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# Live Impact Area Soil Sampling Report
# U.S. Naval Facility
# Vieques Island, Puerto Rico

Prepared for

## Department of the Navy
### Atlantic Division
### Naval Facilities Engineering Command

Under the
**LANTDIV CLEAN II Program**
Contract No. N62470-95-D-6007
CTO-185

Prepared by

**CH2MHILL**
Tampa, Florida

October 2000

# Surface Soil Investigation Report

# Live Impact Area

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**CTO Task Order 185**

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# 1. Introduction

This document presents the analytical results of a surface soil investigation completed in June 2000 at the Live Impact Area (LIA) on Vieques Island, Puerto Rico. The Work was performed under contract number N62470-95-D-6007, Navy CLEAN II Program, for the Atlantic Division of the Naval Facilities Engineering Command.

Vieques Island has a land area of approximately 33,000 acres and is located in the Caribbean Sea approximately seven miles southeast of Puerto Rico. The Navy's facilities (Navy Facility) is located on the eastern one-third of Vieques Island. The facility includes both the Atlantic Fleet Weapons Training Facility (AFWTF) comprising 3,600 acres, and the adjacent and wholly contiguous Eastern Maneuver Area (EMA) comprising of 11,000 acres. The LIA is located within the AFWTF. Both are under the command of U.S. Naval Station Roosevelt Roads (NSRR). Camp Garcia is located in the southeastern part of the EMA.

The AFWTF, located on the far eastern tip of the island, provides facilities and schedules naval gunfire support and air-to-ground ordnance delivery training for Atlantic Fleet ships, NATO ships, air wings, and smaller air units from other allied nations and the Puerto Rico National Guard. The Fleet Marine Force, Atlantic, conducts training for Marine amphibious units, battalion landing teams and combat engineering units in the EMA. On occasion, naval units of allied nations having a presence in the Caribbean and the Puerto Rico National Guard also utilize the EMA.

The training areas have been in continuous use since World War II when the Navy acquired title to the land. Recently, some Puerto Rican citizens have publicly expressed that ordnance-derived constituents may have migrated from the Navy property to the western two-thirds of Vieques Island. This investigation was conducted to respond to the stated concerns of the Puerto Rican citizens and officials.

## 1.1 Purpose and Objectives of the Field Investigation

The purpose of the investigation was to provide site specific soil analytical data to be used in a risk assessment and air models to evaluated potential risks posed from .

The scope of the field program was designed to meet two specific objectives:

- Determine if the surface soil at the LIA contains explosive compounds.
- Provide data for a food chain and air models.

# 2. Field Investigation Activities

This section presents the rationale and investigation techniques of the field investigations that were performed on the Navy property during June 2000. The field investigations included soil sampling and analysis of thirty seven surface soil samples. Included in the section is a discussion of the investigation rationale, sampling procedures, laboratory analytical program, surveying, and analytical results.

## 2.1 Investigation Rationale

One of the goals of the project was to assess if there are explosive compounds in the surface soil at the LIA. The potential transport mechanism for this occurrence include the transport through surface water runoff and transport through air dispersion of constituents. To meet this goal, a strategy of surface soil sampling was developed to include:

- Sampling of soils along apparent storm drainage features and low lying areas which would collect stormwater across the LIA.
- Sampling of soils at selected targets.

## 2.2 Sampling Procedures

A total of 37 surface soil samples were collected for laboratory analysis. Three samples were collected from within targets. Sixteen samples were collected at drainage features and low lying area which would collect stormwater runoff. Four samples were collected from known beach camps. In addition, seven samples were collected from conservation zones located upwind and downwind of the LIA. The sampling locations are shown in Figure 2-1. Photographs of each location along with a description of each sampling location are provided in Appendix A. Soil descriptions for each sample are provided in Appendix B.

Soil sampling locations at the storm drainage features and low lying areas were initially selected using topographic maps and were refined in the field by visually surveying the drainage patterns. Soil samples at targets and beach camps were selected in the field at locations thought to be representative of the site.

The 37 surface soil samples were collected using a decontaminated stainless steel spoon. Samples were collected from approximately 0-6 inches below ground surface. The soil samples were placed in a decontaminated aluminum pie tin , homogenized, and transferred to appropriate laboratory glass jars.

Sufficient number of decontaminated stainless steel spoons and aluminum pie tins were brought to the site so that decontamination in the field was not required. Decontamination procedures included:

- Rinse with potable water.
- Wash and scrub brush using potable water and Alconox (non-phosphate soap).

- Rinse with potable water.
- Rinse with isopropyl alcohol.
- Rinse with laboratory grade deionized water.
- Air dry.

## 2.3 Laboratory Analytical Program

Soil samples collected for analyses were placed in an iced cooler and shipped via overnight mail to Savannah Laboratories located in Savannah, Georgia. The samples were analyzed for metals in accordance with SW846 Method 6010, explosive residues including nitroaromatics, nitramines, PETN and nitroglycerin in accordance with SW-846 Method 8330, picric acid in accordance with SW846 Method 8330, and perchlorates in accordance with SW-846 Method E314. In addition, seven samples were analyzed for physical soil characteristics including soil particle size distribution, moister content, porosity, and bulk density. Chain of Custody forms for the samples collected are included in Appendix C.

Quality assurance/quality control (QA/QC) samples were also collected as discussed below:

- Duplicates – Field duplicate soil samples were collected at a frequency of 10 percent per sample matrix.
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) were collected at a frequency of 1 per 20 field samples per matrix.

The analytical results are summarized in Table 3-1. The validated chemical analytical data package from the laboratories are presented in Appendix D. The physical soil analysis data is presented in Appendix E.

## 2.4 Surveying

The surface soil samples were surveyed in the field during sample collection using Global Positioning Satellite (GPS) techniques. The survey established the latitude and longitude coordinates for each of the sample locations. In addition, the elevation, in feet above mean sea level, was established to the nearest 0.01 feet. The survey data is provided on Figure 2-1.

## Table 2-1
## Surface Soil Analytical Data Summary
## Live Impact Area - Vieques, Puerto Rico

| PARAMETER | UNITS | LIA001 | | LIA001D | | LIA002 | | LIA003 | | LIA004 | | LIA005 | | LIA006 | | LIA007 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **METALS** | | | | | | | | | | | | | | | | | |
| ALUMINUM | MG/KG | 11,000 | J | 11,000 | J | 24,000 | J | 28,000 | J | 26,000 | J | 660 | J | 770 | J | 21,000 | |
| ANTIMONY | MG/KG | 2.2 | U | 2.2 | U | 2.1 | U | 2.5 | U | 2.4 | U | 2.4 | U | 2.1 | U | 2.5 | UJ |
| ARSENIC | MG/KG | 3.1 | | 3.5 | | 2.6 | | 7.5 | | 4.5 | | 1.0 | J | 2.1 | | 6.3 | |
| BARIUM | MG/KG | 38 | | 38 | | 48 | | 120 | | 110 | | 10 | | 11 | | 160 | |
| BERYLLIUM | MG/KG | 0.23 | J | 0.28 | J | 0.3 | J | 0.48 | J | 0.47 | J | 0.087 | J | 0.087 | J | 0.27 | J |
| CADMIUM | MG/KG | 0.56 | U | 0.56 | U | 0.53 | U | 1.0 | U | 0.61 | U | 0.59 | U | 0.52 | U | 3.4 | J |
| CHROMIUM | mg/Kg | 13 | | 14 | | 29 | | 100 | | 83 | | 8.8 | | 9.1 | | 20 | |
| COBALT | mg/Kg | 10 | | 11 | | 23 | | 26 | | 32 | | 0.35 | J | 0.37 | J | 20 | |
| COPPER | mg/Kg | 24 | | 25 | | 57 | | 57 | | 48 | | 2.1 | J | 6.4 | | 72 | J |
| IRON | mg/Kg | 26,000 | | 29,000 | | 52,000 | | 55,000 | | 59,000 | | 1,000 | | 1,100 | | 55,000 | |
| LEAD | mg/Kg | 9.2 | | 9.2 | | 2.9 | | 11 | | 4.6 | | 0.52 | J | 1.8 | | 11 | |
| MANGANESE | mg/Kg | 670 | | 700 | | 1,200 | | 1,100 | | 1,500 | | 36 | | 40 | | 1,400 | |
| MERCURY | mg/Kg | 0.0093 | UJ | 0.0089 | J | 0.0079 | J | 0.0096 | J | 0.011 | J | 0.024 | U | 0.0041 | J | 0.025 | |
| NICKEL | mg/Kg | 6.7 | | 7.4 | | 16 | | 59 | | 45 | | 0.82 | J | 0.75 | J | 12 | |
| SELENIUM | mg/Kg | 1.1 | UJ | 1.1 | UJ | 1.1 | UJ | 1.3 | UJ | 1.2 | UJ | 1.2 | UJ | 1.0 | UJ | 2.1 | |
| SILVER | mg/Kg | 1.1 | U | 1.1 | U | 1.1 | U | 1.3 | U | 1.2 | U | 1.2 | U | 1.0 | U | 1.2 | U |
| THALLIUM | mg/Kg | 1.1 | UJ | 1.1 | UJ | 1.1 | UJ | 1.3 | UJ | 1.2 | UJ | 1.2 | UJ | 1.0 | UJ | 1.2 | U |
| TIN | mg/Kg | 5.6 | U | 5.6 | U | 5.3 | U | 6.3 | U | 6.1 | U | 5.9 | U | 5.2 | U | 6.2 | U |
| VANADIUM | mg/Kg | 66 | | 65 | | 150 | | 140 | | 150 | | 3.6 | | 3.8 | | 95 | |
| ZINC | mg/Kg | 42 | | 44 | | 68 | | 180 | | 70 | | 2.4 | J | 4.2 | | 100 | R |
| **EXPLOSIVES** | | | | | | | | | | | | | | | | | |
| HMX | ug/Kg | 500 | U | 500 | U | 500 | U | 500 | U | 500 | U | 500 | U | 500 | U | 500 | U |
| RDX | ug/Kg | 500 | U | 500 | U | 500 | U | 500 | U | 500 | U | 500 | U | 500 | U | 500 | U |
| 2-AM-DNT | ug/Kg | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U |
| 2,4,6-TNT | ug/Kg | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U |
| NITROGLYCERIN | ug/Kg | 1,100 | U | 1,100 | U | 1,000 | U | 1,300 | U | 1,200 | U | 1,200 | U | 1,100 | U | 1,200 | U |
| PENTAERYTHRITOL TETRANITRATE | ug/Kg | 1,100 | U | 1,100 | U | 1,000 | U | 1,300 | U | 1,200 | U | 1,200 | U | 1,100 | U | 1,200 | U |
| AMMONIUM PERCHLORATE | ug/Kg | 33.6 | U | 50.8 | U | 50.6 | U | 50.4 | U | 52.3 | U | 51.1 | U | 59.3 | U | 62.6 | U |
| PICRIC ACID | ug/Kg | 950 | R[b] | 830 | R[b] | 950 | R[b] | 770 | R[b] | 1,000 | R[b] | 950 | R[b] | 1,000 | R[b] | 830 | R[b] |

NOTES:

U - The analyte was analyzed for but was not detected. The number adjacent to the "U" indicates the reporting limit.

J - Estimated value.

R[a] - All positive results are rejected and unusable. The matrix spike recovery for zinc in soil was 529%, which was above the 200% maximum.

R[b] - Indicates the non-detected results are rejected and unusable. The Region II extraction time of fourteen (14) days was exceeded by twenty-two (22) to twenty-three (23) days for all samples. A positive rejected result would have been qualified with a J

## Table 2-1
## Surface Soil Analytical Data Summary
## Live Impact Area - Vieques, Puerto Rico

| PARAMETER | UNITS | LIA008 | | LIA009 | | LIA010 | | LIA011 | | LIA011D | | LIA012 | | LIA013 | | LIA014 | | LIA014D | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **METALS** | | | | | | | | | | | | | | | | | | | |
| ALUMINUM | MG/KG | 20,000 | | 15,000 | | 17,000 | | 9,600 | | 8,500 | | 29,000 | | 8,600 | | 18,000 | | 17,000 | |
| ANTIMONY | MG/KG | 3.3 | J | 2.3 | UJ | 0.73 | J | 2.2 | UJ | 2.3 | UJ | 1.3 | J | 2.3 | UJ | 2.3 | UJ | 2.4 | U |
| ARSENIC | MG/KG | 8.1 | | 5.10 | | 18 | | 10 | | 9.5 | | 5.7 | | 12 | | 4.3 | | 4.0 | |
| BARIUM | MG/KG | 77 | | 100 | | 21 | | 80 | | 74 | | 160 | | 120 | | 100 | | 97 | |
| BERYLLIUM | MG/KG | 0.23 | J | 0.23 | J | 0.31 | J | 0.15 | J | 0.099 | J | 0.18 | J | 0.16 | J | 0.16 | J | 0.25 | J |
| CADMIUM | MG/KG | 1.8 | J | 2.3 | J | 0.66 | J | 2.4 | J | 2.3 | J | 2.6 | J | 2.0 | J | 1.8 | J | 1.4 | |
| CHROMIUM | mg/Kg | 55 | | 10 | | 20 | | 18 | | 16 | | 11 | | 19 | | 120 | | 110 | |
| COBALT | mg/Kg | 26 | | 13 | | 17 | | 11 | | 10 | | 23 | | 9.0 | | 27 | | 24 | |
| COPPER | mg/Kg | 47 | J | 81 | J | 37 | J | 38 | J | 35 | J | 120 | J | 37 | J | 46 | J | 41 | |
| IRON | mg/Kg | 51,000 | | 35,000 | | 37,000 | | 23,000 | | 24,000 | | 52,000 | | 26,000 | | 35,000 | | 33,000 | |
| LEAD | mg/Kg | 2.6 | | 17 | | 0.97 | | 2.6 | | 2.5 | | 25 | | 7.1 | | 3.1 | | 3.8 | |
| MANGANESE | mg/Kg | 1,300 | | 840 | | 260 | | 560 | | 560 | | 1,500 | | 740 | | 920 | | 930 | |
| MERCURY | mg/Kg | 0.074 | | 0.0044 | J | 0.026 | | 0.0069 | J | 0.011 | J | 0.013 | J | 0.023 | U | 0.022 | | 0.016 | J |
| NICKEL | mg/Kg | 29 | | 7.4 | | 10 | | 9.0 | | 8.2 | | 10 | | 7.1 | | 75 | | 67 | |
| SELENIUM | mg/Kg | 2.1 | | 1.3 | | 1.3 | | 0.52 | J | 0.67 | J | 1.5 | | 0.83 | J | 0.72 | J | 1.2 | U |
| SILVER | mg/Kg | 1.2 | U | 1.1 | U | 1.1 | U | 1.1 | U | 1.2 | U | 1.1 | U | 1.2 | U | 1.1 | U | 1.2 | U |
| THALLIUM | mg/Kg | 1.2 | U | 1.1 | U | 1.1 | UJ | 1.1 | U | 1.2 | U | 1.1 | U | 1.2 | U | 1.1 | U | 1.2 | U |
| TIN | mg/Kg | 6.0 | U | 5.7 | U | 5.6 | U | 5.6 | U | 5.8 | U | 5.0 | J | 5.8 | U | 5.7 | U | 6.1 | U |
| VANADIUM | mg/Kg | 120 | | 82 | | 130 | | 92 | | 87 | | 220 | | 90 | | 71 | | 64 | |
| ZINC | mg/Kg | 69 | R | 58 | R | 47 | R | 58 | R | 51 | R | 77 | R | 110 | R | 49 | R | 51 | |
| **EXPLOSIVES** | | | | | | | | | | | | | | | | | | | |
| HMX | ug/Kg | 500 | U | 420 | J | 500 | U | 500 | U | 500 | U | 350 | J | 500 | U | 500 | U | 500 | U |
| RDX | ug/Kg | 500 | U | 290 | J | 500 | U | 500 | U | 500 | U | 2,800 | | 500 | U | 500 | U | 500 | U |
| 2-AM-DNT | ug/Kg | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U |
| 2,4,6-TNT | ug/Kg | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U |
| NITROGLYCERIN | ug/Kg | 1,200 | U | 1,100 | U | 1,200 | U | 1,100 | U | 1,200 | U | 3,600 | | 1,200 | U | 1,100 | U | 1,200 | U |
| PENTAERYTHRITOL TETRANITRATE | ug/Kg | 1,200 | U | 1,100 | U | 1,200 | U | 1,100 | U | 1,200 | U | 1,100 | U | 1,200 | U | 1,100 | U | 1,200 | U |
| AMMONIUM PERCHLORATE | ug/Kg | 61.4 | U | 45.5 | U | 42.2 | U | 47.7 | U | 49.5 | U | 46.8 | U | 58.4 | U | 57.2 | U | 57.8 | U |
| PICRIC ACID | ug/Kg | 830 | R[b] | 740 | R[b] | 830 | R[b] | 910 | R[b] | 1,000 | R[b] | 830 | R[b] | 950 | R[b] | 870 | R[b] | 740 | R[b] |

## Table 2-1
## Surface Soil Analytical Data Summary
## Live Impact Area - Vieques, Puerto Rico

| PARAMETER | UNITS | LIA015 | | LIA016 | | LIA016D | | LIA017 | | LIA018 | | LIA019 | | LIA020 | | LIA021 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **METALS** | | | | | | | | | | | | | | | | | |
| ALUMINUM | MG/KG | 820 | J | 13,000 | | 14,000 | | 3,400 | | 16,000 | | 5,300 | J | 10,000 | J | 15,000 | |
| ANTIMONY | MG/KG | 2.5 | U | 2.2 | UJ | 2.1 | UJ | 2.3 | U | 2.7 | U | 2.2 | U | 2.4 | U | 0.76 | J |
| ARSENIC | MG/KG | 2.5 | | 20 | | 20 | | 4.8 | | 12 | | 11 | | 6.7 | | 10 | |
| BARIUM | MG/KG | 19 | | 110 | | 150 | | 37 | | 360 | | 39 | | 50 | | 110 | |
| BERYLLIUM | MG/KG | 0.1 | J | 0.14 | J | 0.13 | J | 0.075 | J | 0.37 | J | 0.19 | J | 0.21 | J | 0.35 | J |
| CADMIUM | MG/KG | 0.63 | U | 0.93 | J | 0.98 | J | 0.37 | J | 2.0 | | 1.6 | | 0.60 | U | 2.6 | |
| CHROMIUM | mg/Kg | 7.2 | | 12 | | 13 | | 7.2 | | 17 | | 16 | | 27 | | 19 | |
| COBALT | mg/Kg | 0.38 | J | 12 | | 14 | | 2.9 | | 18 | | 5.2 | | 9.2 | | 18 | |
| COPPER | mg/Kg | 6.5 | | 20 | J | 19 | J | 11 | | 61 | | 38 | | 27 | | 65 | |
| IRON | mg/Kg | 1,400 | | 29,000 | | 31,000 | | 5,200 | | 39,000 | | 14,000 | | 23,000 | | 37,000 | |
| LEAD | mg/Kg | 1.8 | | 0.81 | | 1.1 | | 1.2 | | 10 | | 8.6 | | 31 | | 33 | |
| MANGANESE | mg/Kg | 58 | | 550 | | 780 | | 160 | | 1,400 | | 360 | | 530 | | 830 | |
| MERCURY | mg/Kg | 0.0099 | J | 0.0097 | J | 0.014 | J | 0.013 | J | 0.019 | J | 0.012 | J | 0.017 | J | 0.052 | |
| NICKEL | mg/Kg | 0.92 | J | 7.3 | | 8.3 | | 3.5 | J | 10 | | 7.0 | | 13 | | 11 | |
| SELENIUM | mg/Kg | 1.3 | UJ | 0.70 | J | 0.72 | J | 1.2 | U | 1.3 | U | 1.1 | UJ | 1.2 | UJ | 1.1 | U |
| SILVER | mg/Kg | 1.3 | U | 1.1 | U | 1.1 | U | 1.2 | U | 1.3 | U | 1.1 | U | 1.2 | U | 1.1 | U |
| THALLIUM | mg/Kg | 1.3 | UJ | 1.1 | U | 1.1 | U | 1.2 | U | 1.3 | U | 1.1 | UJ | 1.2 | UJ | 1.1 | U |
| TIN | mg/Kg | 6.3 | U | 5.5 | U | 5.3 | U | 5.8 | U | 6.7 | U | 5.6 | U | 6.0 | U | 5.7 | U |
| VANADIUM | mg/Kg | 5.3 | | 72 | | 75 | | 26 | | 170 | | 41 | | 66 | | 140 | |
| ZINC | mg/Kg | 5.6 | | 36 | R | 43 | R | 14 | | 60 | | 54 | | 52 | | 60 | |
| **EXPLOSIVES** | | | | | | | | | | | | | | | | | |
| HMX | ug/Kg | 500 | U | 500 | U | 500 | U | 500 | U | 500 | U | 500 | U | 500 | U | 500 | U |
| RDX | ug/Kg | 500 | U | 500 | U | 500 | U | 500 | U | 500 | U | 560 | | 500 | U | 500 | U |
| 2-AM-DNT | ug/Kg | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U |
| 2,4,6-TNT | ug/Kg | 250 | U | 1,300 | J | 4,100 | J | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U |
| NITROGLYCERIN | ug/Kg | 1,200 | U | 1,100 | U | 1,100 | U | 1,300 | U | 1,300 | U | 1,600 | | 1,200 | U | 1,100 | U |
| PENTAERYTHRITOL TETRANITRATE | ug/Kg | 1,200 | U | 1,100 | U | 1,100 | U | 1,300 | U | 1,300 | U | 1,100 | U | 1,200 | U | 1,100 | U |
| AMMONIUM PERCHLORATE | ug/Kg | 49.1 | U | 50.1 | U | 50.1 | U | 56.0 | U | 62.1 | U | 52.9 | U | 56.5 | U | 52.9 | U |
| PICRIC ACID | ug/Kg | 870 | R[b] | 1,000 | R[b] | 770 | R[b] | 800 | R[b] | 1,000 | R[b] | 870 | R[b] | 870 | R[b] | 910 | R[b] |

## Table 2-1
## Surface Soil Analytical Data Summary
## Live Impact Area - Vieques, Puerto Rico

| PARAMETER | UNITS | LIA022 | | LIA023 | | LIA023D | | LIA024 | | LIA025 | | LIA026 | | LIA027 | | LIA028 | | LIA029 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **METALS** | | | | | | | | | | | | | | | | | | | |
| ALUMINUM | MG/KG | 22,000 | | 20,000 | | 22,000 | | 25,000 | | 22,000 | | 20,000 | | 10,000 | | 24,000 | | 6,000 | |
| ANTIMONY | MG/KG | 2.2 | U | 0.69 | J | 0.77 | J | 2.4 | U | 0.56 | J | 0.90 | J | 2.3 | UJ | 0.77 | J | 2.1 | UJ |
| ARSENIC | MG/KG | 7.6 | | 9.3 | | 9.6 | | 4.3 | | 4.7 | | 7.3 | | 15 | | 16 | | 4.1 | |
| BARIUM | MG/KG | 73 | | 120 | | 140 | | 55 | | 62 | | 46 | | 45 | | 79 | | 13 | |
| BERYLLIUM | MG/KG | 0.29 | J | 0.37 | J | 0.39 | J | 0.28 | J | 0.27 | J | 0.26 | J | 0.21 | J | 0.2 | J | 0.41 | U |
| CADMIUM | MG/KG | 1.4 | | 1.6 | | 1.5 | | 1.7 | | 2.0 | | 1.4 | | 1.1 | J | 2.0 | J | 0.39 | J |
| CHROMIUM | mg/Kg | 41 | | 45 | | 44 | | 53 | | 43 | | 40 | | 13 | | 32 | | 7.9 | |
| COBALT | mg/Kg | 21 | | 17 | | 25 | | 21 | | 19 | | 16 | | 15 | | 19 | | 4.1 | |
| COPPER | mg/Kg | 54 | | 48 | | 61 | | 73 | | 72 | | 51 | | 31 | J | 59 | J | 11 | J |
| IRON | mg/Kg | 43,000 | | 46,000 | | 45,000 | | 43,000 | | 39,000 | | 33,000 | | 26,000 | | 48,000 | | 8,800 | |
| LEAD | mg/Kg | 5.6 | | 16 | | 15 | | 12 | | 10 | | 6.8 | | 1.6 | | 12 | | 1.9 | |
| MANGANESE | mg/Kg | 1,100 | | 790 | | 1,200 | | 790 | | 830 | | 750 | | 830 | | 1,200 | | 190 | |
| MERCURY | mg/Kg | 0.086 | | 0.009 | J | 0.012 | J | 0.014 | J | 0.021 | J | 0.038 | | 0.0064 | J | 0.022 | J | 0.023 | J |
| NICKEL | mg/Kg | 27 | | 22 | | 31 | | 34 | | 29 | | 24 | | 9.0 | | 21 | | 3.6 | J |
| SELENIUM | mg/Kg | 1.1 | U | 1.0 | U | 1.2 | U | 1.2 | U | 1.1 | U | 1.0 | U | 0.95 | J | 1.3 | | 0.99 | J |
| SILVER | mg/Kg | 1.1 | U | 1.0 | U | 1.2 | U | 1.2 | U | 1.1 | U | 1.0 | U | 1.1 | U | 1.1 | U | 1.0 | U |
| THALLIUM | mg/Kg | 2.2 | U | 1.0 | U | 1.2 | U | 1.2 | U | 1.1 | U | 1.0 | U | 1.1 | U | 1.1 | U | 1.0 | U |
| TIN | mg/Kg | 5.6 | U | 5.2 | U | 5.9 | U | 6.0 | U | 5.5 | U | 5.1 | U | 5.7 | U | 5.0 | J | 5.2 | U |
| VANADIUM | mg/Kg | 130 | | 150 | | 140 | | 130 | | 120 | | 100 | | 130 | | 110 | | 34 | |
| ZINC | mg/Kg | 62 | | 46 | | 49 | | 66 | | 81 | | 53 | R | 34 | R | 53 | R | 13 | R |
| **EXPLOSIVES** | | | | | | | | | | | | | | | | | | | |
| HMX | ug/Kg | 500 | U | 500 | U | 500 | U | 500 | U | 500 | U | 500 | U | 500 | U | 500 | U | 500 | U |
| RDX | ug/Kg | 120 | R | 500 | U | 500 | U | 500 | U | 500 | U | 500 | U | 500 | U | 500 | U | 500 | U |
| 2-AM-DNT | ug/Kg | 620 | J | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U |
| 2,4,6-TNT | ug/Kg | 13,000 | J | 500 | U | 500 | U | 500 | U | 500 | U | 500 | U | 250 | U | 250 | U | 250 | U |
| NITROGLYCERIN | ug/Kg | 1,100 | U | 1,100 | U | 1,200 | U | 1,200 | U | 1,100 | U | 1,100 | U | 1,100 | U | 1,100 | U | 1,100 | U |
| PENTAERYTHRITOL TETRANITRATE | ug/Kg | 1,100 | U | 1,100 | U | 1,200 | U | 1,200 | U | 1,100 | U | 1,100 | U | 1,100 | U | 1,100 | U | 1,100 | U |
| AMMONIUM PERCHLORATE | ug/Kg | 53.1 | U | 53.0 | U | 54.5 | U | 55.7 | U | 51.0 | U | 60.4 | U | 53.9 | U | 48.4 | U | 49.5 | U |
| PICRIC ACID | ug/Kg | 870 | R[b] | 950 | R[b] | 800 | R[b] | 950 | R[b] | 830 | R[b] | 830 | R[b] | 1,000 | R[b] | 910 | R[b] | 1,000 | R[b] |

**Table 2-1**
**Surface Soil Analytical Data Summary**
**Live Impact Area - Vieques, Puerto Rico**

| PARAMETER | UNITS | LIA029D | | LIA030 | | UP-EAST SS-01 | | UP-EAST SS-02 | | UP-EAST SS-03 | | UP-EAST SS-04 | | DOWN-WEST SS-01 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **METALS** | | | | | | | | | | | | | | | |
| ALUMINUM | MG/KG | 6,700 | | 31,000 | | 33,000 | | 19,000 | | 39,000 | | 17,000 | | 2,000 | J |
| ANTIMONY | MG/KG | 2.2 | UJ | 2.3 | UJ | 2.4 | UJ | 0.62 | J | 2.4 | J | 2.3 | UJ | 2.0 | U |
| ARSENIC | MG/KG | 4.8 | | 3.5 | | 36 | | 15 | | 27 | | 25 | | 2.4 | |
| BARIUM | MG/KG | 15 | | 48 | | 55 | | 29 | | 76 | | 42 | | 26 | |
| BERYLLIUM | MG/KG | 0.44 | U | 0.17 | J | 1.0 | | 0.37 | J | 1.1 | | 0.31 | J | 0.11 | J |
| CADMIUM | MG/KG | 0.48 | J | 1.5 | J | 1.1 | J | 0.61 | J | 1.4 | J | 0.73 | J | 0.49 | U |
| CHROMIUM | mg/Kg | 10 | | 24 | | 59 | | 35 | | 79 | | 35 | | 10 | |
| COBALT | mg/Kg | 4.9 | | 24 | | 12 | | 4.9 | | 15 | | 6.4 | | 1.4 | |
| COPPER | mg/Kg | 12 | J | 53 | J | 22 | J | 17 | J | 33 | J | 27 | J | 7.0 | |
| IRON | mg/Kg | 11,000 | | 48,000 | | 39,000 | | 16,000 | | 49,000 | | 23,000 | | 3,700 | |
| LEAD | mg/Kg | 1.6 | | 2.7 | | 16 | | 4.4 | | 13 | | 3.6 | | 2.4 | |
| MANGANESE | mg/Kg | 210 | | 1,100 | | 890 | | 410 | | 910 | | 700 | | 150 | |
| MERCURY | mg/Kg | 0.0074 | J | 0.011 | J | 0.12 | | 0.064 | | 0.045 | | 0.040 | | 0.015 | J |
| NICKEL | mg/Kg | 5.2 | | 17 | | 19 | | 10 | | 23 | | 11 | | 2.2 | J |
| SELENIUM | mg/Kg | 1.1 | U | 1.5 | | 1.6 | J | 1.1 | J | 1.8 | J | 1.4 | J | 0.98 | UJ |
| SILVER | mg/Kg | 1.1 | U | 1.1 | U | 1.2 | U | 1.1 | U | 1.2 | U | 1.1 | U | 0.98 | U |
| THALLIUM | mg/Kg | 1.1 | U | 1.1 | U | 1.2 | U | 1.1 | U | 1.2 | U | 1.1 | U | 0.98 | UJ |
| TIN | mg/Kg | 5.6 | U | 4.6 | J | 6.0 | U | 5.7 | U | 6.0 | U | 5.7 | U | 4.9 | U |
| VANADIUM | mg/Kg | 42 | | 150 | | 69 | | 33 | | 78 | | 55 | | 7.2 | |
| ZINC | mg/Kg | 15 | R | 63 | R | 40 | R | 23 | R | 37 | R | 35 | R | 36 | |
| **EXPLOSIVES** | | | | | | | | | | | | | | | |
| HMX | ug/Kg | 500 | U | 500 | U | 500 | U | 500 | U | 500 | U | 500 | U | 500 | U |
| RDX | ug/Kg | 500 | U | 500 | U | 500 | U | 500 | U | 500 | U | 500 | U | 500 | U |
| 2-AM-DNT | ug/Kg | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U |
| 2,4,6-TNT | ug/Kg | 250 | U | 250 | U | 2,500 | U | 250 | U | 250 | U | 250 | U | 250 | U |
| NITROGLYCERIN | ug/Kg | 1,100 | U | 1,100 | U | 1,200 | U | 1,100 | U | 1,200 | U | 1,100 | U | 1,100 | U |
| PENTAERYTHRITOL TETRANITRATE | ug/Kg | 1,100 | U | 1,100 | U | 1,200 | U | 1,100 | U | 1,200 | U | 1,100 | U | 1,100 | U |
| AMMONIUM PERCHLORATE | ug/Kg | 50.1 | U | 48.3 | U | 123.0 | | 65.6 | U | 51.9 | U | 61.3 | U | 51.1 | U |
| PICRIC ACID | ug/Kg | 910 | R[b] | 910 | R[b] | 910 | R[b] | 1,000 | R[b] | 910 | R[b] | 800 | R[b] | 1,000 | R[b] |

## Table 2-1
## Surface Soil Analytical Data Summary
## Live Impact Area - Vieques, Puerto Rico

| PARAMETER | UNITS | DOWN-WEST SS-01D | | DOWN-WEST SS-02 | | DOWN-WEST SS-03 | | DOWN-WEST SS-03D | |
|---|---|---|---|---|---|---|---|---|---|
| **METALS** | | | | | | | | | |
| ALUMINUM | MG/KG | 2,100 | J | 19,000 | J | 15,000 | J | 16,000 | J |
| ANTIMONY | MG/KG | 2.1 | U | 2.4 | U | 2.8 | U | 2.7 | U |
| ARSENIC | MG/KG | 2.2 | | 6.0 | | 3.5 | | 3.2 | |
| BARIUM | MG/KG | 26 | | 270 | | 220 | | 210 | |
| BERYLLIUM | MG/KG | 0.12 | J | 0.48 | | 0.44 | J | 0.42 | J |
| CADMIUM | MG/KG | 0.53 | U | 0.60 | U | 0.70 | U | 0.67 | U |
| CHROMIUM | mg/Kg | 11 | | 55 | | 40 | | 34 | |
| COBALT | mg/Kg | 1.2 | | 21 | | 21 | | 19 | |
| COPPER | mg/Kg | 7.1 | | 71 | | 52 | | 50 | |
| IRON | mg/Kg | 5,000 | | 51,000 | | 41,000 | | 41,000 | |
| LEAD | mg/Kg | 2.6 | | 4.6 | | 15 | | 13 | |
| MANGANESE | mg/Kg | 140 | | 1,400 | | 1,700 | | 1,600 | |
| MERCURY | mg/Kg | 0.018 | J | 0.021 | J | 0.069 | | 0.048 | |
| NICKEL | mg/Kg | 2.4 | J | 25 | | 14 | | 15 | |
| SELENIUM | mg/Kg | 1.1 | UJ | 1.2 | UJ | 1.4 | UJ | 1.3 | UJ |
| SILVER | mg/Kg | 1.1 | U | 1.2 | U | 1.4 | U | 1.3 | U |
| THALLIUM | mg/Kg | 1.1 | UJ | 1.2 | UJ | 1.4 | UJ | 1.3 | UJ |
| TIN | mg/Kg | 5.3 | U | 6.0 | U | 7.0 | U | 6.7 | U |
| VANADIUM | mg/Kg | 7.3 | | 110 | | 77 | | 74 | |
| ZINC | mg/Kg | 39 | | 120 | | 170 | | 160 | |
| **EXPLOSIVES** | | | | | | | | | |
| HMX | ug/Kg | 500 | U | 500 | U | 500 | U | 500 | U |
| RDX | ug/Kg | 500 | U | 500 | U | 500 | U | 500 | U |
| 2-AM-DNT | ug/Kg | 250 | U | 250 | U | 250 | U | 250 | U |
| 2,4,6-TNT | ug/Kg | 250 | U | 250 | U | 250 | U | 250 | U |
| NITROGLYCERIN | ug/Kg | 1,100 | U | 1,200 | U | 3,600 | | 19,000 | J |
| PENTAERYTHRITOL TETRANITRATE | ug/Kg | 1,100 | U | 1,200 | U | 1,400 | U | 2,700 | UJ |
| AMMONIUM PERCHLORATE | ug/Kg | 53.4 | U | 50.9 | U | 64.2 | U | 64.9 | U |
| PICRIC ACID | ug/Kg | 770 | R[b] | 710 | R[b] | 950 | R[b] | 1,000 | R[b] |

Appendix A

# Sample Photographs

Photograph 1: Upwind-East SS01 collected from the conservation zone located east of the LIA

Photograph 2: View of Upwind-East SS01 looking to the south.



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**Photograph 3:** Upwind-East SS-02 collected from the conservation zone located east of the LIA.

**Photograph 4:** View of Upwind-East SS-02 looking to the south.

**Photograph 5:** Upwind-East SS-03 collected from the conservation zone located east of the LIA.

**Photograph 6:** View of Upwind-East SS-03 looking to the west.

**Photograph 7:** Upwind-East SS-04 collected from the conservation zone located east of the LIA.

**Photograph 8:** View of Upwind-East SS-04 looking to the south.

**Photograph 9:** LIA-SS-01 collected in a low lying grassy area downhill of Target 1.

**Photograph 10:** View of LIA-SS-01 looking to the southeast. Target 1 shown in background.

**Photograph 11:** View of Target 1 looking south from the northwest corner of Target 1.

**Photograph 12:** LIA-SS-02 collected from the center of Target 1.

**Photograph 13:** View of LIA-SS-02 looking to the north.

**Photograph 14:** View of LIA-SS-02 looking to the north.

**Photograph 15:** View of Target 1 looking to the east from the west side of Target 1.

**Photograph 16:** LIA-SS-03 collected in a scrap equipment yard west of Target 1.

**Photograph 17:** View of LIA-SS-03 looking to the west.

**Photograph 18:** LIA-SS-04 collected from the east side of Lagoon 1 and downhill of Target 1.

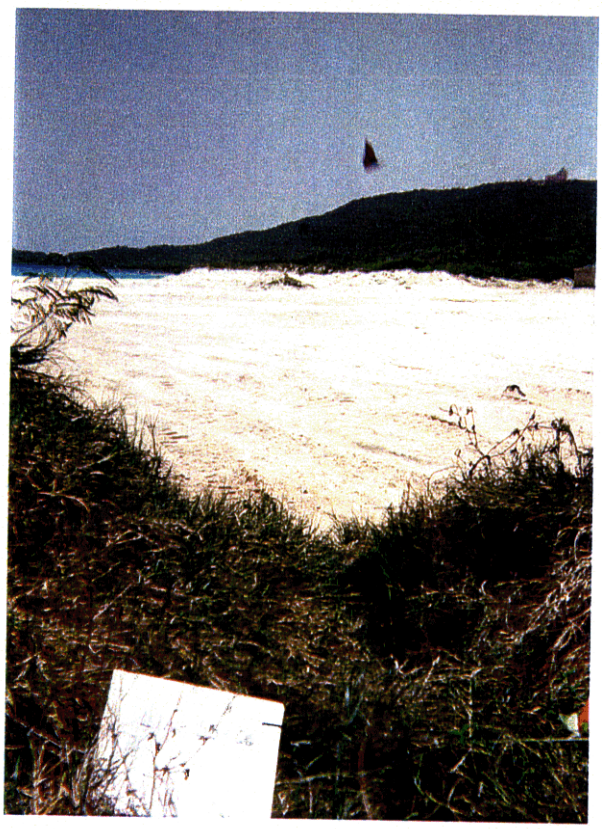
**Photograph 19:** View of LIA-SS-04 looking to the west. Lagoon 1 shown in the background.

**Photograph 20:** LIA-SS-05 collected in a grassy area near the northwest corner of the south Beach Camp.

**Photograph 21:** View of LIA-SS-05 looking to the south.

**Photograph 22:** View of LIA-SS-05 looking to the west.

**Photograph 23:** LIA-SS-06 collected from a grassy area northeast of the south Beach Camp.



**Photograph 24:** View of LIA-SS-06 looking to the southwest.

**Photograph 25:** View of LIA-SS-06 looking to the northeast.

**Photograph 26:** LIA-SS-07 collected from a low lying area downhill of SAM west.

**Photograph 27:** View of LIA-SS-07 looking to the north towards SAM West.

**Photograph 28:** LIA-SS-08 collected from a low lying drainage pathway downhill from SAM West.

**Photograph 29:** View of LIA-SS-08 looking to the north.

**Photograph 30:** LIA-SS-09 collected in a low lying grassy area downhill of Target 5.

**Photograph 31:** View of LIA-SS-09 looking to the west at Target 5.

**Photograph 32:** LIA-SS-10 collected on the west edge of the Ammo Dump.

**Photograph 33:** View of LIA-SS-10 looking to the west at the Ammo Dump.

**Photograph 34:** Looking to the northeast from the Ammo Dump.

**Photograph 35:** LIA-SS-11 & LIA-SS-11D collected in a low lying grassy area down hill and east of the Ammo Dump.

**Photograph 36:** View of LIA-SS-11 & LIA-SS-11D looking to the east.

**Photograph 37:** LIA-SS-12 collected from Target 4 (Tank).

**Photograph 38:** View of LIA-SS-12 looking to the southwest.

**Photograph 39:** LIA-SS-13 & LIA-SS-13D collected from a low lying area downhill from the Fuel Farm.

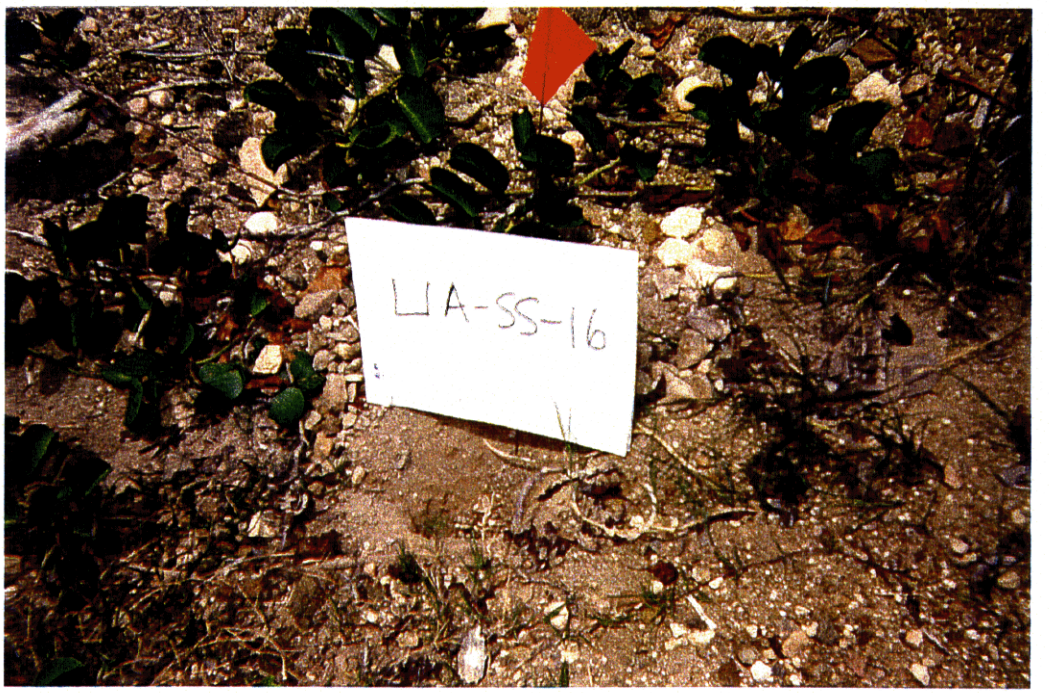
**Photograph 40:** View of LIA-SS-13 & LIA-SS-13D looking south from the Fuel Farm.

**Photograph 41:** LIA-SS-14 & LIA-SS-14D collected on the west side of Lagoon 2 and downhill of SAM West.

**Photograph 42:** View of LIA-SS-14 & LIA-SS-14D looking to the east. Lagoon 2 shown in background.

**Photograph 43:** LIA-SS-15 collected from a low lying area near the north Beach Camp.

**Photograph 44:** View of LIA-SS-15 looking to the north.




**Photograph 45:** LIA-SS-16 collected from a low lying drainage area along the southern edge of the LIA.

**Photograph 46:** View of LIA-SS-16 looking to the south.

**Photograph 47:** LIA-SS-17 collected in a stormwater drainage flow path downhill and west of the North Convoy.

**Photograph 48:** View of LIA-SS-17 looking to the northeast.

**Photograph 49:** LIA-SS-18 collected from a grassy area downhill of the North Runway Revetment.

**Photograph 50:** View of LIA-SS-18 looking to the southeast. North Runway Revetment shown in background.

**Photograph 51:** LIA-SS-19 collected from the north side of Lagoon 3.

**Photograph 52:** View of LIA-SS-19 looking to the south.

**Photograph 53:** LIA-SS-20 collected from a low lying area near the Beach Camp/School.

**Photograph 54:** View of LIA-SS-20 looking to the north.

**Photograph 55:** View of LIA-SS-20 looking to the south.

**Photograph 56:** LIA-SS-21 collected from the north Runway center.

**Photograph 57:** View of LIA-SS-21 looking to the east.

**Photograph 58:** View of LIA-SS-21 looking to the west.

**Photograph 59:** LIA-SS-22 collected from the South Runway Revetment downhill of the Runway.

**Photograph 60:** View of LIA-SS-22 looking southwest toward the Runway.

**Photograph 61:** LIA-SS-23 & LIA-SS-23D collected from a low lying area downhill from the South Runway Revetment.

**Photograph 62:** View of LIA-SS-23 & LIA-SS-23D looking to the southeast. South Runway Revetment shown in background.

**Photograph 63:** LIA-SS-24 collected from a low lying area at the northwest corner of the runway and adjacent to the south side of Lagoon 3.

**Photograph 64:** View of LIA-SS-24 looking to the northeast. Runway shown in background.

**Photograph 65:** View of LIA-SS-24 looking to the west. Lagoon 3 shown in background.

**Photograph 66:** LIA-SS-25 collected from a grassy area located on the northwest end of the Runway.

**Photograph 67:** View of LIA-SS-25 looking to the northwest. Runway shown in background.

**Photograph 68:** LIA-SS-26 collected in a low lying grassy area on the southwest corner of the Runway.

**Photograph 69:** View of LIA-SS-26 looking to the northeast. Runway shown in background.

**Photograph 70:** LIA-SS-27 collected from a stormwater drainage path from the Fuel Farm.

**Photograph 71:** View of LIA-SS-27 looking southeast toward the Fuel Farm.

**Photograph 72:** LIA-SS-28 collected from a low lying grassy area downhill (south side) of Target 7.

**Photograph 73:** View of LIA-SS-28 looking to the south across Target 7.

**Photograph 74:** View of LIA-SS-28 looking to the southwest at Target 7.

**Photograph 75:** LIA-SS-29 & LIA-SS-29D collected from a low lying drainage pathway along the south central edge of the LIA.

**Photograph 76:** View of LIA-SS-29 & LIA-SS-29D looking to the south.

**Photograph 77:** LIA-SS-30 collected from Target 6.

**Photograph 78:** Looking to the north from LIA-SS-30.

**Photograph 78:** Looking to the west from LIA-SS-30.

**Photograph 80:** Downwind SS-01 & SS-01D collected from a low lying area at the conservation zone located northwest of the LIA.

**Photograph 81:** View of Downwind SS-01 & SS-01D looking to the north.

**Photograph 82:** Downwind SS-02 collected adjacent to the cistern at the conservation zone located northwest of the LIA.

**Photograph 83:** View of Downwind SS-02 looking to the north at the cistern.

**Photograph 84:** Downwind SS-03 collected at the LIA/northwest conservation zone boundary

**Photograph 85:** View of Downwind SS-03 looking to the north.

APPENDIX B

# Soil Logs

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | Downwind-SS-02 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | Sandy clay, reddish brown, very fine to fine grained, gravel intermixed. | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | Downwind-SS-03 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | Silty sand, very fine to fine grained, some rocks and gravel intermixed. | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | LIA-SS-01 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | silty sand, light brown, very fine to medium grained | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | LIA-SS-02 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | clayey sand, reddish brown, rocky | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | LIA-SS-03 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | clayey sand, reddish brown, approx. 40% grave | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | Upwind East SS-04 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | Clayey sand, red, very fine, dry | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | LIA-SS-05 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | Sand, white to light brown, fine to medium grained, moist, no gravel | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | LIA-SS-06 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | Sand, white to light brown, fine to medium grained, moist, no gravel | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | LIA-SS-07 SHEET 1 OF 1 |

CH2M HILL

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | Silty sand, brown, very fine to fine, no gravel | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | LIA-SS-08 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | Sandy clay, reddish brown, <15% small gravel | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | LIA-SS-09 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | Clayey sand with gravel, reddish brown | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | LIA-SS-10 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | Clayey sand, reddish brown, small to medium gravel | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | LIA-SS-11 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | Silty sand, very fine to fine, light brown, small to medium gravel intermixed. | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | LIA-SS-12 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | Clayey sand, brown, with gravel and large rc | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | LIA-SS-13 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | Silty sand, greyish brown, very gfine to fine, < 15% small gravel. | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | LIA-SS-14 & 14D SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | Silty sand, brown, very fine to fine, no gravel | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | LIA-SS-15 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | sand, light brown, fine | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | LIA-SS-16 & 16D SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | Silty sand and gravel, approx. 40-50% gravel up to 1/4 " | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | LIA-SS-17 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | Clayey sand, yellowish brown, very fine to medium grained, some small gravel | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | LIA-SS-18 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | Clayey sand, with 10% limerock intermixed. | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | LIA-SS-19 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | Silty sand, tan, very fine to fine grained | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | LIA-SS-20 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | Silty sand, brown, some small gravel | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | LIA-SS-21 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | Clayey sand, light brown, small to medium gravel intermixed. | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | LIA-SS-22 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | sandy clay, reddish brown, approx. 50% rocks and gravel | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | LIA-SS-23 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | Sandy clay, reddish brown, small gravel intermixed, moist | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | LIA-SS-24 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | Sandy clay, reddish brown | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | LIA-SS-25 SHEET 1 OF 1 |

CH2M HILL

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | Sandy clay, brown, small to medium gravel | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | LIA-SS-26 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | Sandy clay, reddish brown, some small gravel, moist. | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | LIA-SS-27 SHEET 1 OF 1 |

CH2M HILL ©

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainlessss Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION SOIL N: NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | Clayey sand, yellowish brown, very fine to medium grained, some small gravel | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | LIA-SS-28 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | Sand, light brown to brown, fine to medium grained, dry | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | LIA-SS-29 & 29D SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT: Live Impact Area Soil Sampling LOCATION: Vieques, PR

ELEVATION: DRILLING CONTRACTOR: NA

DRILLING METHOD AND EQUIPMENT USED: Stainless Steel Spoon

WATER LEVELS: START: 06/21/2000 END: ## LOGGER: K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | Sand, light brown to brown, fine to medium grained, dry | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | LIA-SS-30 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | Clayey sand with gravel, reddish brown | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | LIA-SS-31 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | Clayey sand with gravel, reddish brown | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

| PROJECT NUMBER | BORING NUMBER |
|---|---|
| 159720 | Downwind-SS-01 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Live Impact Area Soil Sampling LOCATION : Vieques, PR

ELEVATION : DRILLING CONTRACTOR : NA

DRILLING METHOD AND EQUIPMENT USED : Stainless Steel Spoon

WATER LEVELS : START : 06/21/2000 END : ## LOGGER : K. Coats

| DEPTH BELOW SURFACE (FT) | INTERVAL (FT) | RECOVERY (IN) | #/TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N) | CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. |
|---|---|---|---|---|---|---|
| 0 | 6" | NA | NA | NA | Sand, tan, fine to medium grained, quartz. | |
| 5 | | | | | | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

APPENDIX C

# Chain-of-Custody Forms

Generated on: 06/21/2000 1:37:48 PM

# Chain of Custody Form

| | | | | | |
|---|---|---|---|---|---|
| COC Number: | LIA | Project: | Camp Garcia Live Impact Area | Kit Request ID: | |
| Project #: | 139322.PP.WP | Laboratory Coordinator: | Ellen Patterson / USA 954.426.6112 x233 | Lab: | SAVANNAH LABS, GEORGIA |

| [illegible] | [illegible] | Date & Time Collected | [illegible] | Number of Containers | Analysis Requested | Comments |
|---|---|---|---|---|---|---|
| LIA009 | LIA-SS-09 | 6/20/00 12:55 | SS | 2 | EXP_S, MET_S | |
| LIA010 | LIA-SS-10 | 6/20/00 14:35 | SS | 2 | EXP_S, MET_S | |
| LIA011 | LIA-SS-11 | 6/20/00 14:10 | SS | 2 | EXP_S, MET_S | |
| LIA012 | LIA-SS-12 | 6/20/00 12:30 | SS | 2 | EXP_S, MET_S | |
| LIA013 | LIA-SS-13 | 6/20/00 15:20 | SS | 9 | EXP_S, MET_S, BULKDEN_S, GRAIN_S, MOISTURE_S | Use Extra Samples for MS/MSD. |
| LIA016 | LIA-SS-16 | 6/20/00 11:05 | SS | 2 | EXP_S, MET_S | |
| LIA027 | LIA-SS-27 | 6/20/00 15:05 | SS | 3 | EXP_S, MET_S, [redacted] | SEE COC FOR 06-22-00 |
| LIA028 | LIA-SS-28 | 6/20/00 10:40 | SS | 2 | EXP_S, MET_S | |
| LIA029 | LIA-SS-29 | 6/20/00 10:20 | SS | 2 | EXP_S, MET_S | |
| LIA030 | LIA-SS-30 | 6/20/00 11:30 | SS | 2 | EXP_S, MET_S | |
| UP_EAST-SS-01 | UP_EAST-SS-01 | 6/20/00 09:00 | SS | 2 | EXP_S, MET_S | |
| UP_EAST-SS-02 | UP_EAST-SS-02 | 6/20/00 08:45 | SS | 2 | EXP_S, MET_S | |
| UP_EAST-SS-03 | UP_EAST-SS-03 | 6/20/00 09:20 | SS | 2 | EXP_S, MET_S | |
| UP_EAST-SS-04 | UP_EAST-SS-04 | 6/20/00 09:36 | SS | 2 | EXP_S, MET_S | |
| LIA011D | LIA-SS-11D | 6/20/00 14:10 | SS | 2 | EXP_S, MET_S | |
| LIA016D | LIA-SS-16D | 6/20/00 11:05 | SS | 2 | EXP_W, MET_W | |
| LIA029D | LIA-SS-29D | 6/20/00 10:20 | SS | 2 | EXP_W, MET_W | |

| | | | | | |
|---|---|---|---|---|---|
| Sampled By: | Date / Time: 06-27-00 1700 | | Custody Seal: Y / N | Relinquished By: | Date / Time: 06-21-00 1700 |
| Shipped Via: UPS FedEx Hand Other (please specify): | | | | | |
| Received By: | Date / Time: | Cooler Temp: | Custody Seal: Y / N | Relinquished By: | Date / Time: |
| Received By: | Date / Time: | Cooler Temp: | Custody Seal: Y / N | Relinquished By: | Date / Time: |

Remarks:

2 COOLERS / FEDEX 8202 1433 8188

CH2M HILL

# Chain of Custody Form

Generated on: 06/21/2000 1:47:19 PM

COC Number: LIA | Project: Camp Garcia Live Impact Area | Kit Request ID:

Project #: 139322.PP.WP | Laboratory Coordinator: Ellen Patterson / USA 954.426.6112 x233 | Lab: SAVANNAH LABS, GEORGIA

| [illegible] | [illegible] | Date / Time Collected | [illegible] | Number of Containers | Analysis Requested | Comments |
|---|---|---|---|---|---|---|
| LIA007 | LIA-SS-07 | 6/21/00 11:40 | SS | 2 | EXP_S, MET_S | |
| LIA008 | LIA-SS-08 | 6/21/00 11:20 | SS | 2 | EXP_S, MET_S | |
| LIA014 | LIA-SS-14 | 6/21/00 10:55 | SS | 2 | EXP_S, MET_S | |
| LIA014D | LIA-SS-14D | 6/21/00 10:55 | SS | 2 | EXP_S, MET_S | Field Duplicate |
| LIA017 | LIA-SS-17 | 6/21/00 08:00 | SS | 3 | EXP_S, MET_S, BULKDEN_S, GRAIN_S, MOISTURE_S | |
| LIA018 | LIA-SS-18 | 6/21/00 08:30 | SS | 3 | EXP_S, MET_S, BULKDEN_S, GRAIN_S, MOISTURE_S | |
| LIA021 | LIA-SS-21 | 6/21/00 08:40 | SS | 2 | EXP_S, MET_S | |
| LIA022 | LIA-SS-22 | 6/21/00 09:05 | SS | 3 | EXP_S, MET_S, BULKDEN_S, GRAIN_S, MOISTURE_S | |
| LIA023 | LIA-SS-23 | 6/21/00 10:10 | SS | 2 | EXP_S, MET_S | |
| LIA023D | LIA-SS-23D | 6/21/00 10:10 | SS | 2 | EXP_S, MET_S | Field Duplicate |
| LIA024 | LIA-SS-24 | 6/21/00 09:40 | SS | 2 | EXP_S, MET_S | |
| LIA025 | LIA-SS-25 | 6/21/00 09:20 | SS | 2 | EXP_S, MET_S | |
| LIA026 | LIA-SS-26 | 6/21/00 09:55 | SS | 2 | EXP_S, MET_S | |

| | | | | | |
|---|---|---|---|---|---|
| Sampled By: | Date / Time: 06.21.00 1700 | | Custody Seal: Y / N | Relinquished By: | Date / Time 06-21-00 1700 |
| Shipped Via: UPS FedEx Hand Other (please specify): | | | | | |
| Received By: | Date / Time: | Cooler Temp: | Custody Seal: Y / N | Relinquished By: | Date / Time: |
| Received By: | Date / Time: | Cooler Temp: | Custody Seal: Y / N | Relinquished By: | Date / Time: |

Remarks:

2 COOLERS / FEDEX 8202 1433 8188

# Camp Garcia LIA

LIVE IMPACT AREA SAMPLING

CH2M HILL

Chain of Custody Form

Generated on: 06/22/2000 2:57:11 PM

COC Number: LIA | Project: Camp Garcia Live Impact Area | Kit Request ID:

Project #: 139322.PP.WP | Laboratory Coordinator: Ellen Patterson / USA 954.426.6112 x233 | Lab: SAVANNAH LABS, GEORGIA

| Sample ID | Station ID | Date & Time Collected | Matrix | Number of Containers | Analysis Requested | Comments |
|---|---|---|---|---|---|---|
| LIA001 | LIA-SS-01 | 6/22/00 10:20 | SS | 2 | EXP_S, MET_S | |
| LIA002 | LIA-SS-02 | 6/22/00 11:00 | SS | 2 | EXP_S, MET_S | |
| LIA003 | LIA-SS-03 | 6/22/00 11:20 | SS | 3 | EXP_S, MET_S, BULKDEN_S, GRAIN_S, MOISTURE_S | |
| LIA004 | LIA-SS-04 | 6/21/00 13:45 | SS | 2 | EXP_S, MET_S | |
| LIA005 | LIA-SS-05 | 6/21/00 13:30 | SS | 6 | EXP_S, MET_S | Use Extra Samples for MS/MSD. |
| LIA006 | LIA-SS-06 | 6/21/00 13:00 | SS | 2 | EXP_S, MET_S | |
| * LIA012 | LIA-SS-12 | 6/20/00 12:30 | SS | 1 ~~7~~ | [redacted], BULKDEN_S, GRAIN_S, MOISTURE_S | |
| LIA015 | LIA-SS-15 | 6/21/00 14:15 | SS | 2 | EXP_S, MET_S | |
| LIA019 | LIA-SS-19 | 6/22/00 11:45 | SS | 2 | EXP_S, MET_S | |
| LIA020 | LIA-SS-20 | 6/21/00 14:00 | SS | 2 | EXP_S, MET_S | |
| * LIA027 | LIA-SS-27 | 6/20/00 15:05 | SS | 1 ~~7~~ | [redacted] BULKDEN_S, GRAIN_S, MOISTURE_S | |
| OWN_WEST-SS-01 | OWN_WEST-SS-01 | 6/22/00 12:40 | SS | 2 | EXP_S, MET_S | |
| OWN_WEST-SS-02 | OWN_WEST-SS-02 | 6/22/00 12:50 | SS | 2 | EXP_S, MET_S | |
| OWN_WEST-SS-03 | OWN_WEST-SS-03 | 6/22/00 13:05 | SS | 2 | EXP_S, MET_S | |
| OWNWEST-SS-03D | OWNWEST-SS-03D | 6/22/00 13:05 | SS | 2 | EXP_S, MET_S | |
| LIA001D | LIA-SS-01D | 6/22/00 10:20 | SS | 2 | EXP_S, MET_S | Field Duplicate |
| OWNWEST-SS-01D | OWNWEST-SS-01D | 6/22/00 12:40 | SS | 2 | EXP_S, MET_S | Field Duplicate |

* NOTE: GEOTECH SAMPLES WERE NOT INCLUDED IN LAST SHIPMENT. PLEASE CROSSOUT GEOTECH FOR SAMPLES SHIPPED

| | | | | |
|---|---|---|---|---|
| Sampled By: [signature] | Date / Time: 06-22-00 1700 | Custody Seal: Y / N | Relinquished By: [signature] | Date / Time: 06-21-00 |
| Shipped Via: UPS FedEx Hand Other (please specify): | | | | 06-22-00 1700 |
| Received By: Kevin Conner | Date / Time: 6/27 | Cooler Temp: 1.3 | Custody Seal: Y / N | Relinquished By: Date / Time: |
| Received By: FEDEX | Date / Time: | Cooler Temp: | Custody Seal: Y / N | Relinquished By: Date / Time: |

Remarks:

1 COOLER / FEDEX 8202 1433 8247

rptChainOfCustody - updated 981112



SO-04125

Generated on: 06/21/2000 1:36:07 PM

# Chain of Custody Form

| | | | | | |
|---|---|---|---|---|---|
| COC Number: | LIA | Project: | Camp Garcia Live Impact Area | Kit Request ID: | |
| PIC [illegible]: | 139322.PP.WP | Laboratory Coordinator: | Ellen Patterson / USA 954.426.6112 x233 | Lab: | GP LABS |

| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
|---|---|---|---|---|---|---|
| LIA009 | LIA-SS-09 | 6/20/00 12:55 | SS | 1 | PER_S, PICRIC_S | |
| LIA010 | LIA-SS-10 | 6/20/00 14:35 | SS | 1 | PER_S, PICRIC_S | |
| LIA011 | LIA-SS-11 | 6/20/00 14:10 | SS | 1 | PER_S, PICRIC_S | |
| LIA012 | LIA-SS-12 | 6/20/00 12:30 | SS | 1 | PER_S, PICRIC_S | |
| LIA013 | LIA-SS-13 | 6/20/00 16:20 | SS | 3 | PER_S, PICRIC_S | Use Extra Samples for MS/MSD. |
| LIA016 | LIA-SS-16 | 6/20/00 11:05 | SS | 1 | PER_S, PICRIC_S | |
| LIA027 | LIA-SS-27 | 6/20/00 15:05 | SS | 1 | PER_S, PICRIC_S | |
| LIA028 | LIA-SS-28 | 6/20/00 10:40 | SS | 1 | PER_S, PICRIC_S | |
| LIA029 | LIA-SS-29 | 6/20/00 10:20 | SS | 1 | PER_S, PICRIC_S | |
| LIA030 | LIA-SS-30 | 6/20/00 11:30 | SS | 1 | PER_S, PICRIC_S | |
| UP_EAST-SS-01 | UP_EAST-SS-01 | 6/20/00 08:00 | SS | 1 | PER_S, PICRIC_S | |
| UP_EAST-SS-02 | UP_EAST-SS-02 | 6/20/00 08:45 | SS | 1 | PER_S, PICRIC_S | |
| UP_EAST-SS-03 | UP_EAST-SS-03 | 6/20/00 09:20 | SS | 1 | PER_S, PICRIC_S | |
| UP_EAST-SS-04 | UP_EAST-SS-04 | 6/20/00 09:35 | SS | 1 | PER_S, PICRIC_S | |
| LIA011D | LIA-SS-11D | 6/20/00 14:10 | SS | 1 | PER_S, PICRIC_S | |
| LIA016D | LIA-SS-16D | 6/20/00 11:05 | SS | 2 | PER_W, PICRIC_W | |
| LIA029D | LIA-SS-29D | 6/20/00 10:20 | SS | 2 | PER_W, PICRIC_W | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Sampled By: | Date / Time: 06·21·00 1700 | | Custody Seal: Y / N | Relinquished By: | Date / Time: 06-21-00 1700 |
| Shipped Via: UPS FedEx Hand Other (please specify): | | | | | |
| Received By: | Date / Time: | Cooler Temp: | Custody Seal: Y / N | Relinquished By: | Date / Time: |
| Received By: | Date / Time: | Cooler Temp: | Custody Seal: Y / N | Relinquished By: | Date / Time: |

Remarks:

1- COOLER / 8202 1433 8258 FEDEX

LIVE IMPACT AREA SAMPLING

# Camp Garcia LIA

CH2M HILL

## Chain of Custody Form

Generated on: 06/21/2000 1:47:17 PM

COC Number: LIA | Project: Camp Garcia Live Impact Area | Kit Request ID:

Project #: 139322.PP.WP | Laboratory Coordinator: Ellen Patterson / USA 954.426.6112 x233 | Lab: GP LABS

| [illegible] | [illegible] | Date & [illegible] | [illegible] | Number of [illegible] | [illegible] | Comments |
|---|---|---|---|---|---|---|
| LIA007 | LIA-SS-07 | 6/21/00 11:30 | SS | 1 | PER_S, PICRIC_S | |
| LIA008 | LIA-SS-08 | 6/21/00 11:20 | SS | 1 | PER_S, PICRIC_S | |
| LIA014 | LIA-SS-14 | 6/21/00 10:55 | SS | 1 | PER_S, PICRIC_S | |
| LIA014D | LIA-SS-14D | 6/21/00 10:55 | SS | 1 | PER_S, PICRIC_S | Field Duplicate |
| LIA017 | LIA-SS-17 | 6/21/00 08:00 | SS | 1 | PER_S, PICRIC_S | |
| LIA018 | LIA-SS-18 | 6/21/00 08:30 | SS | 1 | PER_S, PICRIC_S | |
| LIA021 | LIA-SS-21 | 6/21/00 08:40 | SS | 1 | PER_S, PICRIC_S | |
| LIA022 | LIA-SS-22 | 6/21/00 09:05 | SS | 1 | PER_S, PICRIC_S | |
| LIA023 | LIA-SS-23 | 6/21/00 10:10 | SS | 1 | PER_S, PICRIC_S | |
| LIA023D | LIA-SS-23D | 6/21/00 10:10 | SS | 1 | PER_S, PICRIC_S | Field Duplicate |
| LIA024 | LIA-SS-24 | 6/21/00 09:40 | SS | 1 | PER_S, PICRIC_S | |
| LIA025 | LIA-SS-25 | 6/21/00 09:20 | SS | 1 | PER_S, PICRIC_S | |
| LIA026 | LIA-SS-26 | 6/21/00 09:55 | SS | 1 | PER_S, PICRIC_S | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Sampled By: | Date / Time: 06-21-00 1700 | | Custody Seal: Y / N | Relinquished By: | Date / Time: 06-21-00 1702 |
| Shipped Via: UPS FedEx Hand Other (please specify): | | | | | |
| Received By: | Date / Time: | Cooler Temp: | Custody Seal: Y / N | Relinquished By: | Date / Time: |
| Received By: | Date / Time: | Cooler Temp: | Custody Seal: Y / N | Relinquished By: | Date / Time: |

Remarks: 1 COOLER / 8202 1433 8858 FEDEX



rptChainOfCustody - updated 981112

# Camp Garcia LIA

LIVE IMPACT AREA SAMPLING

**CH2M HILL**
**Chain of Custody Form**

Generated on: 06/22/2000 2:57:08 PM

| | | | | | |
|---|---|---|---|---|---|
| COC Number: | LIA | Project: | Camp Garcia Live Impact Area | Kit Request ID: | |
| Project #: | 139322.PP.WP | Laboratory Coordinator: | Ellen Patterson / USA 954.426.6112 x233 | Lab: | GP LABS |

| Sample ID | Station ID | Date & Time Collected | Matrix | Number of Containers | Analysis Requested | Comments |
|---|---|---|---|---|---|---|
| LIA001 | LIA-SS-01 | 6/22/00 10:20 | SS | 1 | PER_S, PICRIC_S | |
| LIA002 | LIA-SS-02 | 6/22/00 11:00 | SS | 1 | PER_S, PICRIC_S | |
| LIA003 | LIA-SS-03 | 6/22/00 11:20 | SS | 1 | PER_S, PICRIC_S | |
| LIA004 | LIA-SS-04 | 6/21/00 13:45 | SS | 1 | PER_S, PICRIC_S | |
| LIA005 | LIA-SS-05 | 6/21/00 13:30 | SS | 3 | PER_S, PICRIC_S | Use Extra Samples for MS/MSD. |
| LIA006 | LIA-SS-06 | 6/21/00 13:00 | SS | 1 | PER_S, PICRIC_S | |
| [redacted] | | | | | | |
| LIA015 | LIA-SS-15 | 6/21/00 14:15 | SS | 1 | PER_S, PICRIC_S | |
| LIA019 | LIA-SS-19 | 6/22/00 11:45 | SS | 1 | PER_S, PICRIC_S | |
| LIA020 | LIA-SS-20 | 6/21/00 14:00 | SS | 1 | PER_S, PICRIC_S | |
| [redacted] | | | | | | |
| DOWN_WEST-SS-01 | DOWN_WEST-SS-01 | 6/22/00 12:40 | SS | 1 | PER_S, PICRIC_S | |
| DOWN_WEST-SS-02 | DOWN_WEST-SS-02 | 6/22/00 12:50 | SS | 1 | PER_S, PICRIC_S | |
| DOWN_WEST-SS-03 | DOWN_WEST-SS-03 | 6/22/00 13:05 | SS | 1 | PER_S, PICRIC_S | |
| DOWNWEST-SS-03D | DOWNWEST-SS-03D | 6/22/00 13:05 | SS | 1 | PER_S, PICRIC_S | |
| LIA001D | LIA-SS-01D | 6/22/00 10:20 | SS | 1 | PER_S, PICRIC_S | Field Duplicate |
| DOWNWEST-SS-01D | DOWNWEST-SS-01D | 6/22/00 12:40 | SS | 1 | PER_S, PICRIC_S | Field Duplicate |

| | | | | | |
|---|---|---|---|---|---|
| Sampled By: | Date / Time: 06·22·00 1700 | | Custody Seal: Y / N | Relinquished By: | Date / Time: 06·22·00 1700 |
| Shipped Via: UPS FedEx Hand Other (please specify): | | | | | |
| Received By: | Date / Time: | Cooler Temp: | Custody Seal: Y / N | Relinquished By: | Date / Time: |
| Received By: Clinton | Date / Time: [illegible] | Cooler Temp: | Custody Seal: Y / N | Relinquished By: | Date / Time: |

Remarks:

1 - COOLERS / FEDEX 8202 1433 8199

APPENDIX D

# Analytical Data Package

HEARTLAND ENVIRONMENTAL SERVICES, INC.

# Data Validation Report

CH2M HILL
Vieques
SDG #: VIEQ001

**HEARTLAND**
**ENVIRONMENTAL SERVICES, INC.**

# Data Validation Report

| | |
|---|---|
| SDG#: | VIEQ001 |
| Date: | August 23, 2000 |
| Client Name: | CH2M Hill |
| Project/Site Name: | Vieques |
| Date Sampled: | June 20 - 21, 2000 |
| Number of Samples: | 20 Non-Aqueous Sample(s) with 0 MS/MSD(s) |
| Laboratory: | STL - Savannah Laboratories |
| Validation Guidance: | National Functional Guidelines for Organic and Inorganic Data, February, 1994, Region II Modifications |
| QA/QC Level: | DQO Level IV |
| Method(s) Utilized: | SW846 Third Edition |
| Analytical Fractions: | Explosives, Nitroglycerin, PETN and Metals |

Analytical data in this report were screened to determine usability of results and also to determine contractual compliance relative to these requirements and deliverables. This screening assumes analytical results are correct as reported and merely provides an interpretation of the reported quality control results. A minimum of 10% of all laboratory calculations have been verified as part of this validation. All instrument output, i.e. spectra, chromatograms, etc., for each sample have been carefully reviewed. The end-user is urged to review the Specific Findings and associated Data Qualifications presented in this report. Annotated Form 1s or spreadsheets for all samples reviewed are included after the Data Assessment Narratives. Form 1s for MS/MSD samples or spreadsheets are not annotated.

The release of this Data Validation Report is authorized by the following signature:

Craig G. Simpson
Eugene M. Watson, Vice President

8-23-00
Date

4127 Plaza 94 South • St. Charles, MO 63304
(636) 936-1332 • Fax (636) 936-1335

SDG# VIEQ001

Samples and Fractions Reviewed

Sample Identifications Analytical Fractions

| CH2M HILL ID | MATRIX | EXP | | NITR | | PETN | | MET | |
|---|---|---|---|---|---|---|---|---|---|
| LIA009 | SOIL | | X | | X | | X | | X |
| LIA010 | SOIL | | X | | X | | X | | X |
| LIA011 | SOIL | | X | | X | | X | | X |
| LIA012 | SOIL | | X | | X | | X | | X |
| LIA013 | SOIL | | X | | X | | X | | X |
| LIA016 | SOIL | | X | | X | | X | | X |
| LIA027 | SOIL | | X | | X | | X | | X |
| LIA028 | SOIL | | X | | X | | X | | X |
| LIA029 | SOIL | | X | | X | | X | | X |
| LIA030 | SOIL | | X | | X | | X | | X |
| UP-EAST-SS-01 | SOIL | | X | | X | | X | | X |
| UP-EAST-SS-02 | SOIL | | X | | X | | X | | X |
| UP-EAST-SS-03 | SOIL | | X | | X | | X | | X |
| UP-EAST-SS-04 | SOIL | | X | | X | | X | | X |
| LIA011D | SOIL | | X | | X | | X | | X |
| LIA016D | SOIL | | X | | X | | X | | X |
| LIA029D | SOIL | | X | | X | | X | | X |
| LIA007 | SOIL | | X | | X | | X | | X |
| LIA008 | SOIL | | X | | X | | X | | X |
| LIA014 | SOIL | | X | | X | | X | | X |
| Total Billable Samples (Water/Soil) | | 0 | 20 | 0 | 20 | 0 | 20 | 0 | 20 |

EXP= Explosives
NITR= Nitroglycerin
PETN= Pentaerythritol Tetranitrate
MET= Metals

# DATA ASSESSMENT NARRATIVES

# DATA ASSESSMENT NARRATIVE

# EXPLOSIVES

## General

The organic findings offered in this screening report assumes that all analytical results are correct as reported and is based upon the examination of the reported holding times, blank analysis results, surrogate and matrix spike recoveries, HPLC performance, and calibration results. This report was prepared in compliance relative to the analytical and deliverable requirements specified in the SW-846 Method 8330; Region II Data Validation Guidelines, Revision 1.3, September, 1994; and DQO Level IV requirements. All comments made within this report should be considered when examining the analytical results. Please refer the specific findings found in each category to the Summary of Data Qualifications table.

## SDG# VIEQ001

A validation was performed on the Explosives data from SDG VIEQ001. The data was evaluated based on the following parameters.

| | | |
|---|---|---|
| * | • | Data Completeness |
| * | • | Holding Times |
| * | • | HPLC Performance |
| * | • | Calibrations |
| * | • | Blanks |
| * | • | Surrogate Recoveries |
| * | • | Matrix Spike/Matrix Spike Duplicates |
| | • | Field Duplicates |
| * | • | Compound Identification |
| | • | Compound Quantitation |

* - All criteria were met for this parameter.

**Field Duplicates**

The field duplicate pair of samples LIA016 and LIA016D exhibited a high RPD for one (1) compound and required qualifications. For the following samples and compound, the positive results are qualified as estimated, J FD.

| | |
|---|---|
| LIA016 | 2,4,6-TNT |
| LIA016D | |

**Compound Quantitation**

All positive results exhibiting column quantitation %Ds greater than 25% but ≤ 90% are qualified as estimated, J 2C.

**System Performance and Overall Assessment**

The data required qualifications.

# GLOSSARY OF DATA QUALIFIERS

## QUALIFICATION CODES

**U** = Not detected

**J** = Estimated value

**UJ** = Reported quantitation limit is qualified as estimated

**NJ** = Result is considered presumptively present at an estimated concentration

**R** = Result is rejected and unusable

**D** = Result value is based on dilution analysis

## METHOD BLANK QUALIFICATION CODES

**CRQL** = The sample result for the blank contaminant is less than the sample CRQL and is less than 5X the method blank value. The sample result for the blank contaminant is rejected and the CRQL for that compound is reported.

**U** = The sample result for the blank contaminant is greater than the sample CRQL and is less than 5X the method blank value. The sample result for the blank contaminant is qualified as non detected at the compound value reported.

**No Action** = The sample result for the blank contaminant is greater than the sample CRQL and is greater than 5X the method blank value. The sample result for the blank contaminant is not qualified with any blank qualifiers.

**Two Digit Code Definitions for Comment Field**

| Code | Definition |
|---|---|
| TN | Tune |
| BS | Blank Spike/LCS |
| IS | Internal Standard |
| MS | Matrix Spike and/or Matrix Spike Duplicate Recovery |
| MD | Matrix Spike/Matrix Spike Duplicate Precision |
| 2S | Second Source |
| SD | Serial Dilution |
| SS | Spiked Surrogate |
| LR | Analyte present above linear (or calibration) range |
| IC | Initial Calibration |
| CC | Continuing Calibration Verification |
| PD | Pesticide Degradation |
| LD | Lab Duplicate |
| 2C | Second Column (Confirmation) |
| HT | Holding Time |
| PS | Post Spike |
| BL | Blank |
| RE | Re-extraction |
| DL | Dilution |
| IB | In Between |
| FD | Field Duplicate |
| OT | Other |

# SUMMARY OF DATA QUALIFICATIONS

| SAMPLE ID | COMPOUND ID | DL | QL | CODE |
|---|---|---|---|---|
| LIA016<br>LIA016D | 2,4,6-TNT | + | J | FD |
| All Samples | All P > 25%<br>But ≤ 90% | + | J | 2C |

* DL denotes the Form I qualifier supplied by the laboratory
QL denotes the qualifier used by the data validation firm
+ in the DL column denotes a positive result
- in the DL column denotes a non detect result

# DATA ASSESSMENT NARRATIVE

# NITROGLYCERIN AND PENTAERYTHRITOL TETRANITRATE

## General

The organic findings offered in this screening report assumes that all analytical results are correct as reported and is based upon the examination of the reported holding times, blank analysis results, surrogate and matrix spike recoveries, GC performance, and calibration results. This report was prepared in compliance relative to the analytical and deliverable requirements specified in the SW-846 Method 8332; Region II Data Validation Guidelines, where applicable; and DQO Level IV requirements. All comments made within this report should be considered when examining the analytical results. Please refer the specific findings found in each category to the Summary of Data Qualifications table.

## SDG# VIEQ001

A validation was performed on the Nitroglycerin and Pentaerythritol Tetranitrate data from SDG VIEQ001. The data was evaluated based on the following parameters.

* • Data Completeness
* • Holding Times
* • GC Performance
* • Calibrations
* • Blanks
* • Surrogate Recoveries
* • Matrix Spike/Matrix Spike Duplicates
* • Field Duplicates
* • Compound Identification
* • Compound Quantitation

* - All criteria were met for this parameter.

## System Performance and Overall Assessment

The data did not require qualifications.

# GLOSSARY OF DATA QUALIFIERS

## QUALIFICATION CODES

**U** = Not detected

**J** = Estimated value

**UJ** = Reported quantitation limit is qualified as estimated

**NJ** = Result is considered presumptively present at an estimated concentration

**R** = Result is rejected and unusable

**D** = Result value is based on dilution analysis

## METHOD BLANK QUALIFICATION CODES

**CRQL =** The sample result for the blank contaminant is less than the sample CRQL and is less than 5X the method blank value. The sample result for the blank contaminant is rejected and the CRQL for that compound is reported.

**U =** The sample result for the blank contaminant is greater than the sample CRQL and is less than 5X the method blank value. The sample result for the blank contaminant is qualified as non detected at the compound value reported.

**No Action =** The sample result for the blank contaminant is greater than the sample CRQL and is greater than 5X the method blank value. The sample result for the blank contaminant is not qualified with any blank qualifiers.

**Two Digit Code Definitions for Comment Field**

| Code | Definition |
|---|---|
| TN | Tune |
| BS | Blank Spike/LCS |
| IS | Internal Standard |
| MS | Matrix Spike and/or Matrix Spike Duplicate Recovery |
| MD | Matrix Spike/Matrix Spike Duplicate Precision |
| 2S | Second Source |
| SD | Serial Dilution |
| SS | Spiked Surrogate |
| LR | Analyte present above linear (or calibration) range |
| IC | Initial Calibration |
| CC | Continuing Calibration Verification |
| PD | Pesticide Degradation |
| LD | Lab Duplicate |
| 2C | Second Column (Confirmation) |
| HT | Holding Time |
| PS | Post Spike |
| BL | Blank |
| RE | Re-extraction |
| DL | Dilution |
| IB | In Between |
| FD | Field Duplicate |
| OT | Other |

# SUMMARY OF DATA QUALIFICATIONS

| SAMPLE ID | COMPOUND ID | DL | QL | CODE |
|---|---|---|---|---|

NO QUALIFICATIONS WERE REQUIRED.

* DL denotes the Form I qualifier supplied by the laboratory
QL denotes the qualifier used by the data validation firm
+ in the DL column denotes a positive result
- in the DL column denotes a non detect result

# DATA ASSESSMENT NARRATIVE
# METALS

General

The inorganic findings offered in this screening report assumes that all analytical results are correct as reported and is based upon the examination of the reported holding times, blank analysis results, matrix spike and LCS recoveries, matrix duplicates and calibration results. This report was prepared in compliance relative to the analytical and deliverable requirements specified in the SW846 methods: the Evaluation of Metals Data for the Contract Laboratory Program Jan. 1992 and DQO Level IV requirements. All comments made within this report should be considered when examining the analytical results. Please refer the specific findings found in each category to the Summary of Data Qualification table.

## SDGs # VIEQ001

A validation was performed on the Metals Data from SDG VIEQ001. The data was evaluated based on the following parameters.

| | | |
|---|---|---|
| * | ● | Data Completeness |
| * | ● | Holding Times |
| | ● | Calibrations |
| * | ● | Blanks |
| * | ● | Interferences |
| | ● | Matrix Spike Recovery |
| * | ● | Matrix Duplicates |
| * | ● | Field Duplicates |
| * | ● | Laboratory Control Samples |
| * | ● | Serial Dilutions |

* - All criteria were met for this parameter.

## Calibration Verification Standard results

1. The first CRI standard for Thallium (51%) was below the lower control limits (<80%). All positive and non-detect results for samples S004089-1 thru S004089-8 below the CRI standard plus two times the CRDL are qualified as estimated, "J" or "UJ". The second CRI standard for Lead was below the lower control limits but the data was not affected due to high concentrations of Lead in samples(OT).

2. The second CRI standards for Selenium (134%) and Thallium (128%) were above the upper control limits (>120%). All positive results Selenium for samples S004089-9 thru S004089-20 below the CRI standard plus two times the CRDL are qualified as estimated, "J". All Thallium results were non-detect and are not affected. The CRI standards for Manganese and Zinc were also greater than the control limits but the data was not affected due to high concentrations of Manganese and Zinc in the samples(OT).

## Matrix Spike Recovery results

3. The matrix spike recovery for soils for Antimony (48%) was below the lower control limits (>10% but <75%). The positive and non-detect results are qualified as estimated, "J" or "UJ" (MS).

4. The matrix spike recoveries for soils for Copper (126%) and Cadmium (193%) were above the upper control limits (>125% but <200%). All positive results are qualified as estimated, "J" (MS).

5. The matrix spike recovery for soils for Zinc (529%) was above 200%. All positive results are rejected, "R"(MS).

6. All sample results left with a "B" qualifier after all other qualifications, will be qualified with a "J" (IB) qualifier in place of the "B". Value is below the CRDL but greater than the IDL.

# SUMMARY OF DATA QUALIFICATIONS

| Sample ID | Analyte | DL | QL |
|---|---|---|---|
| 1. S004089-1 thru -8. | Tl. | +/U | J/UJ |
| 2. S0040899-20. | Se. | + | J |
| 3. all soil samples | Sb. | +/U | J/UJ |
| 4. all soil samples | Cu and Cd. | + | J |
| 5. all soil samples | Zn. | + | R |
| 6. all "B" results | all analytes | B | J |

# ANNOTATED FORM Is

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-1

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA009

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K7

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/27/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 06/29/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q | |
|---|---|---|---|---|
| 2691-41-0 | HMX | 420 | ~~JP~~ | J 2C |
| 99-35-4 | 1,3,5-TNB | 250 | U | |
| 121-82-4 | RDX | 290 | ~~J~~ | J 2C |
| 99-65-0 | 1,3-DNB | 250 | U | |
| 479-45-8 | Tetryl | 500 | U | |
| 355-72-78-2 | 2-AM-DNT | 250 | U | |
| 19406-51-0 | 4-AM-DNT | 500 | U | |
| 91-20-3 | Nitrobenzene | 250 | U | |
| 118-96-7 | 2,4,6-TNT | 250 | U | |
| 121-14-2 | 2,4-DNT | 250 | U | |
| 606-20-2 | 2,6-DNT | 500 | U | |
| 88-72-2 | 2-NT | 250 | U | |
| 99-08-1 | 3-NT | 250 | U | |
| 99-99-0 | 4-NT | 250 | U | |

EKL
9/21/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-2

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA010

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K8

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/27/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 06/29/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 91-20-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EDK
8/21/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-3

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA011

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K9

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/27/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 06/29/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 91-20-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EXC
8/21/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-4

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA012

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K10

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/27/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 06/29/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 350 | J |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 2800 | |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 91-20-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EXK
9/21/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-5

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA013

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K11

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/27/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 06/29/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 91-20-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

CAL
3/21/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-6

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA016

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K14

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/27/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 06/29/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 91-20-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 1300 | J FD |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EJK
9/21/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-7

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA027

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K15

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/27/00

Concentrated Extract Volume: 20.0 (mL) Date Analyzed: 06/29/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 91-20-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

Ew
8/21/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-8

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA028

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K16

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/27/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 06/29/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 91-20-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

Ex
8/21/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-9

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA029

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K19

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/27/00

Concentrated Extract Volume: 20.0 (mL) Date Analyzed: 06/29/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 91-20-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EXK
8/21/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-10

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA030

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K20

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/27/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 06/29/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 91-20-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EXL
8/21/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-11

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: UP-EAST-SS-01

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K21

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/27/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 06/29/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 91-20-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EXK
8/21/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-12

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: UP-EAST-SS-02

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K22

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/27/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 06/29/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 91-20-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

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3/21/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-13

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: UP-EAST-SS-03

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K23

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/27/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 06/29/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 91-20-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EKK
9/21/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-14

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: UP-EAST-SS-04

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K24

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/27/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 06/29/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 91-20-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

Exc
9/21/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-15

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA011D

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K25

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/27/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 06/29/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 91-20-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

Exc
8/21/03

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-16

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project:

SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA016D

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K26

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/27/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 06/30/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 91-20-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 4100 | J FD |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EXL
9/21/00



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08.08.0

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-17

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA029D

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K27

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/27/00

Concentrated Extract Volume: 20.0 (mL) Date Analyzed: 06/30/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 91-20-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EW
3/21/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-18

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project:

SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA007

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K28

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/27/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 06/30/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 91-20-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EXL
8/21/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-19

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA008

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K29

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/27/00

Concentrated Extract Volume: 20.0 (mL) Date Analyzed: 06/30/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 91-20-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EW
3/21/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-20

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA014

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K30

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/27/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 06/30/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 91-20-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EKL
8/21/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-5MS

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: 04089-5MS

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K12

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/27/00

Concentrated Extract Volume: 20.0 (mL) Date Analyzed: 06/29/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 3100 | |
| 99-35-4 | 1,3,5-TNB | 3000 | |
| 121-82-4 | RDX | 2800 | |
| 99-65-0 | 1,3-DNB | 2900 | |
| 479-45-8 | Tetryl | 2300 | |
| 355-72-78-2 | 2-AM-DNT | 2800 | |
| 19406-51-0 | 4-AM-DNT | 3000 | |
| 91-20-3 | Nitrobenzene | 2800 | |
| 118-96-7 | 2,4,6-TNT | 2900 | |
| 121-14-2 | 2,4-DNT | 2800 | |
| 606-20-2 | 2,6-DNT | 2900 | |
| 88-72-2 | 2-NT | 2500 | |
| 99-08-1 | 3-NT | 2600 | |
| 99-99-0 | 4-NT | 2500 | |

EKK
8/21/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-5MSD

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: 04089-5MSD

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K13

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/27/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 06/29/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 3100 | |
| 99-35-4 | 1,3,5-TNB | 3100 | |
| 121-82-4 | RDX | 2800 | |
| 99-65-0 | 1,3-DNB | 2900 | |
| 479-45-8 | Tetryl | 2300 | |
| 355-72-78-2 | 2-AM-DNT | 2800 | |
| 19406-51-0 | 4-AM-DNT | 3000 | |
| 91-20-3 | Nitrobenzene | 2800 | |
| 118-96-7 | 2,4,6-TNT | 2900 | |
| 121-14-2 | 2,4-DNT | 2800 | |
| 606-20-2 | 2,6-DNT | 2900 | |
| 88-72-2 | 2-NT | 2500 | |
| 99-08-1 | 3-NT | 2600 | |
| 99-99-0 | 4-NT | 2500 | |

EAR
8/21/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-1

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA009

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J28

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 12 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0(mL) Date Analyzed: 07/15/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1100 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1100 | U |

EMC
3/21/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-2

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project:

SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA010

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J29

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 19 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0(mL) Date Analyzed: 07/15/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1200 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1200 | U |

EM
6/21/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-3

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA011

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J30

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 11 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0 (mL) Date Analyzed: 07/15/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1100 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1100 | U |

EAL
3/21/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-4

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project:

SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA012

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J31

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 8 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0(mL) Date Analyzed: 07/15/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 3600 | |
| 78-11-5 | Pentaerythritol tetranitrate | 1100 | U |

EAK
8/21/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-5

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA013

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J32

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 14 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0(mL) Date Analyzed: 07/15/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1200 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1200 | U |

EAL
3/21/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-6

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA016

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J35

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 9 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0(mL) Date Analyzed: 07/15/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1100 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1100 | U |

EKA
8/21/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-7

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA027

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J36

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 13 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0(mL) Date Analyzed: 07/15/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1100 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1100 | U |

EAL
8/21/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-8

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA028

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J37

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 10 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0(mL) Date Analyzed: 07/15/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1100 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1100 | U |

EXL
8/21/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-9

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA029

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J40

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 12 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0(mL) Date Analyzed: 07/15/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1100 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1100 | U |

EM
9/21/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-10

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA030

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J41

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 12 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0 (mL) Date Analyzed: 07/15/00

Injection Volume: 40.0 (uL) Dilution Factor 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1100 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1100 | U |

Ek
3/21/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-11

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: UP-EAST-SS-01

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J42

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 17 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0(mL) Date Analyzed: 07/15/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1200 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1200 | U |

CH
9/21/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-12

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: UP-EAST-SS-02

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J43

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 12 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0(mL) Date Analyzed: 07/15/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1100 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1100 | U |

EK
3/21/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-13

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: UP-EAST-SS-03

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J44

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 16 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0(mL) Date Analyzed: 07/15/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1200 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1200 | U |

EKL
3/21/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-14

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: UP-EAST-SS-04

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J45

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 12 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0(mL) Date Analyzed: 07/15/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1100 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1100 | U |

CK
9/21/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-15

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA011D

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J46

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 14 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0 (mL) Date Analyzed: 07/15/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1200 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1200 | U |

EMK
3/21/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-16

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA016D

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J47

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 6 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0(mL) Date Analyzed: 07/15/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1100 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1100 | U |

EKK
8/21/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-17

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA029D

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J48

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 10 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0(mL) Date Analyzed: 07/15/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1100 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1100 | U |

EKK
9/21/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-18

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA007

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J49

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 19 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0 (mL) Date Analyzed: 07/15/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1200 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1200 | U |

EXL
9/21/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-19

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA008

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J50

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 16 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0 (mL) Date Analyzed: 07/15/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1200 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1200 | U |

EKK
3/21/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-20

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: LIA014

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J51

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 13 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0(mL) Date Analyzed: 07/15/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1100 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1100 | U |

EAL
3/21/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-5MS

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: 04089-5MS

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J33

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 14 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0 (mL) Date Analyzed: 07/15/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 3200 | |
| 78-11-5 | Pentaerythritol tetranitrate | 1200 | U |

EM
8/21/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089-5MSD

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project:

SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: 04089-5MSD

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J34

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 14 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract volume: 10.0(mL) Date Analyzed: 07/15/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 3000 | |
| 78-11-5 | Pentaerythritol tetranitrate | 1200 | U |

EKK
8/21/00

FORM I SV LC

*Savannah Laboratories*

# TOTAL METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

LIA009

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ001

Matrix (soil/water): SOIL Lab Sample ID: S004089-1

Level (low/med): LOW Date Received: 22-JUN-2000

% Solids: 88.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 15000 | | | P | |
| 7440-36-0 | Antimony | 2.3 | U | ~~N~~ | P | UJ3(MS) |
| 7440-38-2 | Arsenic | 5.1 | | | P | |
| 7440-39-3 | Barium | 100 | | | P | |
| 7440-41-7 | Beryllium | 0.23 | ~~B~~ | | P | J6 (IB) |
| 7440-43-9 | Cadmium | 2.3 | | ~~N*~~ | P | J4 (MS) |
| 7440-47-3 | Chromium | 10 | | | P | |
| 7440-48-4 | Cobalt | 13 | | | P | |
| 7440-50-8 | Copper | 81 | | ~~N~~ | P | J4 (MS) |
| 7439-89-6 | Iron | 35000 | | | P | |
| 7439-92-1 | Lead | 17 | | | P | |
| 7439-96-5 | Manganese | 840 | | | P | |
| 7439-97-6 | Mercury | 0.0045 | ~~B~~ | | CV | J6(IB)8/21/0 |
| 7440-02-0 | Nickel | 7.4 | | | P | |
| 7782-49-2 | Selenium | 1.3 | | | P | |
| 7440-22-4 | Silver | 1.1 | U | | P | |
| 7440-28-0 | Thallium | 1.1 | U | | P | UJ1 (OT) |
| 7440-31-5 | Tin | 5.7 | U | | P | |
| 7440-62-2 | Vanadium | 82 | | | P | |
| 7440-66-6 | Zinc | 58 | | ~~N*~~ | P | R5 (MS) |

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

*Savannah Laboratories*

# TOTAL METALS
-1-
## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.
LIA010

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ001

Matrix (soil/water): SOIL Lab Sample ID: S004089-2

Level (low/med): LOW Date Received: 22-JUN-2000

% Solids: 81.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 17000 | | | P | |
| 7440-36-0 | Antimony | 0.73 | ~~B~~ | ~~N~~ | P | J 3 (MS) |
| 7440-38-2 | Arsenic | 18 | | | P | |
| 7440-39-3 | Barium | 21 | | | P | |
| 7440-41-7 | Beryllium | 0.31 | ~~B~~ | | P | J6 (IB) |
| 7440-43-9 | Cadmium | 0.66 | | ~~N*~~ | P | J4 (MS) |
| 7440-47-3 | Chromium | 20 | | | P | |
| 7440-48-4 | Cobalt | 17 | | | P | |
| 7440-50-8 | Copper | 37 | | ~~N~~ | P | J4 (MS) 8/24 |
| 7439-89-6 | Iron | 37000 | | | P | |
| 7439-92-1 | Lead | 0.97 | | | P | |
| 7439-96-5 | Manganese | 260 | | | P | |
| 7439-97-6 | Mercury | 0.026 | | | CV | |
| 7440-02-0 | Nickel | 10 | | | P | |
| 7782-49-2 | Selenium | 1.3 | | | P | |
| 7440-22-4 | Silver | 1.1 | U | | P | |
| 7440-28-0 | Thallium | 1.1 | U | | P | UJ1 (OT) |
| 7440-31-5 | Tin | 5.6 | U | | P | |
| 7440-62-2 | Vanadium | 130 | | | P | |
| 7440-66-6 | Zinc | 47 | | ~~N*~~ | P | R5 (MS) |

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

*Savannah Laboratories*

# TOTAL METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

LIA011

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ001

Matrix (soil/water): SOIL Lab Sample ID: S004089-3

Level (low/med): LOW Date Received: 22-JUN-2000

% Solids: 89.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 9600 | | | P | |
| 7440-36-0 | Antimony | 2.2 | U | ~~N~~ | P | UJ3 MS |
| 7440-38-2 | Arsenic | 10 | | | P | |
| 7440-39-3 | Barium | 80 | | | P | |
| 7440-41-7 | Beryllium | 0.15 | ~~B~~ | | P | J6 IB |
| 7440-43-9 | Cadmium | 2.4 | | ~~N*~~ | P | J4 MS |
| 7440-47-3 | Chromium | 18 | | | P | |
| 7440-48-4 | Cobalt | 11 | | | P | |
| 7440-50-8 | Copper | 38 | | ~~N~~ | P | J4 MS |
| 7439-89-6 | Iron | 23000 | | | P | |
| 7439-92-1 | Lead | 2.6 | | | P | |
| 7439-96-5 | Manganese | 560 | | | P | |
| 7439-97-6 | Mercury | 0.0069 | ~~B~~ | | CV | J6 IB |
| 7440-02-0 | Nickel | 9.0 | | | P | |
| 7782-49-2 | Selenium | 0.52 | ~~B~~ | | P | J6 IB 8/21/0 |
| 7440-22-4 | Silver | 1.1 | U | | P | |
| 7440-28-0 | Thallium | 1.1 | U | | P | UJ1 OT |
| 7440-31-5 | Tin | 5.6 | U | | P | |
| 7440-62-2 | Vanadium | 92 | | | P | |
| 7440-66-6 | Zinc | 58 | | ~~N*~~ | P | R5 MS |

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

*Savannah Laboratories*

# TOTAL METALS
-1-
## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.
LIA012

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ001

Matrix (soil/water): SOIL Lab Sample ID: S004089-4

Level (low/med): LOW Date Received: 22-JUN-2000

% Solids: 92.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 29000 | | | P | |
| 7440-36-0 | Antimony | 1.3 | ~~B~~ | ~~N~~ | P | J3 MS |
| 7440-38-2 | Arsenic | 5.7 | | | P | |
| 7440-39-3 | Barium | 160 | | | P | |
| 7440-41-7 | Beryllium | 0.18 | ~~B~~ | | P | J6 IB |
| 7440-43-9 | Cadmium | 2.6 | | ~~N*~~ | P | J4 MS |
| 7440-47-3 | Chromium | 11 | | | P | |
| 7440-48-4 | Cobalt | 23 | | | P | |
| 7440-50-8 | Copper | 120 | | ~~N~~ | P | J4 MS |
| 7439-89-6 | Iron | 52000 | | | P | |
| 7439-92-1 | Lead | 25 | | | P | |
| 7439-96-5 | Manganese | 1500 | | | P | |
| 7439-97-6 | Mercury | 0.013 | ~~B~~ | | CV | J6 IB |
| 7440-02-0 | Nickel | 10 | | | P | |
| 7782-49-2 | Selenium | 1.5 | | | P | |
| 7440-22-4 | Silver | 1.1 | U | | P | |
| 7440-28-0 | Thallium | 1.1 | U | | P | UJ1 OT |
| 7440-31-5 | Tin | 5.0 | ~~B~~ | | P | J6 IB |
| 7440-62-2 | Vanadium | 220 | | | P | |
| 7440-66-6 | Zinc | 77 | | ~~N*~~ | P | RS MS |

PBW 8/21/00

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

*Savannah Laboratories*

# TOTAL METALS
-1-
## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.
LIA013

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ001

Matrix (soil/water): SOIL Lab Sample ID: S004089-5

Level (low/med): LOW Date Received: 22-JUN-2000

% Solids: 86.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 8600 | | | P | |
| 7440-36-0 | Antimony | 2.3 | U | ~~N~~ | P | UJ3 MS |
| 7440-38-2 | Arsenic | 12 | | | P | |
| 7440-39-3 | Barium | 120 | | | P | |
| 7440-41-7 | Beryllium | 0.16 | ~~B~~ | | P | J6 IB |
| 7440-43-9 | Cadmium | 2.0 | | ~~N*~~ | P | J4 MS |
| 7440-47-3 | Chromium | 19 | | | P | |
| 7440-48-4 | Cobalt | 9.0 | | | P | |
| 7440-50-8 | Copper | 37 | | ~~N~~ | P | J4 MS |
| 7439-89-6 | Iron | 26000 | | | P | |
| 7439-92-1 | Lead | 7.1 | | | P | |
| 7439-96-5 | Manganese | 740 | | | P | |
| 7439-97-6 | Mercury | 0.023 | U | | CV | |
| 7440-02-0 | Nickel | 7.1 | | | P | |
| 7782-49-2 | Selenium | 0.83 | ~~B~~ | | P | J6 IB |
| 7440-22-4 | Silver | 1.2 | U | | P | |
| 7440-28-0 | Thallium | 1.2 | U | | P | UJ1 OT |
| 7440-31-5 | Tin | 5.8 | U | | P | |
| 7440-62-2 | Vanadium | 90 | | | P | |
| 7440-66-6 | Zinc | 110 | | ~~N*~~ | P | R5 MS |

8/21/0

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

*Savannah Laboratories*

# TOTAL METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

LIA016

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ001

Matrix (soil/water): SOIL Lab Sample ID: S004089-6

Level (low/med): LOW Date Received: 22-JUN-2000

% Solids: 91.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 13000 | | | P | |
| 7440-36-0 | Antimony | 2.2 | U | ~~N~~ | P | UJ3 MS |
| 7440-38-2 | Arsenic | 20 | | | P | |
| 7440-39-3 | Barium | 110 | | | P | |
| 7440-41-7 | Beryllium | 0.14 | ~~B~~ | | P | J6 IB |
| 7440-43-9 | Cadmium | 0.93 | | ~~N*~~ | P | J4 MS |
| 7440-47-3 | Chromium | 12 | | | P | |
| 7440-48-4 | Cobalt | 12 | | | P | |
| 7440-50-8 | Copper | 20 | | ~~N~~ | P | J4 MS |
| 7439-89-6 | Iron | 29000 | | | P | |
| 7439-92-1 | Lead | 0.81 | | | P | |
| 7439-96-5 | Manganese | 550 | | | P | |
| 7439-97-6 | Mercury | 0.0097 | ~~B~~ | | CV | J6 IB 8/21/ |
| 7440-02-0 | Nickel | 7.3 | | | P | |
| 7782-49-2 | Selenium | 0.70 | ~~B~~ | | P | J6 IB |
| 7440-22-4 | Silver | 1.1 | U | | P | |
| 7440-28-0 | Thallium | 1.1 | U | | P | UJ1 OT |
| 7440-31-5 | Tin | 5.5 | U | | P | |
| 7440-62-2 | Vanadium | 72 | | | P | |
| 7440-66-6 | Zinc | 36 | | ~~N*~~ | P | RS MS |

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

*Savannah Laboratories*

# TOTAL METALS
-1-
## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

LIA027

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ001

Matrix (soil/water): SOIL Lab Sample ID: S004089-7

Level (low/med): LOW Date Received: 22-JUN-2000

% Solids: 87.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 10000 | | | P | |
| 7440-36-0 | Antimony | 2.3 | U | ~~N~~ | P | UJ3 MS |
| 7440-38-2 | Arsenic | 15 | | | P | |
| 7440-39-3 | Barium | 45 | | | P | |
| 7440-41-7 | Beryllium | 0.21 | ~~B~~ | | P | J6 IB |
| 7440-43-9 | Cadmium | 1.1 | | ~~N*~~ | P | J4 MS |
| 7440-47-3 | Chromium | 13 | | | P | |
| 7440-48-4 | Cobalt | 15 | | | P | |
| 7440-50-8 | Copper | 31 | | ~~N~~ | P | J4 MS |
| 7439-89-6 | Iron | 26000 | | | P | |
| 7439-92-1 | Lead | 1.6 | | | P | |
| 7439-96-5 | Manganese | 830 | | | P | |
| 7439-97-6 | Mercury | 0.0064 | ~~B~~ | | CV | J6 IB 8/21/00 |
| 7440-02-0 | Nickel | 9.0 | | | P | |
| 7782-49-2 | Selenium | 0.95 | ~~B~~ | | P | J6 IB |
| 7440-22-4 | Silver | 1.1 | U | | P | |
| 7440-28-0 | Thallium | 1.1 | U | | P | UJ1 OT |
| 7440-31-5 | Tin | 5.7 | U | | P | |
| 7440-62-2 | Vanadium | 130 | | | P | |
| 7440-66-6 | Zinc | 34 | | ~~N*~~ | P | R5 MS |

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

*Savannah Laboratories*

# TOTAL METALS
-1-
## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

LIA028

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ001

Matrix (soil/water): SOIL Lab Sample ID: S004089-8

Level (low/med): LOW Date Received: 22-JUN-2000

% Solids: 90.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 24000 | | | P | |
| 7440-36-0 | Antimony | 0.77 | ~~B~~ | ~~N~~ | P | J3 MS |
| 7440-38-2 | Arsenic | 16 | | | P | |
| 7440-39-3 | Barium | 79 | | | P | |
| 7440-41-7 | Beryllium | 0.20 | ~~B~~ | | P | J6 IB |
| 7440-43-9 | Cadmium | 2.0 | | ~~N*~~ | P | J4 MS |
| 7440-47-3 | Chromium | 32 | | | P | |
| 7440-48-4 | Cobalt | 19 | | | P | |
| 7440-50-8 | Copper | 59 | | ~~N~~ | P | J4 MS |
| 7439-89-6 | Iron | 48000 | | | P | |
| 7439-92-1 | Lead | 12 | | | P | |
| 7439-96-5 | Manganese | 1200 | | | P | |
| 7439-97-6 | Mercury | 0.022 | ~~B~~ | | CV | J6 IB 8/21/03 |
| 7440-02-0 | Nickel | 21 | | | P | |
| 7782-49-2 | Selenium | 1.3 | | | P | |
| 7440-22-4 | Silver | 1.1 | U | | P | |
| 7440-28-0 | Thallium | 1.1 | U | | P | UJ1 OT |
| 7440-31-5 | Tin | 5.0 | ~~B~~ | | P | J6 IB |
| 7440-62-2 | Vanadium | 110 | | | P | |
| 7440-66-6 | Zinc | 53 | | ~~N*~~ | P | R5 MS |

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

*Savannah Laboratories*

# TOTAL METALS
-1-
## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.
LIA029

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ001

Matrix (soil/water): SOIL Lab Sample ID: S004089-9

Level (low/med): LOW Date Received: 22-JUN-2000

% Solids: 88.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 6000 | | | P | |
| 7440-36-0 | Antimony | 2.1 | U | ~~N~~ | P | UJ3 MS |
| 7440-38-2 | Arsenic | 4.1 | | | P | |
| 7440-39-3 | Barium | 13 | | | P | |
| 7440-41-7 | Beryllium | 0.41 | U | | P | |
| 7440-43-9 | Cadmium | 0.39 | ~~B~~ | ~~N*~~ | P | J4 MS |
| 7440-47-3 | Chromium | 7.9 | | | P | |
| 7440-48-4 | Cobalt | 4.1 | | | P | |
| 7440-50-8 | Copper | 11 | | ~~N~~ | P | J4 MS |
| 7439-89-6 | Iron | 8800 | | | P | |
| 7439-92-1 | Lead | 1.9 | | | P | |
| 7439-96-5 | Manganese | 190 | | | P | 8/21/0 |
| 7439-97-6 | Mercury | 0.023 | U | | CV | |
| 7440-02-0 | Nickel | 3.6 | ~~B~~ | | P | J6 IB |
| 7782-49-2 | Selenium | 0.99 | ~~L~~ | | P | J2 OT |
| 7440-22-4 | Silver | 1.0 | U | | P | |
| 7440-28-0 | Thallium | 1.0 | U | | P | |
| 7440-31-5 | Tin | 5.2 | U | | P | |
| 7440-62-2 | Vanadium | 34 | | | P | |
| 7440-66-6 | Zinc | 13 | | ~~N*~~ | P | R5 MS |

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

*Savannah Laboratories*

# TOTAL METALS
-1-
## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.
LIA030

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ001

Matrix (soil/water): SOIL Lab Sample ID: S004089-10

Level (low/med): LOW Date Received: 22-JUN-2000

% Solids: 88.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 31000 | | | P | |
| 7440-36-0 | Antimony | 2.3 | U | ~~N~~ | P | UJ3 MS |
| 7440-38-2 | Arsenic | 3.5 | | | P | |
| 7440-39-3 | Barium | 48 | | | P | |
| 7440-41-7 | Beryllium | 0.17 | ~~B~~ | | P | J6 IB |
| 7440-43-9 | Cadmium | 1.5 | | ~~N*~~ | P | J4 MS |
| 7440-47-3 | Chromium | 24 | | | P | |
| 7440-48-4 | Cobalt | 24 | | | P | |
| 7440-50-8 | Copper | 53 | | ~~N~~ | P | J4 MS |
| 7439-89-6 | Iron | 48000 | | | P | |
| 7439-92-1 | Lead | 2.7 | | | P | |
| 7439-96-5 | Manganese | 1100 | | | P | |
| 7439-97-6 | Mercury | 0.011 | ~~B~~ | | CV | J6 IB 8/21/00 |
| 7440-02-0 | Nickel | 17 | | | P | |
| 7782-49-2 | Selenium | 1.5 | | | P | J2 OT |
| 7440-22-4 | Silver | 1.1 | U | | P | |
| 7440-28-0 | Thallium | 1.1 | U | | P | |
| 7440-31-5 | Tin | 4.6 | ~~B~~ | | P | J6 IB |
| 7440-62-2 | Vanadium | 150 | | | P | |
| 7440-66-6 | Zinc | 63 | | ~~N*~~ | P | R5 MS |

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

*Savannah Laboratories*

# TOTAL METALS
-1-
## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.
UP-EAST-SS-01

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ001

Matrix (soil/water): SOIL Lab Sample ID: S004089-11

Level (low/med): LOW Date Received: 22-JUN-2000

% Solids: 83.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 33000 | | | P | |
| 7440-36-0 | Antimony | 2.4 | U | ~~N~~ | P | UJ3 MS |
| 7440-38-2 | Arsenic | 36 | | | P | |
| 7440-39-3 | Barium | 55 | | | P | |
| 7440-41-7 | Beryllium | 1.0 | | | P | |
| 7440-43-9 | Cadmium | 1.1 | | ~~N~~ | P | J4 MS |
| 7440-47-3 | Chromium | 59 | | | P | |
| 7440-48-4 | Cobalt | 12 | | | P | |
| 7440-50-8 | Copper | 22 | | ~~N~~ | P | J4 MS |
| 7439-89-6 | Iron | 39000 | | | P | |
| 7439-92-1 | Lead | 16 | | | P | |
| 7439-96-5 | Manganese | 890 | | | P | |
| 7439-97-6 | Mercury | 0.12 | | | CV | |
| 7440-02-0 | Nickel | 19 | | | P | |
| 7782-49-2 | Selenium | 1.6 | | | P | J2 OT |
| 7440-22-4 | Silver | 1.2 | U | | P | |
| 7440-28-0 | Thallium | 1.2 | U | | P | |
| 7440-31-5 | Tin | 6.0 | U | | P | |
| 7440-62-2 | Vanadium | 69 | | | P | |
| 7440-66-6 | Zinc | 40 | | ~~N~~ | P | RS MS |

8/21/0

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

*Savannah Laboratories*

# TOTAL METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

UP-EAST-SS-02

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ001

Matrix (soil/water): SOIL Lab Sample ID: S004089-12

Level (low/med): LOW Date Received: 22-JUN-2000

% Solids: 88.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 19000 | | | P | |
| 7440-36-0 | Antimony | 0.62 | ~~B~~ | ~~N~~ | P | J3 MS |
| 7440-38-2 | Arsenic | 15 | | | P | |
| 7440-39-3 | Barium | 29 | | | P | |
| 7440-41-7 | Beryllium | 0.37 | ~~B~~ | | P | J6 IB |
| 7440-43-9 | Cadmium | 0.61 | | ~~N*~~ | P | J4 MS |
| 7440-47-3 | Chromium | 35 | | | P | |
| 7440-48-4 | Cobalt | 4.9 | | | P | |
| 7440-50-8 | Copper | 17 | | ~~N~~ | P | J4 MS |
| 7439-89-6 | Iron | 16000 | | | P | |
| 7439-92-1 | Lead | 4.4 | | | P | |
| 7439-96-5 | Manganese | 410 | | | P | |
| 7439-97-6 | Mercury | 0.064 | | | CV | |
| 7440-02-0 | Nickel | 10 | | | P | |
| 7782-49-2 | Selenium | 1.1 | ~~B~~ | | P | J2 DT |
| 7440-22-4 | Silver | 1.1 | U | | P | |
| 7440-28-0 | Thallium | 1.1 | U | | P | |
| 7440-31-5 | Tin | 5.7 | U | | P | |
| 7440-62-2 | Vanadium | 33 | | | P | |
| 7440-66-6 | Zinc | 23 | | ~~N*~~ | P | R5 MS |

8/21/00

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

*Savannah Laboratories*

# TOTAL METALS
-1-
## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.
UP-EAST-SS-03

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ001

Matrix (soil/water): SOIL Lab Sample ID: S004089-13

Level (low/med): LOW Date Received: 22-JUN-2000

% Solids: 84.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 39000 | | | P | |
| 7440-36-0 | Antimony | 2.4 | U | ~~N~~ | P | UJ3 MS |
| 7440-38-2 | Arsenic | 27 | | | P | |
| 7440-39-3 | Barium | 76 | | | P | |
| 7440-41-7 | Beryllium | 1.1 | | | P | |
| 7440-43-9 | Cadmium | 1.4 | | ~~N*~~ | P | J4 MS |
| 7440-47-3 | Chromium | 79 | | | P | |
| 7440-48-4 | Cobalt | 15 | | | P | |
| 7440-50-8 | Copper | 33 | | ~~N~~ | P | J4 MS |
| 7439-89-6 | Iron | 49000 | | | P | |
| 7439-92-1 | Lead | 13 | | | P | |
| 7439-96-5 | Manganese | 910 | | | P | |
| 7439-97-6 | Mercury | 0.045 | | | CV | |
| 7440-02-0 | Nickel | 23 | | | P | |
| 7782-49-2 | Selenium | 1.8 | | | P | J2 OT |
| 7440-22-4 | Silver | 1.2 | U | | P | |
| 7440-28-0 | Thallium | 1.2 | U | | P | |
| 7440-31-5 | Tin | 6.0 | U | | P | |
| 7440-62-2 | Vanadium | 78 | | | P | |
| 7440-66-6 | Zinc | 37 | | ~~N*~~ | P | R5 MS |

PBG 8/21

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

*Savannah Laboratories*

# TOTAL METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

UP-EAST-SS-04

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ001

Matrix (soil/water): SOIL Lab Sample ID: S004089-14

Level (low/med): LOW Date Received: 22-JUN-2000

% Solids: 88.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 17000 | | | P | |
| 7440-36-0 | Antimony | 2.3 | U | ~~N~~ | P | UJ3 MS |
| 7440-38-2 | Arsenic | 25 | | | P | |
| 7440-39-3 | Barium | 42 | | | P | |
| 7440-41-7 | Beryllium | 0.31 | ~~B~~ | | P | J6 IB |
| 7440-43-9 | Cadmium | 0.73 | | ~~N*~~ | P | J4 MS |
| 7440-47-3 | Chromium | 35 | | | P | |
| 7440-48-4 | Cobalt | 6.4 | | | P | |
| 7440-50-8 | Copper | 27 | | ~~N~~ | P | J4 MS |
| 7439-89-6 | Iron | 23000 | | | P | |
| 7439-92-1 | Lead | 3.6 | | | P | |
| 7439-96-5 | Manganese | 700 | | | P | |
| 7439-97-6 | Mercury | 0.040 | | | CV | |
| 7440-02-0 | Nickel | 11 | | | P | |
| 7782-49-2 | Selenium | 1.4 | | | P | J2 OT |
| 7440-22-4 | Silver | 1.1 | U | | P | |
| 7440-28-0 | Thallium | 1.1 | U | | P | |
| 7440-31-5 | Tin | 5.7 | U | | P | |
| 7440-62-2 | Vanadium | 55 | | | P | |
| 7440-66-6 | Zinc | 35 | | ~~N*~~ | P | R5 MS |

8/21/0

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

*Savannah Laboratories*

# TOTAL METALS
-1-
## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

LIA011D

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ001

Matrix (soil/water): SOIL Lab Sample ID: S004089-15

Level (low/med): LOW Date Received: 22-JUN-2000

% Solids: 86.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 8500 | | | P | |
| 7440-36-0 | Antimony | 2.3 | U | ~~N~~ | P | UJ3 MS |
| 7440-38-2 | Arsenic | 9.5 | | | P | |
| 7440-39-3 | Barium | 74 | | | P | |
| 7440-41-7 | Beryllium | 0.099 | ~~B~~ | | P | J6 IB |
| 7440-43-9 | Cadmium | 2.3 | | ~~N*~~ | P | J4 MS |
| 7440-47-3 | Chromium | 16 | | | P | |
| 7440-48-4 | Cobalt | 10 | | | P | |
| 7440-50-8 | Copper | 35 | | ~~N~~ | P | J4 MS |
| 7439-89-6 | Iron | 24000 | | | P | |
| 7439-92-1 | Lead | 2.5 | | | P | |
| 7439-96-5 | Manganese | 560 | | | P | |
| 7439-97-6 | Mercury | 0.0[illegible]1 | ~~B~~ | | CV | J6 IB 8/21/0[illegible] |
| 7440-02-0 | Nickel | 8.2 | | | P | |
| 7782-49-2 | Selenium | 0.67 | ~~B~~ | | P | J2 OT |
| 7440-22-4 | Silver | 1.2 | U | | P | |
| 7440-28-0 | Thallium | 1.2 | U | | P | |
| 7440-31-5 | Tin | 5.8 | U | | P | |
| 7440-62-2 | Vanadium | 87 | | | P | |
| 7440-66-6 | Zinc | 51 | | ~~N*~~ | P | R5 MS |

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

*Savannah Laboratories*

# TOTAL METALS
-1-
## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.
LIA016D

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ001

Matrix (soil/water): SOIL Lab Sample ID: S004089-16

Level (low/med): LOW Date Received: 22-JUN-2000

% Solids: 94.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 14000 | | | P | |
| 7440-36-0 | Antimony | 2.1 | U | ~~N~~ | P | UJ3 MS |
| 7440-38-2 | Arsenic | 20 | | | P | |
| 7440-39-3 | Barium | 150 | | | P | |
| 7440-41-7 | Beryllium | 0.13 | ~~B~~ | | P | J6 IB |
| 7440-43-9 | Cadmium | 0.98 | | ~~N*~~ | P | J4 MS |
| 7440-47-3 | Chromium | 13 | | | P | |
| 7440-48-4 | Cobalt | 14 | | | P | |
| 7440-50-8 | Copper | 19 | | ~~N~~ | P | J4 MS |
| 7439-89-6 | Iron | 31000 | | | P | PB6 |
| 7439-92-1 | Lead | 1.1 | | | P | |
| 7439-96-5 | Manganese | 780 | | | P | |
| 7439-97-6 | Mercury | 0.014 | ~~B~~ | | CV | J6 IB 8/21/0 |
| 7440-02-0 | Nickel | 8.3 | | | P | |
| 7782-49-2 | Selenium | 0.72 | ~~B~~ | | P | JL OT |
| 7440-22-4 | Silver | 1.1 | U | | P | |
| 7440-28-0 | Thallium | 1.1 | U | | P | |
| 7440-31-5 | Tin | 5.3 | U | | P | |
| 7440-62-2 | Vanadium | 75 | | | P | |
| 7440-66-6 | Zinc | 43 | | ~~N*~~ | P | RS MS |

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

*Savannah Laboratories*

# TOTAL METALS
-1-
## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.
LIA029D

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ001

Matrix (soil/water): SOIL Lab Sample ID: S004089-1

Level (low/med): LOW Date Received: 22-JUN-2000

% Solids: 90.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 6700 | | | P | |
| 7440-36-0 | Antimony | 2.2 | U | ~~N~~ | P | UJ3 MS |
| 7440-38-2 | Arsenic | 4.8 | | | P | |
| 7440-39-3 | Barium | 15 | | | P | |
| 7440-41-7 | Beryllium | 0.44 | U | | P | |
| 7440-43-9 | Cadmium | 0.48 | ~~B~~ | ~~N*~~ | P | J4 MS |
| 7440-47-3 | Chromium | 10 | | | P | |
| 7440-48-4 | Cobalt | 4.9 | | | P | |
| 7440-50-8 | Copper | 12 | | ~~N~~ | P | J4 MS 8/21/0 |
| 7439-89-6 | Iron | 11000 | | | P | |
| 7439-92-1 | Lead | 1.6 | | | P | |
| 7439-96-5 | Manganese | 210 | | | P | |
| 7439-97-6 | Mercury | 0.0074 | ~~B~~ | | CV | J6 IB |
| 7440-02-0 | Nickel | 5.2 | | | P | |
| 7782-49-2 | Selenium | 1.1 | U | | P | |
| 7440-22-4 | Silver | 1.1 | U | | P | |
| 7440-28-0 | Thallium | 1.1 | U | | P | |
| 7440-31-5 | Tin | 5.6 | U | | P | |
| 7440-62-2 | Vanadium | 42 | | | P | |
| 7440-66-6 | Zinc | 15 | | ~~N*~~ | P | RS MS |

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

*Savannah Laboratories*

# TOTAL METALS
-1-
## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.
LIA007

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ001

Matrix (soil/water): SOIL Lab Sample ID: S004089-18

Level (low/med): LOW Date Received: 22-JUN-2000

% Solids: 81.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 21000 | | | P | |
| 7440-36-0 | Antimony | 2.5 | U | ~~N~~ | P | UJ3 MS |
| 7440-38-2 | Arsenic | 6.3 | | | P | |
| 7440-39-3 | Barium | 160 | | | P | |
| 7440-41-7 | Beryllium | 0.27 | ~~B~~ | | P | J6 IB |
| 7440-43-9 | Cadmium | 3.4 | | ~~N*~~ | P | J4 MS |
| 7440-47-3 | Chromium | 20 | | | P | |
| 7440-48-4 | Cobalt | 20 | | | P | |
| 7440-50-8 | Copper | 72 | | ~~N~~ | P | J4 MS |
| 7439-89-6 | Iron | 55000 | | | P | |
| 7439-92-1 | Lead | 11 | | | P | |
| 7439-96-5 | Manganese | 1400 | | | P | |
| 7439-97-6 | Mercury | 0.025 | | | CV | |
| 7440-02-0 | Nickel | 12 | | | P | |
| 7782-49-2 | Selenium | 2.1 | | | P | J2 OT |
| 7440-22-4 | Silver | 1.2 | U | | P | |
| 7440-28-0 | Thallium | 1.2 | U | | P | |
| 7440-31-5 | Tin | 6.2 | U | | P | |
| 7440-62-2 | Vanadium | 95 | | | P | |
| 7440-66-6 | Zinc | 100 | | ~~N*~~ | P | RS MS |

8/21/0

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

*Savannah Laboratories*

# TOTAL METALS
-1-
## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.
LIA008

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ001

Matrix (soil/water): SOIL Lab Sample ID: S004089-19

Level (low/med): LOW Date Received: 22-JUN-2000

% Solids: 84.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 20000 | | | P | |
| 7440-36-0 | Antimony | 3.3 | | ~~N~~ | P | J3 MS |
| 7440-38-2 | Arsenic | 8.1 | | | P | |
| 7440-39-3 | Barium | 77 | | | P | |
| 7440-41-7 | Beryllium | 0.23 | ~~B~~ | | P | J6 IB |
| 7440-43-9 | Cadmium | 1.8 | | ~~N*~~ | P | J4 MS |
| 7440-47-3 | Chromium | 55 | | | P | |
| 7440-48-4 | Cobalt | 26 | | | P | |
| 7440-50-8 | Copper | 47 | | ~~N~~ | P | J4 MS/BH |
| 7439-89-6 | Iron | 51000 | | | P | |
| 7439-92-1 | Lead | 2.6 | | | P | |
| 7439-96-5 | Manganese | 1300 | | | P | |
| 7439-97-6 | Mercury | 0.074 | | | CV | 8/21/0 |
| 7440-02-0 | Nickel | 29 | | | P | |
| 7782-49-2 | Selenium | 2.1 | | | P | J2 OT |
| 7440-22-4 | Silver | 1.2 | U | | P | |
| 7440-28-0 | Thallium | 1.2 | U | | P | |
| 7440-31-5 | Tin | 6.0 | U | | P | |
| 7440-62-2 | Vanadium | 120 | | | P | |
| 7440-66-6 | Zinc | 69 | | ~~N*~~ | P | R5 MS |

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

*Savannah Laboratories*

# TOTAL METALS
-1-
## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.
LIA014

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VTEQ001

Matrix (soil/water): SOIL Lab Sample ID: S004089-20

Level (low/med): LOW Date Received: 22-JUN-2000

% Solids: 87.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 18000 | | | P | |
| 7440-36-0 | Antimony | 2.3 | U | ~~N~~ | P | UJ 3 MS |
| 7440-38-2 | Arsenic | 4.3 | | | P | |
| 7440-39-3 | Barium | 100 | | | P | |
| 7440-41-7 | Beryllium | 0.16 | ~~B~~ | | P | J6 IB |
| 7440-43-9 | Cadmium | 1.8 | | ~~N*~~ | P | J4 MS |
| 7440-47-3 | Chromium | 120 | | | P | |
| 7440-48-4 | Cobalt | 27 | | | P | |
| 7440-50-8 | Copper | 46 | | ~~N~~ | P | J4 MS |
| 7439-89-6 | Iron | 35000 | | | P | |
| 7439-92-1 | Lead | 3.1 | | | P | |
| 7439-96-5 | Manganese | 920 | | | P | |
| 7439-97-6 | Mercury | 0.022 | | | CV | |
| 7440-02-0 | Nickel | 75 | | | P | |
| 7782-49-2 | Selenium | 0.72 | ~~B~~ | | P | J2 OT |
| 7440-22-4 | Silver | 1.1 | U | | P | |
| 7440-28-0 | Thallium | 1.1 | U | | P | |
| 7440-31-5 | Tin | 5.7 | U | | P | |
| 7440-62-2 | Vanadium | 71 | | | P | |
| 7440-66-6 | Zinc | 49 | | ~~N*~~ | P | R5 MS |

8/21/00

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

# DATA VALIDATION WORKSHEETS

DPO: [ ]ACTION [ ]FYI REGION II

# ORGANIC REGIONAL DATA ASSESSMENT SUMMARY

CASE/SAS NO.: _____ LABORATORY: STL Tallahassee

SDG NO.: VIEQ001 DATA USER: EPA Region II

SOW: OLM03.2 REVIEW COMPLETION DATE: 8/21/00

NO. OF SAMPLES: ____ WATER 20 SOIL ____ OTHER

REVIEWER: [ ] ESD [ ] ESAT [✓] OTHER, CONTRACTOR HESI

| QC ITEM | VOA | BNA | PES | EXP | Nit & PETN |
|---|---|---|---|---|---|
| HOLDING TIMES | | | | O | O |
| GC-MS PERFORMANCE | | | | O | O |
| INITIAL CALIBRATIONS | | | | O | O |
| CONTINUING | | | | O | O |
| FIELD BLANKS(F = | | | | — | — |
| LABORATORY BLANKS | | | | O | O |
| SURROGATES | | | | O | O |
| MATRIX | | | | O | O |
| QC SAMPLES(LCS, PVS) | | | | X* | O |
| INTERNAL STANDARDS | | | | — | — |
| COMPOUND | | | | O | O |
| COMPOUND | | | | X | O |
| SYSTEM PERFORMANCE | | | | O | O |
| OVERALL ASSESSMENT | | | | O | O |

O = No problems or minor problems that do not affect data usability.
X = No more than about 5% of the data points are qualified as either estimated or unusable.
M = More than about 5% of the data points are qualified as either estimated or unusable.
Z = More than about 5% of the data points are qualified as unusable.

* Field Dups

DPO ACTION ITEMS: _____

YES NO N/A

CASE NUMBER: VIEQ001 LAB: STL Tallahassee

SITE: CH2M Hill Vieques PR (Camp Garcia Live Impact Area)

1.0 Introduction

1.1 The attached Standard Operating Procedure (SOP) is applicable to nitro substituted aromatics and nitro substituted amines by High Performance Liquid Chromatography (HPLC) data. Its scope is not only to facilitate the data validation process of the data reported by the contracting laboratory but also to ensure that the data is being reviewed in a uniform manner.

1.2 The SOP is based upon the quality control and quality assurance requirement specified in the analytical **Method 8330, November 1992 (Revision 0).**

2.0 Responsibilities

2.1 The reviewer must be knowledgeable of the analytical method and its QC criteria.

2.2 The reviewer must complete and/or file the following:

**Data Assessment Checklist**- The data reviewer evaluates each criterion carefully and checks if data is in compliance, non-compliance or not applicable.

**Data Assessment Narrative**- The data reviewer must present professional judgement, address areas of concern and comment on the validity of the overall data package. The reviewer must explain the reasons for rejecting and/or qualifying the data.

**Rejection Summary Form**-The reviewer must submit a completed form using a ratio format.

**Organic Regional Data Assessment Summary**- A completed form must be submitted.

**Telephone Record Log**-All phone conversations must be transcribed by the reviewer. Upon completion of the data review, the original telