Project:** | Cecil 81 ABC/112G01264 | **Date Collected:** | 10/23/2008 |
| **Sample Matrix:** | Water | **Date Received:** | 10/24/2008 |

## Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | CEF-081-14S-102308 | **Units:** | ug/L |
| **Lab Code:** | J0805172-008 | **Basis:** | NA |
| **Extraction Method:** | EPA 5030B | **Level:** | Low |
| **Analysis Method:** | 8260B | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Isopropylbenzene | ND | U | 1.0 | 0.14 | 1 | 10/29/08 | 10/29/08 | JWG0804082 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 1,2-Dichloroethane-d4 | 104 | 71-122 | 10/29/08 | Acceptable |
| 4-Bromofluorobenzene | 104 | 75-120 | 10/29/08 | Acceptable |
| Dibromofluoromethane | 99 | 82-116 | 10/29/08 | Acceptable |
| Toluene-d8 | 100 | 88-117 | 10/29/08 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Tetra Tech NUS, Inc. | **Service Request:** | J0805172 |
| **Project:** | Cecil 81 ABC/112G01264 | **Date Collected:** | 10/23/2008 |
| **Sample Matrix:** | Water | **Date Received:** | 10/24/2008 |

## Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | Trip Blank | **Units:** | ug/L |
| **Lab Code:** | J0805172-009 | **Basis:** | NA |
| **Extraction Method:** | EPA 5030B | **Level:** | Low |
| **Analysis Method:** | 8260B | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Isopropylbenzene | ND | U | 1.0 | 0.14 | 1 | 10/29/08 | 10/29/08 | JWG0804082 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 71-122 | 10/29/08 | Acceptable |
| 4-Bromofluorobenzene | 107 | 75-120 | 10/29/08 | Acceptable |
| Dibromofluoromethane | 95 | 82-116 | 10/29/08 | Acceptable |
| Toluene-d8 | 103 | 88-117 | 10/29/08 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Tetra Tech NUS, Inc. | **Service Request:** | J0805172 |
| **Project:** | Cecil 81 ABC/112G01264 | **Date Collected:** | NA |
| **Sample Matrix:** | Water | **Date Received:** | NA |

## Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | Method Blank | **Units:** | ug/L |
| **Lab Code:** | JWG0804082-4 | **Basis:** | NA |
| **Extraction Method:** | EPA 5030B | **Level:** | Low |
| **Analysis Method:** | 8260B | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Isopropylbenzene | ND | U | 1.0 | 0.14 | 1 | 10/29/08 | 10/29/08 | JWG0804082 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 1,2-Dichloroethane-d4 | 95 | 71-122 | 10/29/08 | Acceptable |
| 4-Bromofluorobenzene | 112 | 75-120 | 10/29/08 | Acceptable |
| Dibromofluoromethane | 94 | 82-116 | 10/29/08 | Acceptable |
| Toluene-d8 | 103 | 88-117 | 10/29/08 | Acceptable |

**Comments:**

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil 81 ABC/112G01264
**Sample Matrix:** Water

**Service Request:** J0805172

**Surrogate Recovery Summary**
**Volatile Organic Compounds by GC/MS**

**Extraction Method:** EPA 5030B
**Analysis Method:** 8260B

**Units:** PERCENT
**Level:** Low

| Sample Name | Lab Code | Sur1 | Sur2 | Sur3 | Sur4 |
|---|---|---|---|---|---|
| CEF-081-21I-102308 | J0805172-001 | 97 | 105 | 92 | 98 |
| CEF-081-18I-102308 | J0805172-002 | 101 | 101 | 96 | 98 |
| CEF-081-04I-102308 | J0805172-003 | 104 | 106 | 101 | 101 |
| CEF-081-22I-102308 | J0805172-004 | 101 | 105 | 101 | 98 |
| CEF-081-19I-102308 | J0805172-005 | 102 | 106 | 98 | 99 |
| CEF-081-16S-102308 | J0805172-006 | 100 | 98 | 98 | 102 |
| CEF-081-17S-102308 | J0805172-007 | 97 | 106 | 97 | 98 |
| CEF-081-14S-102308 | J0805172-008 | 104 | 104 | 99 | 100 |
| Trip Blank | J0805172-009 | 100 | 107 | 95 | 103 |
| Method Blank | JWG0804082-4 | 95 | 112 | 94 | 103 |
| Lab Control Sample | JWG0804082-3 | 99 | 104 | 97 | 100 |

**Surrogate Recovery Control Limits (%)**

| | | |
|---|---|---|
| Sur1 = | 1,2-Dichloroethane-d4 | 71-122 |
| Sur2 = | 4-Bromofluorobenzene | 75-120 |
| Sur3 = | Dibromofluoromethane | 82-116 |
| Sur4 = | Toluene-d8 | 88-117 |

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

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Tetra Tech NUS, Inc. | **Service Request:** | J0805172 |
| **Project:** | Cecil 81 ABC/112G01264 | **Date Analyzed:** | 10/29/2008 |
| | | **Time Analyzed:** | 16:21 |

**Internal Standard Area and RT Summary**
**Volatile Organic Compounds by GC/MS**

| | | | |
|---|---|---|---|
| **File ID:** | \\JACKSONVILLE1\ACQUDATA\MS53\DATA\MS538K29.B\1 | **Lab Code:** | JWG0804083-2 |
| **Instrument ID:** | MS53.i | **Analysis Lot:** | JWG0804083 |
| **Analysis Method:** | 8260B | **Column :** | DB-VRX |

| | | 1,4-Dichlorobenzene-d4 | | Chlorobenzene-d5 | | Fluorobenzene | |
|---|---|---|---|---|---|---|---|
| | | **Area** | **RT** | **Area** | **RT** | **Area** | **RT** |
| | **Results ==>** | 237,262 | 11.14 | 266,447 | 8.76 | 795,362 | 5.39 |
| | **Upper Limit ==>** | 474,524 | 11.64 | 532,894 | 9.26 | 1,590,724 | 5.89 |
| | **Lower Limit ==>** | 118,631 | 10.64 | 133,224 | 8.26 | 397,681 | 4.89 |
| | **ICAL Result ==>** | 223,997 | 11.14 | 241,439 | 8.76 | 755,443 | 5.40 |
| ***Associated Analyses*** | | | | | | | |
| Lab Control Sample | JWG0804082-3 | 222,138 | 11.14 | 260,790 | 8.75 | 764,631 | 5.39 |
| Method Blank | JWG0804082-4 | 214,160 | 11.14 | 257,633 | 8.75 | 786,530 | 5.40 |
| CEF-081-21I-102308 | J0805172-001 | 222,522 | 11.14 | 261,564 | 8.76 | 789,234 | 5.40 |
| CEF-081-18I-102308 | J0805172-002 | 217,735 | 11.14 | 256,874 | 8.75 | 752,158 | 5.39 |
| CEF-081-04I-102308 | J0805172-003 | 215,062 | 11.14 | 249,108 | 8.75 | 718,497 | 5.39 |
| CEF-081-22I-102308 | J0805172-004 | 223,391 | 11.14 | 259,410 | 8.75 | 749,400 | 5.39 |
| CEF-081-19I-102308 | J0805172-005 | 225,119 | 11.14 | 259,024 | 8.75 | 754,415 | 5.39 |
| CEF-081-16S-102308 | J0805172-006 | 225,890 | 11.13 | 259,986 | 8.75 | 767,417 | 5.39 |
| CEF-081-17S-102308 | J0805172-007 | 220,858 | 11.13 | 264,522 | 8.75 | 775,633 | 5.39 |
| CEF-081-14S-102308 | J0805172-008 | 219,408 | 11.13 | 257,902 | 8.75 | 764,846 | 5.39 |
| Trip Blank | J0805172-009 | 214,275 | 11.14 | 265,849 | 8.75 | 770,094 | 5.39 |

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

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Tetra Tech NUS, Inc. | **Service Request:** | J0805172 |
| **Project:** | Cecil 81 ABC/112G01264 | **Date Extracted:** | 10/29/2008 |
| **Sample Matrix:** | Water | **Date Analyzed:** | 10/29/2008 |

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

| | | | |
|---|---|---|---|
| **Extraction Method:** | EPA 5030B | **Units:** | ug/L |
| **Analysis Method:** | 8260B | **Basis:** | NA |
| | | **Level:** | Low |
| | | **Extraction Lot:** | JWG0804082 |

| | Lab Control Sample JWG0804082-3 Lab Control Spike | | | |
|---|---|---|---|---|
| **Analyte Name** | **Result** | **Expected** | **%Rec** | **%Rec Limits** |
| Isopropylbenzene | 19.2 | 20.0 | 96 | 83-122 |

**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.

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Tetra Tech NUS, Inc. | **Service Request:** | J0805172 |
| **Project:** | Cecil 81 ABC/112G01264 | **Date Extracted:** | 10/29/2008 |
| **Sample Matrix:** | Water | **Date Analyzed:** | 10/29/2008 |
| | | **Time Analyzed:** | 17:44 |

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

| | | | |
|---|---|---|---|
| **Sample Name:** | Method Blank | **File ID:** | J:\MS53\DATA\MS538K29.B\1029-05.D |
| **Lab Code:** | JWG0804082-4 | **Instrument ID:** | MS53.i |
| **Extraction Method:** | EPA 5030B | **Level:** | Low |
| **Analysis Method:** | 8260B | **Extraction Lot:** | JWG0804082 |

This Method Blank applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed | Time Analyzed |
|---|---|---|---|---|
| Lab Control Sample | JWG0804082-3 | J:\MS53\DATA\MS538K29.B\1029-03.D | 10/29/08 | 16:49 |
| CEF-081-21I-102308 | J0805172-001 | J:\MS53\DATA\MS538K29.B\1029-10.D | 10/29/08 | 20:02 |
| CEF-081-18I-102308 | J0805172-002 | J:\MS53\DATA\MS538K29.B\1029-11.D | 10/29/08 | 20:30 |
| CEF-081-04I-102308 | J0805172-003 | J:\MS53\DATA\MS538K29.B\1029-12.D | 10/29/08 | 20:58 |
| CEF-081-22I-102308 | J0805172-004 | J:\MS53\DATA\MS538K29.B\1029-13.D | 10/29/08 | 21:25 |
| CEF-081-19I-102308 | J0805172-005 | J:\MS53\DATA\MS538K29.B\1029-14.D | 10/29/08 | 21:53 |
| CEF-081-16S-102308 | J0805172-006 | J:\MS53\DATA\MS538K29.B\1029-15.D | 10/29/08 | 22:21 |
| CEF-081-17S-102308 | J0805172-007 | J:\MS53\DATA\MS538K29.B\1029-16.D | 10/29/08 | 22:48 |
| CEF-081-14S-102308 | J0805172-008 | J:\MS53\DATA\MS538K29.B\1029-17.D | 10/29/08 | 23:16 |
| Trip Blank | J0805172-009 | J:\MS53\DATA\MS538K29.B\1029-18.D | 10/29/08 | 23:44 |

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Tetra Tech NUS, Inc. | **Service Request:** | J0805172 |
| **Project:** | Cecil 81 ABC/112G01264 | **Date Extracted:** | 10/29/2008 |
| **Sample Matrix:** | Water | **Date Analyzed:** | 10/29/2008 |
| | | **Time Analyzed:** | 16:49 |

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

| | | | |
|---|---|---|---|
| **Sample Name:** | Lab Control Sample | **File ID:** | J:\MS53\DATA\MS538K29.B\1029-03.D |
| **Lab Code:** | JWG0804082-3 | **Instrument ID:** | MS53.i |
| **Extraction Method:** | EPA 5030B | **Level:** | Low |
| **Analysis Method:** | 8260B | **Extraction Lot:** | JWG0804082 |

This Lab Control Sample applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed | Time Analyzed |
|---|---|---|---|---|
| Method Blank | JWG0804082-4 | J:\MS53\DATA\MS538K29.B\1029-05.D | 10/29/08 | 17:44 |
| CEF-081-21I-102308 | J0805172-001 | J:\MS53\DATA\MS538K29.B\1029-10.D | 10/29/08 | 20:02 |
| CEF-081-18I-102308 | J0805172-002 | J:\MS53\DATA\MS538K29.B\1029-11.D | 10/29/08 | 20:30 |
| CEF-081-04I-102308 | J0805172-003 | J:\MS53\DATA\MS538K29.B\1029-12.D | 10/29/08 | 20:58 |
| CEF-081-22I-102308 | J0805172-004 | J:\MS53\DATA\MS538K29.B\1029-13.D | 10/29/08 | 21:25 |
| CEF-081-19I-102308 | J0805172-005 | J:\MS53\DATA\MS538K29.B\1029-14.D | 10/29/08 | 21:53 |
| CEF-081-16S-102308 | J0805172-006 | J:\MS53\DATA\MS538K29.B\1029-15.D | 10/29/08 | 22:21 |
| CEF-081-17S-102308 | J0805172-007 | J:\MS53\DATA\MS538K29.B\1029-16.D | 10/29/08 | 22:48 |
| CEF-081-14S-102308 | J0805172-008 | J:\MS53\DATA\MS538K29.B\1029-17.D | 10/29/08 | 23:16 |
| Trip Blank | J0805172-009 | J:\MS53\DATA\MS538K29.B\1029-18.D | 10/29/08 | 23:44 |

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil 81 ABC/112G01264

**Service Request:** J0805172
**Date Analyzed:** 10/29/2008
**Time Analyzed:** 15:57

## Tune Summary
## Volatile Organic Compounds by GC/MS

**File ID:** \\JACKSONVILLE1\ACQUDATA\MS53\DATA\MS538K29.B\1029-01.D
**Instrument ID:** MS52.i
**Column:**

**Analysis Method:** 8260B
**Analysis Lot:** JWG0804083

| Target Mass | Relative to Mass | Lower Limit% | Upper Limit% | Relative Abundance % | Raw Abundance | Result Pass/Fail |
|---|---|---|---|---|---|---|
| 50 | 95 | 15 | 40 | 15.7 | 1449 | PASS |
| 75 | 95 | 30 | 60 | 34.5 | 3177 | PASS |
| 95 | 95 | 100 | 100 | 100.0 | 9217 | PASS |
| 96 | 95 | 5 | 9 | 6.2 | 575 | PASS |
| 173 | 174 | 0 | 2 | 0.0 | 0 | PASS |
| 174 | 95 | 50 | 120 | 62.8 | 5792 | PASS |
| 175 | 174 | 5 | 9 | 6.5 | 375 | PASS |
| 176 | 174 | 95 | 101 | 95.7 | 5544 | PASS |
| 177 | 176 | 5 | 9 | 6.2 | 345 | PASS |

| Sample Name | Lab Code | File ID | Date Analyzed | Time Analyzed | Q |
|---|---|---|---|---|---|
| Continuing Calibration Verification | JWG0804083-2 | J:\MS53\DATA\MS538K29.B\1029-0 | 10/29/2008 | 16:21 | |
| Lab Control Sample | JWG0804082-3 | J:\MS53\DATA\MS538K29.B\1029-0 | 10/29/2008 | 16:49 | |
| Method Blank | JWG0804082-4 | J:\MS53\DATA\MS538K29.B\1029-0 | 10/29/2008 | 17:44 | |
| CEF-081-21I-102308 | J0805172-001 | J:\MS53\DATA\MS538K29.B\1029-1 | 10/29/2008 | 20:02 | |
| CEF-081-18I-102308 | J0805172-002 | J:\MS53\DATA\MS538K29.B\1029-1 | 10/29/2008 | 20:30 | |
| CEF-081-04I-102308 | J0805172-003 | J:\MS53\DATA\MS538K29.B\1029-1 | 10/29/2008 | 20:58 | |
| CEF-081-22I-102308 | J0805172-004 | J:\MS53\DATA\MS538K29.B\1029-1 | 10/29/2008 | 21:25 | |
| CEF-081-19I-102308 | J0805172-005 | J:\MS53\DATA\MS538K29.B\1029-1 | 10/29/2008 | 21:53 | |
| CEF-081-16S-102308 | J0805172-006 | J:\MS53\DATA\MS538K29.B\1029-1 | 10/29/2008 | 22:21 | |
| CEF-081-17S-102308 | J0805172-007 | J:\MS53\DATA\MS538K29.B\1029-1 | 10/29/2008 | 22:48 | |
| CEF-081-14S-102308 | J0805172-008 | J:\MS53\DATA\MS538K29.B\1029-1 | 10/29/2008 | 23:16 | |
| Trip Blank | J0805172-009 | J:\MS53\DATA\MS538K29.B\1029-1 | 10/29/2008 | 23:44 | |

**Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window**

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil 81 ABC/112G01264

**Service Request:** J0805172
**ICAL Date:** 10/22/2008

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

**ICAL ID:** CAL1629
**Instrument ID:** MS53.i

**Column:** DB-VRX

| Level ID | File ID | Level ID | File ID |
|---|---|---|---|
| A | \\Jacksonville1\ACQUDATA\MS53\DATA\MS538K22.B\102 | E | \\Jacksonville1\ACQUDATA\MS53\DATA\MS538K22.B\102 |
| B | \\Jacksonville1\ACQUDATA\MS53\DATA\MS538K22.B\102 | F | \\Jacksonville1\ACQUDATA\MS53\DATA\MS538K22.B\102 |
| C | \\Jacksonville1\ACQUDATA\MS53\DATA\MS538K22.B\102 | G | \\Jacksonville1\ACQUDATA\MS53\DATA\MS538K22.B\102 |
| D | \\Jacksonville1\ACQUDATA\MS53\DATA\MS538K22.B\102 | H | \\Jacksonville1\ACQUDATA\MS53\DATA\MS538K22.B\102 |

| Analyte Name | Level ID | Amt | RRF | Level ID | Amt | RRF | Level ID | Amt | RRF | Level ID | Amt | RRF | Level ID | Amt | RRF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,2-Dichloroethane-d4 | | | | | | | C | 10 | 0.190 | D | 20 | 0.182 | E | 50 | 0.184 |
| | F | 100 | 0.176 | G | 150 | 0.181 | H | 200 | 0.184 | | | | | | |
| 4-Bromofluorobenzene | | | | | | | C | 10 | 1.18 | D | 20 | 1.23 | E | 50 | 1.22 |
| | F | 100 | 1.19 | G | 150 | 1.18 | H | 200 | 1.19 | | | | | | |
| Dibromofluoromethane | | | | | | | C | 10 | 0.301 | D | 20 | 0.294 | E | 50 | 0.302 |
| | F | 100 | 0.288 | G | 150 | 0.288 | H | 200 | 0.292 | | | | | | |
| Isopropylbenzene | A | 1.0 | 4.40 | B | 2.0 | 4.17 | C | 5.0 | 4.10 | D | 20 | 4.36 | E | 50 | 4.26 |
| | F | 100 | 4.05 | G | 150 | 4.13 | H | 200 | 3.99 | | | | | | |
| Toluene-d8 | | | | | | | C | 10 | 2.92 | D | 20 | 2.87 | E | 50 | 3.16 |
| | F | 100 | 2.93 | G | 150 | 2.77 | H | 200 | 2.70 | | | | | | |
| ‡ Ethylbenzene | A | 1.0 | 4.42 | B | 2.0 | 4.11 | C | 5.0 | 4.11 | D | 20 | 4.08 | E | 50 | 4.26 |
| | F | 100 | 3.81 | G | 150 | 3.73 | H | 200 | 3.53 | | | | | | |
| ‡ Toluene | A | 1.0 | 4.02 | B | 2.0 | 3.74 | C | 5.0 | 3.70 | D | 20 | 3.73 | E | 50 | 3.88 |
| | F | 100 | 3.45 | G | 150 | 3.42 | H | 200 | 3.28 | | | | | | |
| † Chlorobenzene | A | 1.0 | 2.38 | B | 2.0 | 2.36 | C | 5.0 | 2.28 | D | 20 | 2.29 | E | 50 | 2.40 |
| | F | 100 | 2.16 | G | 150 | 2.12 | H | 200 | 2.04 | | | | | | |
| ‡ Chloroform | A | 1.0 | 0.561 | B | 2.0 | 0.484 | C | 5.0 | 0.499 | D | 20 | 0.504 | E | 50 | 0.476 |
| | F | 100 | 0.461 | G | 150 | 0.462 | H | 200 | 0.473 | | | | | | |
| † Chloromethane | A | 1.0 | 0.488 | B | 2.0 | 0.481 | C | 5.0 | 0.497 | D | 20 | 0.476 | E | 50 | 0.477 |
| | F | 100 | 0.460 | G | 150 | 0.483 | H | 200 | 0.499 | | | | | | |
| ‡ Vinyl Chloride | A | 1.0 | 0.356 | B | 2.0 | 0.384 | C | 5.0 | 0.394 | D | 20 | 0.409 | E | 50 | 0.415 |
| | F | 100 | 0.382 | G | 150 | 0.374 | H | 200 | 0.391 | | | | | | |
| † Bromoform | | | | B | 2.0 | 0.324 | C | 5.0 | 0.370 | D | 20 | 0.383 | E | 50 | 0.405 |
| | F | 100 | 0.378 | G | 150 | 0.396 | H | 200 | 0.381 | | | | | | |
| † 1,1-Dichloroethane | A | 1.0 | 0.531 | B | 2.0 | 0.576 | C | 5.0 | 0.594 | D | 20 | 0.598 | E | 50 | 0.587 |
| | F | 100 | 0.556 | G | 150 | 0.554 | H | 200 | 0.568 | | | | | | |
| ‡ 1,1-Dichloroethene | A | 1.0 | 0.351 | B | 2.0 | 0.358 | C | 5.0 | 0.376 | D | 20 | 0.386 | E | 50 | 0.381 |
| | F | 100 | 0.335 | G | 150 | 0.337 | H | 200 | 0.346 | | | | | | |

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

**† SPCC Compound** **‡ CCC Compound**

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil 81 ABC/112G01264

**Service Request:** J0805172
**ICAL Date:** 10/22/2008

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

**ICAL ID:** CAL1629
**Instrument ID:** MS53.i

**Column:** DB-VRX

| Analyte Name | Level ID | Amt | RRF | Level ID | Amt | RRF | Level ID | Amt | RRF | Level ID | Amt | RRF | Level ID | Amt | RRF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ‡ 1,2-Dichloropropane | A | 1.0 | 0.332 | B | 2.0 | 0.321 | C | 5.0 | 0.340 | D | 20 | 0.349 | E | 50 | 0.343 |
| | F | 100 | 0.305 | G | 150 | 0.330 | H | 200 | 0.330 | | | | | | |
| † 1,1,2,2-Tetrachloroethane | A | 1.0 | 0.818 | B | 2.0 | 0.696 | C | 5.0 | 0.706 | D | 20 | 0.696 | E | 50 | 0.709 |
| | F | 100 | 0.668 | G | 150 | 0.654 | H | 200 | 0.651 | | | | | | |

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

**† SPCC Compound** **‡ CCC Compound**

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil 81 ABC/112G01264

**Service Request:** J0805172
**ICAL Date:** 10/22/2008

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

**ICAL ID:** CAL1629
**Instrument ID:** MS53.i

**Column:** DB-VRX

| | | Calibration Evaluation | | | | | RRF Evaluation | | |
|---|---|---|---|---|---|---|---|---|---|
| Analyte Name | Compound Type | Fit Type | Eval. | Eval. Result | Q | Control Criteria | Average RRF | Q | Minimum RRF |
| 1,2-Dichloroethane-d4 | SURR | AverageRF | % RSD | 2.5 | | ≤ 15 | 0.183 | | |
| 4-Bromofluorobenzene | SURR | AverageRF | % RSD | 1.8 | | ≤ 15 | 1.20 | | |
| Dibromofluoromethane | SURR | AverageRF | % RSD | 2.1 | | ≤ 15 | 0.294 | | |
| Isopropylbenzene | MS | AverageRF | % RSD | 3.5 | | ≤ 15 | 4.18 | | 0.01 |
| Toluene-d8 | SURR | AverageRF | % RSD | 5.5 | | ≤ 15 | 2.89 | | |
| ‡ Ethylbenzene | MS | AverageRF | % RSD | 7.3 | | ≤ 15 | 4.01 | | 0.01 |
| ‡ Toluene | MS | AverageRF | % RSD | 6.8 | | ≤ 15 | 3.65 | | 0.01 |
| † Chlorobenzene | MS | AverageRF | % RSD | 6.0 | | ≤ 15 | 2.25 | | 0.3 |
| ‡ Chloroform | MS | AverageRF | % RSD | 6.7 | | ≤ 15 | 0.490 | | 0.01 |
| † Chloromethane | MS | AverageRF | % RSD | 2.6 | | ≤ 15 | 0.482 | | 0.1 |
| ‡ Vinyl Chloride | MS | AverageRF | % RSD | 4.9 | | ≤ 15 | 0.388 | | 0.01 |
| † Bromoform | MS | AverageRF | % RSD | 6.9 | | ≤ 15 | 0.377 | | 0.1 |
| † 1,1-Dichloroethane | MS | AverageRF | % RSD | 4.0 | | ≤ 15 | 0.571 | | 0.1 |
| ‡ 1,1-Dichloroethene | MS | AverageRF | % RSD | 5.6 | | ≤ 15 | 0.359 | | 0.01 |
| ‡ 1,2-Dichloropropane | MS | AverageRF | % RSD | 4.1 | | ≤ 15 | 0.331 | | 0.01 |
| † 1,1,2,2-Tetrachloroethane | MS | AverageRF | % RSD | 7.6 | | ≤ 15 | 0.700 | | 0.3 |

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

**† SPCC Compound** **‡ CCC Compound**

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Results

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil 81 ABC/112G01264

**Service Request:** J0805172
**ICAL Date:** 10/22/2008
**Date Analyzed:** 10/22/2008

**Second Source Calibration Verification**
**Volatile Organic Compounds by GC/MS**

**ICAL Type:** Internal Standard
**Analysis Method:** 8260B

**ICAL ID:** CAL1629
**Units:** ug/L

**File ID:** \\Jacksonville1\ACQUDATA\MS53\DATA\MS538K22.B\1022-12.D

**Column ID:** DB-VRX

| Analyte Name | Expected | Result | Average RF | SSV RF | %D | %Drift | Criteria | Curve Fit |
|---|---|---|---|---|---|---|---|---|
| Isopropylbenzene | 50 | 50 | 4.18 | 4.16 | -1 | NA | ± 30 % | AverageRF |
| † 1,1,2,2-Tetrachloroethane | 50 | 49 | 0.700 | 0.688 | -2 | NA | ± 30 % | AverageRF |
| † 1,1-Dichloroethane | 50 | 53 | 0.571 | 0.600 | 5 | NA | ± 30 % | AverageRF |
| ‡ 1,1-Dichloroethene | 50 | 56 | 0.359 | 0.399 | 11 | NA | ± 30 % | AverageRF |
| ‡ 1,2-Dichloropropane | 50 | 53 | 0.331 | 0.348 | 5 | NA | ± 30 % | AverageRF |
| † Bromoform | 50 | 50 | 0.377 | 0.376 | 0 | NA | ± 30 % | AverageRF |
| † Chlorobenzene | 50 | 49 | 2.25 | 2.23 | -1 | NA | ± 30 % | AverageRF |
| ‡ Chloroform | 50 | 51 | 0.490 | 0.503 | 3 | NA | ± 30 % | AverageRF |
| † Chloromethane | 50 | 55 | 0.482 | 0.532 | 10 | NA | ± 30 % | AverageRF |
| ‡ Ethylbenzene | 50 | 50 | 4.01 | 3.99 | 0 | NA | ± 30 % | AverageRF |
| ‡ Toluene | 50 | 49 | 3.65 | 3.61 | -1 | NA | ± 30 % | AverageRF |
| ‡ Vinyl Chloride | 50 | 56 | 0.388 | 0.432 | 11 | NA | ± 30 % | AverageRF |

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

**† SPCC Compound** **‡ CCC Compound**

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Results

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil 81 ABC/112G01264

**Service Request:** J0805172
**Date Analyzed:** 10/29/2008

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

**ICAL Type:** Internal Standard
**Analysis Method:** 8260B

**ICAL Date:** 10/22/2008
**ICAL ID:** CAL1629
**Analysis Lot:** JWG0804083
**Units:** ug/L

**File ID:** \\JACKSONVILLE1\ACQUDATA\MS53\DATA\MS538K29.B\1029-02.D

**Column ID:** DB-VRX

| Analyte Name | Expected | Result | Min RF | Average RF | CCV RF | %D | %Drift | Criteria | Curve Fit |
|---|---|---|---|---|---|---|---|---|---|
| 1,2-Dichloroethane-d4 | 50 | 50 | | 0.183 | 0.182 | -1 | NA | ± 30 % | AverageRF |
| 4-Bromofluorobenzene | 50 | 56 | | 1.20 | 1.33 | 11 | NA | ± 30 % | AverageRF |
| Dibromofluoromethane | 50 | 49 | | 0.294 | 0.287 | -3 | NA | ± 30 % | AverageRF |
| Isopropylbenzene | 50 | 46 | 0.01 | 4.18 | 3.82 | -9 | NA | ± 30 % | AverageRF |
| Toluene-d8 | 50 | 51 | | 2.89 | 2.95 | 2 | NA | ± 30 % | AverageRF |
| ‡ Ethylbenzene | 50 | 47 | 0.01 | 4.01 | 3.79 | -6 | NA | ± 20 % | AverageRF |
| ‡ Toluene | 50 | 47 | 0.01 | 3.65 | 3.43 | -6 | NA | ± 20 % | AverageRF |
| † Chlorobenzene | 50 | 46 | 0.3 | 2.25 | 2.09 | -7 | NA | ± 30 % | AverageRF |
| ‡ Chloroform | 50 | 48 | 0.01 | 0.490 | 0.473 | -3 | NA | ± 20 % | AverageRF |
| † Chloromethane | 50 | 38 | 0.1 | 0.482 | 0.364 | -25 | NA | ± 30 % | AverageRF |
| ‡ Vinyl Chloride | 50 | 46 | 0.01 | 0.388 | 0.361 | -7 | NA | ± 20 % | AverageRF |
| † Bromoform | 50 | 43 | 0.1 | 0.377 | 0.322 | -15 | NA | ± 30 % | AverageRF |
| † 1,1-Dichloroethane | 50 | 49 | 0.1 | 0.571 | 0.565 | -1 | NA | ± 30 % | AverageRF |
| ‡ 1,1-Dichloroethene | 50 | 51 | 0.01 | 0.359 | 0.363 | 1 | NA | ± 20 % | AverageRF |
| ‡ 1,2-Dichloropropane | 50 | 50 | 0.01 | 0.331 | 0.329 | -1 | NA | ± 20 % | AverageRF |
| † 1,1,2,2-Tetrachloroethane | 50 | 45 | 0.3 | 0.700 | 0.631 | -10 | NA | ± 30 % | AverageRF |

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

**† SPCC Compound** **‡ CCC Compound**

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Results

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil 81 ABC/112G01264

**Service Request:** J0805172

**Analysis Run Log**
**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260B

**Analysis Lot:** JWG0804083
**Instrument ID:** MS53.i
**Column:** DB-VRX

| File ID | Sample Name | Lab Code | Date Analysis Started | Start Time | Q | Date Analysis Finished | Finish Time |
|---|---|---|---|---|---|---|---|
| \1029-01.D | GC/MS Tuning - Bromofluorobenzene | JWG0804083-1 | 10/29/2008 | 15:57 | | 10/29/2008 | 15:57 |
| \1029-02.D | Continuing Calibration Verification | JWG0804083-2 | 10/29/2008 | 16:21 | | 10/29/2008 | 16:21 |
| \1029-03.D | Lab Control Sample | JWG0804082-3 | 10/29/2008 | 16:49 | | 10/29/2008 | 16:49 |
| \1029-05.D | Method Blank | JWG0804082-4 | 10/29/2008 | 17:44 | | 10/29/2008 | 17:44 |
| \1029-08.D | ZZZZZZ | ZZZZZZ | 10/29/2008 | 19:07 | | 10/29/2008 | 19:07 |
| \1029-09.D | ZZZZZZ | ZZZZZZ | 10/29/2008 | 19:35 | | 10/29/2008 | 19:35 |
| \1029-10.D | CEF-081-21I-102308 | J0805172-001 | 10/29/2008 | 20:02 | | 10/29/2008 | 20:02 |
| \1029-11.D | CEF-081-18I-102308 | J0805172-002 | 10/29/2008 | 20:30 | | 10/29/2008 | 20:30 |
| \1029-12.D | CEF-081-04I-102308 | J0805172-003 | 10/29/2008 | 20:58 | | 10/29/2008 | 20:58 |
| \1029-13.D | CEF-081-22I-102308 | J0805172-004 | 10/29/2008 | 21:25 | | 10/29/2008 | 21:25 |
| \1029-14.D | CEF-081-19I-102308 | J0805172-005 | 10/29/2008 | 21:53 | | 10/29/2008 | 21:53 |
| \1029-15.D | CEF-081-16S-102308 | J0805172-006 | 10/29/2008 | 22:21 | | 10/29/2008 | 22:21 |
| \1029-16.D | CEF-081-17S-102308 | J0805172-007 | 10/29/2008 | 22:48 | | 10/29/2008 | 22:48 |
| \1029-17.D | CEF-081-14S-102308 | J0805172-008 | 10/29/2008 | 23:16 | | 10/29/2008 | 23:16 |
| \1029-18.D | Trip Blank | J0805172-009 | 10/29/2008 | 23:44 | | 10/29/2008 | 23:44 |
| \1029-19.D | ZZZZZZ | ZZZZZZ | 10/30/2008 | 00:11 | | 10/30/2008 | 00:11 |
| \1029-20.D | ZZZZZZ | ZZZZZZ | 10/30/2008 | 00:39 | | 10/30/2008 | 00:39 |
| \1029-21.D | ZZZZZZ | ZZZZZZ | 10/30/2008 | 01:07 | | 10/30/2008 | 01:07 |
| \1029-22.D | ZZZZZZ | ZZZZZZ | 10/30/2008 | 01:34 | | 10/30/2008 | 01:34 |
| \1029-23.D | ZZZZZZ | ZZZZZZ | 10/30/2008 | 02:02 | | 10/30/2008 | 02:02 |
| \1029-24.D | ZZZZZZ | ZZZZZZ | 10/30/2008 | 02:29 | | 10/30/2008 | 02:29 |
| \1029-25.D | ZZZZZZ | ZZZZZZ | 10/30/2008 | 02:57 | | 10/30/2008 | 02:57 |
| \1029-26.D | ZZZZZZ | ZZZZZZ | 10/30/2008 | 03:25 | | 10/30/2008 | 03:25 |
| \1029-27.D | ZZZZZZ | ZZZZZZ | 10/30/2008 | 03:52 | | 10/30/2008 | 03:52 |

**Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis**

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil 81 ABC/112G01264
**Sample Matrix:** Water

**Service Request:** J0805172
**Date Extracted:** 10/29/2008

## Extraction Prep Log
## Volatile Organic Compounds by GC/MS

**Extraction Method:** EPA 5030B
**Analysis Method:** 8260B

**Extraction Lot:** JWG0804082
**Level:** Low

| Sample Name | Lab Code | Date Collected | Date Received | Sample Amount | Final Volume | % Solids | Note |
|---|---|---|---|---|---|---|---|
| CEF-081-21I-102308 | J0805172-001 | 10/23/08 | 10/24/08 | 10ml | 10ml | NA | |
| CEF-081-18I-102308 | J0805172-002 | 10/23/08 | 10/24/08 | 10ml | 10ml | NA | |
| CEF-081-04I-102308 | J0805172-003 | 10/23/08 | 10/24/08 | 10ml | 10ml | NA | |
| CEF-081-22I-102308 | J0805172-004 | 10/23/08 | 10/24/08 | 10ml | 10ml | NA | |
| CEF-081-19I-102308 | J0805172-005 | 10/23/08 | 10/24/08 | 10ml | 10ml | NA | |
| CEF-081-16S-102308 | J0805172-006 | 10/23/08 | 10/24/08 | 10ml | 10ml | NA | |
| CEF-081-17S-102308 | J0805172-007 | 10/23/08 | 10/24/08 | 10ml | 10ml | NA | |
| CEF-081-14S-102308 | J0805172-008 | 10/23/08 | 10/24/08 | 10ml | 10ml | NA | |
| Trip Blank | J0805172-009 | 10/23/08 | 10/24/08 | 10ml | 10ml | NA | |
| Method Blank | JWG0804082-4 | NA | NA | 10ml | 10ml | NA | |
| Lab Control Sample | JWG0804082-3 | NA | NA | 10ml | 10ml | NA | |

**Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis**

# Organic Analysis:
# Volatile Organic Compounds by GC/MS

## Summary Package

### Sample and QC Results

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil Field 81 ABC/112G01264

**Service Request:** J0805450

## Cover Page - Organic Analysis Data Package
## Volatile Organic Compounds by GC/MS

| Sample Name | Lab Code | Date Collected | Date Received |
|---|---|---|---|
| CEF-081-22I-20081110 | J0805450-001 | 11/10/2008 | 11/11/2008 |
| Trip Blank | J0805450-002 | 11/10/2008 | 11/11/2008 |

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: AL Wray

Name: AL Wray

Date: 11/12/08

Title: Analyst

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Tetra Tech NUS, Inc. | **Service Request:** | J0805450 |
| **Project:** | Cecil Field 81 ABC/112G01264 | **Date Collected:** | 11/10/2008 |
| **Sample Matrix:** | Water | **Date Received:** | 11/11/2008 |

## Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | CEF-081-22I-20081110 | **Units:** | ug/L |
| **Lab Code:** | J0805450-001 | **Basis:** | NA |
| **Extraction Method:** | EPA 5030B | **Level:** | Low |
| **Analysis Method:** | 8260B | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| **Isopropylbenzene** | **1.5** | | 1.0 | 0.14 | 1 | 11/11/08 | 11/11/08 | JWG0804295 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 71-122 | 11/11/08 | Acceptable |
| 4-Bromofluorobenzene | 100 | 75-120 | 11/11/08 | Acceptable |
| Dibromofluoromethane | 102 | 82-116 | 11/11/08 | Acceptable |
| Toluene-d8 | 103 | 88-117 | 11/11/08 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Tetra Tech NUS, Inc. | **Service Request:** | J0805450 |
| **Project:** | Cecil Field 81 ABC/112G01264 | **Date Collected:** | 11/10/2008 |
| **Sample Matrix:** | Water | **Date Received:** | 11/11/2008 |

## Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | Trip Blank | **Units:** | ug/L |
| **Lab Code:** | J0805450-002 | **Basis:** | NA |
| **Extraction Method:** | EPA 5030B | **Level:** | Low |
| **Analysis Method:** | 8260B | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Isopropylbenzene | ND | U | 1.0 | 0.14 | 1 | 11/12/08 | 11/12/08 | JWG0804295 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 1,2-Dichloroethane-d4 | 97 | 71-122 | 11/12/08 | Acceptable |
| 4-Bromofluorobenzene | 100 | 75-120 | 11/12/08 | Acceptable |
| Dibromofluoromethane | 96 | 82-116 | 11/12/08 | Acceptable |
| Toluene-d8 | 105 | 88-117 | 11/12/08 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Tetra Tech NUS, Inc. | **Service Request:** | J0805450 |
| **Project:** | Cecil Field 81 ABC/112G01264 | **Date Collected:** | NA |
| **Sample Matrix:** | Water | **Date Received:** | NA |

## Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | Method Blank | **Units:** | ug/L |
| **Lab Code:** | JWG0804295-3 | **Basis:** | NA |
| **Extraction Method:** | EPA 5030B | **Level:** | Low |
| **Analysis Method:** | 8260B | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Isopropylbenzene | ND | U | 1.0 | 0.14 | 1 | 11/11/08 | 11/11/08 | JWG0804295 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 1,2-Dichloroethane-d4 | 96 | 71-122 | 11/11/08 | Acceptable |
| 4-Bromofluorobenzene | 100 | 75-120 | 11/11/08 | Acceptable |
| Dibromofluoromethane | 93 | 82-116 | 11/11/08 | Acceptable |
| Toluene-d8 | 101 | 88-117 | 11/11/08 | Acceptable |

**Comments:**

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil Field 81 ABC/112G01264
**Sample Matrix:** Water

**Service Request:** J0805450

**Surrogate Recovery Summary**
**Volatile Organic Compounds by GC/MS**

**Extraction Method:** EPA 5030B
**Analysis Method:** 8260B

**Units:** PERCENT
**Level:** Low

| Sample Name | Lab Code | Sur1 | Sur2 | Sur3 | Sur4 |
|---|---|---|---|---|---|
| CEF-081-22I-20081110 | J0805450-001 | 101 | 100 | 102 | 103 |
| Trip Blank | J0805450-002 | 97 | 100 | 96 | 105 |
| Method Blank | JWG0804295-3 | 96 | 100 | 93 | 101 |
| Lab Control Sample | JWG0804295-1 | 96 | 99 | 99 | 102 |
| Duplicate Lab Control Sample | JWG0804295-2 | 97 | 101 | 96 | 99 |

**Surrogate Recovery Control Limits (%)**

| | | |
|---|---|---|
| Sur1 = | 1,2-Dichloroethane-d4 | 71-122 |
| Sur2 = | 4-Bromofluorobenzene | 75-120 |
| Sur3 = | Dibromofluoromethane | 82-116 |
| Sur4 = | Toluene-d8 | 88-117 |

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

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil Field 81 ABC/112G01264

**Service Request:** J0805450
**Date Analyzed:** 11/11/2008
**Time Analyzed:** 16:35

## Internal Standard Area and RT Summary
## Volatile Organic Compounds by GC/MS

**File ID:** \\JACKSONVILLE1\ACQUDATA\MS53\DATA\MS538M11.B\1
**Instrument ID:** MS53.i
**Analysis Method:** 8260B

**Lab Code:** JWG0804296-2
**Analysis Lot:** JWG0804296
**Column :** DB-VRX

| | | 1,4-Dichlorobenzene-d4 | | Chlorobenzene-d5 | | | |
|---|---|---|---|---|---|---|---|
| | | Area | RT | Area | RT | Area | RT |
| | **Results ==>** | 200,699 | 11.17 | 245,733 | 8.78 | | |
| | **Upper Limit ==>** | 401,398 | 11.67 | 491,466 | 9.28 | | |
| | **Lower Limit ==>** | 100,350 | 10.67 | 122,867 | 8.28 | | |
| | **ICAL Result ==>** | 207,475 | 11.17 | 239,482 | 8.78 | | |
| ***Associated Analyses*** | | | | | | | |
| Lab Control Sample | JWG0804295-1 | 203,291 | 11.17 | 245,168 | 8.77 | | |
| Duplicate Lab Control Sample | JWG0804295-2 | 203,520 | 11.17 | 247,456 | 8.77 | | |
| Method Blank | JWG0804295-3 | 200,547 | 11.17 | 247,326 | 8.77 | | |
| CEF-081-22I-20081110 | J0805450-001 | 203,745 | 11.17 | 239,096 | 8.77 | | |
| Trip Blank | J0805450-002 | 204,484 | 11.17 | 234,731 | 8.77 | | |

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

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Tetra Tech NUS, Inc. | **Service Request:** | J0805450 |
| **Project:** | Cecil Field 81 ABC/112G01264 | **Date Extracted:** | 11/11/2008 |
| **Sample Matrix:** | Water | **Date Analyzed:** | 11/11/2008 |

**Lab Control Spike/Duplicate Lab Control Spike Summary**
**Volatile Organic Compounds by GC/MS**

| | | | |
|---|---|---|---|
| **Extraction Method:** | EPA 5030B | **Units:** | ug/L |
| **Analysis Method:** | 8260B | **Basis:** | NA |
| | | **Level:** | Low |
| | | **Extraction Lot:** | JWG0804295 |

| | Lab Control Sample JWG0804295-1 Lab Control Spike | | | Duplicate Lab Control Sample JWG0804295-2 Duplicate Lab Control Spike | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Result** | **Expected** | **%Rec** | **Result** | **Expected** | **%Rec** | **%Rec Limits** | **RPD** | **RPD Limit** |
| Isopropylbenzene | 20.5 | 20.0 | 102 | 21.6 | 20.0 | 108 | 83-122 | 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.

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Tetra Tech NUS, Inc. | **Service Request:** | J0805450 |
| **Project:** | Cecil Field 81 ABC/112G01264 | **Date Extracted:** | 11/11/2008 |
| **Sample Matrix:** | Water | **Date Analyzed:** | 11/11/2008 |
| | | **Time Analyzed:** | 18:26 |

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

| | | | |
|---|---|---|---|
| **Sample Name:** | Method Blank | **File ID:** | J:\MS53\DATA\MS538M11.B\1111-06.D |
| **Lab Code:** | JWG0804295-3 | **Instrument ID:** | MS53.i |
| **Extraction Method:** | EPA 5030B | **Level:** | Low |
| **Analysis Method:** | 8260B | **Extraction Lot:** | JWG0804295 |

This Method Blank applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed | Time Analyzed |
|---|---|---|---|---|
| Lab Control Sample | JWG0804295-1 | J:\MS53\DATA\MS538M11.B\1111-03.D | 11/11/08 | 17:03 |
| Duplicate Lab Control Sample | JWG0804295-2 | J:\MS53\DATA\MS538M11.B\1111-04.D | 11/11/08 | 17:31 |
| CEF-081-22I-20081110 | J0805450-001 | J:\MS53\DATA\MS538M11.B\1111-17.D | 11/11/08 | 23:30 |
| Trip Blank | J0805450-002 | J:\MS53\DATA\MS538M11.B\1111-19.D | 11/12/08 | 00:26 |

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil Field 81 ABC/112G01264
**Sample Matrix:** Water

**Service Request:** J0805450

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

| | | | |
|---|---|---|---|
| **Sample Name:** | Lab Control Sample | **Sample Name:** | Duplicate Lab Control Sample |
| **Lab Code:** | JWG0804295-1 | **Lab Code:** | JWG0804295-2 |
| **File ID:** | J:\MS53\DATA\MS538M11.B\1111-03.D | **File ID:** | J:\MS53\DATA\MS538M11.B\1111-04.D |
| **Instrument ID:** | MS53.i | **Instrument ID:** | MS53.i |
| **Date Extracted:** | 11/11/2008 | **Date Extracted:** | 11/11/2008 |
| **Date Analyzed:** | 11/11/2008 | **Date Analyzed:** | 11/11/2008 |
| **Time Analyzed:** | 17:03 | **Time Analyzed:** | 17:31 |

| | | | |
|---|---|---|---|
| **Extraction Method:** | EPA 5030B | **Level:** | Low |
| **Analysis Method:** | 8260B | **Extraction Lot:** | JWG0804295 |

These Lab Control Samples apply to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed | Time Analyzed |
|---|---|---|---|---|
| Method Blank | JWG0804295-3 | J:\MS53\DATA\MS538M11.B\1111-06.D | 11/11/08 | 18:26 |
| CEF-081-22I-20081110 | J0805450-001 | J:\MS53\DATA\MS538M11.B\1111-17.D | 11/11/08 | 23:30 |
| Trip Blank | J0805450-002 | J:\MS53\DATA\MS538M11.B\1111-19.D | 11/12/08 | 00:26 |

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Results

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil Field 81 ABC/112G01264

**Service Request:** J0805450
**Date Analyzed:** 11/11/2008
**Time Analyzed:** 16:10

**Tune Summary**
**Volatile Organic Compounds by GC/MS**

**File ID:** \\JACKSONVILLE1\ACQUDATA\MS53\DATA\MS538M11.B\1111-01.D
**Instrument ID:** MS52.i
**Column:**

**Analysis Method:** 8260B
**Analysis Lot:** JWG0804296

| Target Mass | Relative to Mass | Lower Limit% | Upper Limit% | Relative Abundance % | Raw Abundance | Result Pass/Fail |
|---|---|---|---|---|---|---|
| 50 | 95 | 15 | 40 | 17.5 | 7006 | PASS |
| 75 | 95 | 30 | 60 | 37.6 | 15053 | PASS |
| 95 | 95 | 100 | 100 | 100.0 | 40032 | PASS |
| 96 | 95 | 5 | 9 | 6.2 | 2467 | PASS |
| 173 | 174 | 0 | 2 | 0.0 | 0 | PASS |
| 174 | 95 | 50 | 120 | 59.3 | 23752 | PASS |
| 175 | 174 | 5 | 9 | 7.4 | 1768 | PASS |
| 176 | 174 | 95 | 101 | 96.1 | 22816 | PASS |
| 177 | 176 | 5 | 9 | 6.8 | 1545 | PASS |

| Sample Name | Lab Code | File ID | Date Analyzed | Time Analyzed | Q |
|---|---|---|---|---|---|
| Continuing Calibration Verification | JWG0804296-2 | J:\MS53\DATA\MS538M11.B\1111-0 | 11/11/2008 | 16:35 | |
| Lab Control Sample | JWG0804295-1 | J:\MS53\DATA\MS538M11.B\1111-0 | 11/11/2008 | 17:03 | |
| Duplicate Lab Control Sample | JWG0804295-2 | J:\MS53\DATA\MS538M11.B\1111-0 | 11/11/2008 | 17:31 | |
| Method Blank | JWG0804295-3 | J:\MS53\DATA\MS538M11.B\1111-0 | 11/11/2008 | 18:26 | |
| CEF-081-22I-20081110 | J0805450-001 | J:\MS53\DATA\MS538M11.B\1111-1 | 11/11/2008 | 23:30 | |
| Trip Blank | J0805450-002 | J:\MS53\DATA\MS538M11.B\1111-1 | 11/12/2008 | 00:26 | |

**Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window**

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil Field 81 ABC/112G01264

**Service Request:** J0805450
**ICAL Date:** 11/07/2008

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

**ICAL ID:** CAL1655
**Instrument ID:** MS53.i

**Column:** DB-VRX

| Level ID | File ID | Level ID | File ID |
|---|---|---|---|
| A | \\Jacksonville1\ACQUDATA\MS53\DATA\MS538M07.B\11 | E | \\Jacksonville1\ACQUDATA\MS53\DATA\MS538M07.B\11 |
| B | \\Jacksonville1\ACQUDATA\MS53\DATA\MS538M07.B\11 | F | \\Jacksonville1\ACQUDATA\MS53\DATA\MS538M07.B\11 |
| C | \\Jacksonville1\ACQUDATA\MS53\DATA\MS538M07.B\11 | G | \\Jacksonville1\ACQUDATA\MS53\DATA\MS538M07.B\11 |
| D | \\Jacksonville1\ACQUDATA\MS53\DATA\MS538M07.B\11 | H | \\Jacksonville1\ACQUDATA\MS53\DATA\MS538M07.B\11 |

| Analyte Name | Level ID | Amt | RRF | Level ID | Amt | RRF | Level ID | Amt | RRF | Level ID | Amt | RRF | Level ID | Amt | RRF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,2-Dichloroethane-d4 | A | 10 | 0.173 | B | 20 | 0.190 | C | 50 | 0.182 | D | 100 | 0.176 | E | 150 | 0.171 |
| | F | 200 | 0.185 | | | | | | | | | | | | |
| 4-Bromofluorobenzene | A | 10 | 1.07 | B | 20 | 1.18 | C | 50 | 1.27 | D | 100 | 1.19 | E | 150 | 1.17 |
| | F | 200 | 1.21 | | | | | | | | | | | | |
| Dibromofluoromethane | A | 10 | 0.239 | B | 20 | 0.271 | C | 50 | 0.286 | D | 100 | 0.269 | E | 150 | 0.265 |
| | F | 200 | 0.289 | | | | | | | | | | | | |
| Isopropylbenzene | A | 5.0 | 3.88 | B | 20 | 4.33 | C | 50 | 4.05 | D | 100 | 3.95 | E | 150 | 3.93 |
| | F | 200 | 4.00 | G | 1.0 | 4.33 | H | 2.0 | 3.99 | | | | | | |
| Toluene-d8 | A | 10 | 2.34 | B | 20 | 2.55 | C | 50 | 2.74 | D | 100 | 2.68 | E | 150 | 2.53 |
| | F | 200 | 2.69 | | | | | | | | | | | | |
| ‡ Ethylbenzene | A | 5.0 | 3.70 | B | 20 | 4.12 | C | 50 | 3.93 | D | 100 | 3.76 | E | 150 | 3.57 |
| | F | 200 | 3.70 | G | 1.0 | 4.18 | H | 2.0 | 3.67 | | | | | | |
| ‡ Toluene | A | 5.0 | 3.38 | B | 20 | 3.72 | C | 50 | 3.60 | D | 100 | 3.48 | E | 150 | 3.35 |
| | F | 200 | 3.36 | G | 1.0 | 3.80 | H | 2.0 | 3.27 | | | | | | |
| † Chlorobenzene | A | 5.0 | 2.03 | B | 20 | 2.27 | C | 50 | 2.18 | D | 100 | 2.18 | E | 150 | 2.04 |
| | F | 200 | 2.16 | G | 1.0 | 2.31 | H | 2.0 | 2.01 | | | | | | |
| ‡ Chloroform | A | 5.0 | 0.464 | B | 20 | 0.537 | C | 50 | 0.479 | D | 100 | 0.449 | E | 150 | 0.479 |
| | F | 200 | 0.518 | G | 1.0 | 0.524 | H | 2.0 | 0.463 | | | | | | |
| † Chloromethane | A | 5.0 | 0.464 | B | 20 | 0.503 | C | 50 | 0.450 | D | 100 | 0.449 | E | 150 | 0.485 |
| | F | 200 | 0.533 | G | 1.0 | 0.558 | H | 2.0 | 0.470 | | | | | | |
| ‡ Vinyl Chloride | A | 5.0 | 0.396 | B | 20 | 0.502 | C | 50 | 0.424 | D | 100 | 0.424 | E | 150 | 0.435 |
| | F | 200 | 0.441 | G | 1.0 | 0.428 | H | 2.0 | 0.406 | | | | | | |
| † Bromoform | A | 5.0 | 0.291 | B | 20 | 0.342 | C | 50 | 0.348 | D | 100 | 0.353 | E | 150 | 0.344 |
| | F | 200 | 0.381 | | | | H | 2.0 | 0.277 | | | | | | |
| † 1,1-Dichloroethane | A | 5.0 | 0.584 | B | 20 | 0.674 | C | 50 | 0.597 | D | 100 | 0.588 | E | 150 | 0.604 |
| | F | 200 | 0.601 | G | 1.0 | 0.660 | H | 2.0 | 0.594 | | | | | | |
| ‡ 1,1-Dichloroethene | A | 5.0 | 0.353 | B | 20 | 0.449 | C | 50 | 0.402 | D | 100 | 0.367 | E | 150 | 0.369 |
| | F | 200 | 0.370 | G | 1.0 | 0.401 | H | 2.0 | 0.360 | | | | | | |

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

**† SPCC Compound** **‡ CCC Compound**

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil Field 81 ABC/112G01264

**Service Request:** J0805450
**ICAL Date:** 11/07/2008

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

**ICAL ID:** CAL1655
**Instrument ID:** MS53.i

**Column:** DB-VRX

| Analyte Name | Level ID | Amt | RRF | Level ID | Amt | RRF | Level ID | Amt | RRF | Level ID | Amt | RRF | Level ID | Amt | RRF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ‡ 1,2-Dichloropropane | A | 5.0 | 0.332 | B | 20 | 0.388 | C | 50 | 0.339 | D | 100 | 0.345 | E | 150 | 0.337 |
| | F | 200 | 0.348 | G | 1.0 | 0.382 | H | 2.0 | 0.343 | | | | | | |
| † 1,1,2,2-Tetrachloroethane | A | 5.0 | 0.644 | B | 20 | 0.705 | C | 50 | 0.700 | D | 100 | 0.694 | E | 150 | 0.674 |
| | F | 200 | 0.681 | G | 1.0 | 0.694 | H | 2.0 | 0.668 | | | | | | |

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

† **SPCC Compound** ‡ **CCC Compound**

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil Field 81 ABC/112G01264

**Service Request:** J0805450
**ICAL Date:** 11/07/2008

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

**ICAL ID:** CAL1655
**Instrument ID:** MS53.i

**Column:** DB-VRX

| | | Calibration Evaluation | | | | | RRF Evaluation | | |
|---|---|---|---|---|---|---|---|---|---|
| Analyte Name | Compound Type | Fit Type | Eval. | Eval. Result | Q | Control Criteria | Average RRF | Q | Minimum RRF |
| 1,2-Dichloroethane-d4 | SURR | AverageRF | % RSD | 4.1 | | ≤ 15 | 0.179 | | |
| 4-Bromofluorobenzene | SURR | AverageRF | % RSD | 5.7 | | ≤ 15 | 1.18 | | |
| Dibromofluoromethane | SURR | AverageRF | % RSD | 6.7 | | ≤ 15 | 0.270 | | |
| Isopropylbenzene | MS | AverageRF | % RSD | 4.3 | | ≤ 15 | 4.06 | | 0.01 |
| Toluene-d8 | SURR | AverageRF | % RSD | 5.6 | | ≤ 15 | 2.59 | | |
| ‡ Ethylbenzene | MS | AverageRF | % RSD | 5.8 | | ≤ 15 | 3.83 | | 0.01 |
| ‡ Toluene | MS | AverageRF | % RSD | 5.5 | | ≤ 15 | 3.50 | | 0.01 |
| † Chlorobenzene | MS | AverageRF | % RSD | 5.3 | | ≤ 15 | 2.15 | | 0.3 |
| ‡ Chloroform | MS | AverageRF | % RSD | 6.7 | | ≤ 15 | 0.489 | | 0.01 |
| † Chloromethane | MS | AverageRF | % RSD | 8.1 | | ≤ 15 | 0.489 | | 0.1 |
| ‡ Vinyl Chloride | MS | AverageRF | % RSD | 7.4 | | ≤ 15 | 0.432 | | 0.01 |
| † Bromoform | MS | AverageRF | % RSD | 10.9 | | ≤ 15 | 0.334 | | 0.1 |
| † 1,1-Dichloroethane | MS | AverageRF | % RSD | 5.6 | | ≤ 15 | 0.613 | | 0.1 |
| ‡ 1,1-Dichloroethene | MS | AverageRF | % RSD | 8.2 | | ≤ 15 | 0.384 | | 0.01 |
| ‡ 1,2-Dichloropropane | MS | AverageRF | % RSD | 6.0 | | ≤ 15 | 0.352 | | 0.01 |
| † 1,1,2,2-Tetrachloroethane | MS | AverageRF | % RSD | 2.9 | | ≤ 15 | 0.683 | | 0.3 |

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

**† SPCC Compound** **‡ CCC Compound**

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Results

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil Field 81 ABC/112G01264

**Service Request:** J0805450
**ICAL Date:** 11/07/2008
**Date Analyzed:** 11/07/2008

**Second Source Calibration Verification**
**Volatile Organic Compounds by GC/MS**

**ICAL Type:** Internal Standard
**Analysis Method:** 8260B

**ICAL ID:** CAL1655
**Units:** ug/L

**File ID:** \\Jacksonville1\ACQUDATA\MS53\DATA\MS538M07.B\1107-12.D

**Column ID:** DB-VRX

| Analyte Name | Expected | Result | Average RF | SSV RF | %D | %Drift | Criteria | Curve Fit |
|---|---|---|---|---|---|---|---|---|
| Isopropylbenzene | 50 | 52 | 4.06 | 4.26 | 5 | NA | ± 30 % | AverageRF |
| † 1,1,2,2-Tetrachloroethane | 50 | 54 | 0.683 | 0.733 | 7 | NA | ± 30 % | AverageRF |
| † 1,1-Dichloroethane | 50 | 53 | 0.613 | 0.655 | 7 | NA | ± 30 % | AverageRF |
| ‡ 1,1-Dichloroethene | 50 | 55 | 0.384 | 0.425 | 11 | NA | ± 30 % | AverageRF |
| ‡ 1,2-Dichloropropane | 50 | 55 | 0.352 | 0.387 | 10 | NA | ± 30 % | AverageRF |
| † Bromoform | 50 | 54 | 0.334 | 0.362 | 8 | NA | ± 30 % | AverageRF |
| † Chlorobenzene | 50 | 53 | 2.15 | 2.27 | 5 | NA | ± 30 % | AverageRF |
| ‡ Chloroform | 50 | 55 | 0.489 | 0.534 | 9 | NA | ± 30 % | AverageRF |
| † Chloromethane | 50 | 54 | 0.489 | 0.533 | 9 | NA | ± 30 % | AverageRF |
| ‡ Ethylbenzene | 50 | 53 | 3.83 | 4.07 | 6 | NA | ± 30 % | AverageRF |
| ‡ Toluene | 50 | 53 | 3.50 | 3.69 | 5 | NA | ± 30 % | AverageRF |
| ‡ Vinyl Chloride | 50 | 56 | 0.432 | 0.483 | 12 | NA | ± 30 % | AverageRF |

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

**† SPCC Compound** **‡ CCC Compound**

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Results

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil Field 81 ABC/112G01264

**Service Request:** J0805450
**Date Analyzed:** 11/11/2008

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

**ICAL Type:** Internal Standard
**Analysis Method:** 8260B

**ICAL Date:** 11/07/2008
**ICAL ID:** CAL1655
**Analysis Lot:** JWG0804296
**Units:** ug/L

**File ID:** \\JACKSONVILLE1\ACQUDATA\MS53\DATA\MS538M11.B\1111-02.D

**Column ID:** DB-VRX

| Analyte Name | Expected | Result | Min RF | Average RF | CCV RF | %D | %Drift | Criteria | Curve Fit |
|---|---|---|---|---|---|---|---|---|---|
| 1,2-Dichloroethane-d4 | 50 | 47 | | 0.179 | 0.168 | -6 | NA | ± 30 % | AverageRF |
| 4-Bromofluorobenzene | 50 | 50 | | 1.18 | 1.18 | 0 | NA | ± 30 % | AverageRF |
| Dibromofluoromethane | 50 | 48 | | 0.270 | 0.260 | -4 | NA | ± 30 % | AverageRF |
| Isopropylbenzene | 50 | 53 | 0.01 | 4.06 | 4.28 | 5 | NA | ± 30 % | AverageRF |
| Toluene-d8 | 50 | 51 | | 2.59 | 2.63 | 1 | NA | ± 30 % | AverageRF |
| ‡ Ethylbenzene | 50 | 52 | 0.01 | 3.83 | 4.01 | 5 | NA | ± 20 % | AverageRF |
| ‡ Toluene | 50 | 52 | 0.01 | 3.50 | 3.67 | 5 | NA | ± 20 % | AverageRF |
| † Chlorobenzene | 50 | 50 | 0.3 | 2.15 | 2.16 | 1 | NA | ± 30 % | AverageRF |
| ‡ Chloroform | 50 | 48 | 0.01 | 0.489 | 0.473 | -3 | NA | ± 20 % | AverageRF |
| † Chloromethane | 50 | 47 | 0.1 | 0.489 | 0.464 | -5 | NA | ± 30 % | AverageRF |
| ‡ Vinyl Chloride | 50 | 50 | 0.01 | 0.432 | 0.432 | 0 | NA | ± 20 % | AverageRF |
| † Bromoform | 50 | 50 | 0.1 | 0.334 | 0.331 | -1 | NA | ± 30 % | AverageRF |
| † 1,1-Dichloroethane | 50 | 49 | 0.1 | 0.613 | 0.596 | -3 | NA | ± 30 % | AverageRF |
| ‡ 1,1-Dichloroethene | 50 | 51 | 0.01 | 0.384 | 0.390 | 2 | NA | ± 20 % | AverageRF |
| ‡ 1,2-Dichloropropane | 50 | 52 | 0.01 | 0.352 | 0.363 | 3 | NA | ± 20 % | AverageRF |
| † 1,1,2,2-Tetrachloroethane | 50 | 49 | 0.3 | 0.683 | 0.673 | -1 | NA | ± 30 % | AverageRF |

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

**† SPCC Compound** **‡ CCC Compound**

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil Field 81 ABC/112G01264

**Service Request:** J0805450

## Analysis Run Log
## Volatile Organic Compounds by GC/MS

**Analysis Method:** 8260B

**Analysis Lot:** JWG0804296
**Instrument ID:** MS53.i
**Column:** DB-VRX

| File ID | Sample Name | Lab Code | Date Analysis Started | Start Time | Q | Date Analysis Finished | Finish Time |
|---|---|---|---|---|---|---|---|
| \1111-01.D | GC/MS Tuning - Bromofluorobenzene | JWG0804296-1 | 11/11/2008 | 16:10 | | 11/11/2008 | 16:10 |
| \1111-02.D | Continuing Calibration Verification | JWG0804296-2 | 11/11/2008 | 16:35 | | 11/11/2008 | 16:35 |
| \1111-03.D | Lab Control Sample | JWG0804295-1 | 11/11/2008 | 17:03 | | 11/11/2008 | 17:03 |
| \1111-04.D | Duplicate Lab Control Sample | JWG0804295-2 | 11/11/2008 | 17:31 | | 11/11/2008 | 17:31 |
| \1111-06.D | Method Blank | JWG0804295-3 | 11/11/2008 | 18:26 | | 11/11/2008 | 18:26 |
| \1111-07.D | ZZZZZZ | ZZZZZZ | 11/11/2008 | 18:53 | | 11/11/2008 | 18:53 |
| \1111-08.D | ZZZZZZ | ZZZZZZ | 11/11/2008 | 19:21 | | 11/11/2008 | 19:21 |
| \1111-09.D | ZZZZZZ | ZZZZZZ | 11/11/2008 | 19:49 | | 11/11/2008 | 19:49 |
| \1111-10.D | ZZZZZZ | ZZZZZZ | 11/11/2008 | 20:16 | | 11/11/2008 | 20:16 |
| \1111-11.D | ZZZZZZ | ZZZZZZ | 11/11/2008 | 20:44 | | 11/11/2008 | 20:44 |
| \1111-12.D | ZZZZZZ | ZZZZZZ | 11/11/2008 | 21:12 | | 11/11/2008 | 21:12 |
| \1111-13.D | ZZZZZZ | ZZZZZZ | 11/11/2008 | 21:40 | | 11/11/2008 | 21:40 |
| \1111-14.D | ZZZZZZ | ZZZZZZ | 11/11/2008 | 22:07 | | 11/11/2008 | 22:07 |
| \1111-15.D | ZZZZZZ | ZZZZZZ | 11/11/2008 | 22:35 | | 11/11/2008 | 22:35 |
| \1111-16.D | ZZZZZZ | ZZZZZZ | 11/11/2008 | 23:02 | | 11/11/2008 | 23:02 |
| \1111-17.D | CEF-081-22I-20081110 | J0805450-001 | 11/11/2008 | 23:30 | | 11/11/2008 | 23:30 |
| \1111-19.D | Trip Blank | J0805450-002 | 11/12/2008 | 00:26 | | 11/12/2008 | 00:26 |
| \1111-20.D | ZZZZZZ | ZZZZZZ | 11/12/2008 | 00:53 | | 11/12/2008 | 00:53 |
| \1111-21.D | ZZZZZZ | ZZZZZZ | 11/12/2008 | 01:21 | | 11/12/2008 | 01:21 |
| \1111-22.D | ZZZZZZ | ZZZZZZ | 11/12/2008 | 01:48 | | 11/12/2008 | 01:48 |
| \1111-23.D | ZZZZZZ | ZZZZZZ | 11/12/2008 | 02:16 | | 11/12/2008 | 02:16 |
| \1111-24.D | ZZZZZZ | ZZZZZZ | 11/12/2008 | 02:44 | | 11/12/2008 | 02:44 |

**Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis**

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

**Client:** Tetra Tech NUS, Inc.
**Project:** Cecil Field 81 ABC/112G01264
**Sample Matrix:** Water

**Service Request:** J0805450
**Date Extracted:** 11/11/2008

## Extraction Prep Log
## Volatile Organic Compounds by GC/MS

**Extraction Method:** EPA 5030B
**Analysis Method:** 8260B

**Extraction Lot:** JWG0804295
**Level:** Low

| Sample Name | Lab Code | Date Collected | Date Received | Sample Amount | Final Volume | % Solids | Note |
|---|---|---|---|---|---|---|---|
| CEF-081-22I-20081110 | J0805450-001 | 11/10/08 | 11/11/08 | 10ml | 10ml | NA | |
| Trip Blank | J0805450-002 | 11/10/08 | 11/11/08 | 10ml | 10ml | NA | |
| Method Blank | JWG0804295-3 | NA | NA | 10ml | 10ml | NA | |
| Lab Control Sample | JWG0804295-1 | NA | NA | 10ml | 10ml | NA | |
| Duplicate Lab Control Sample | JWG0804295-2 | NA | NA | 10ml | 10ml | NA | |

**Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis**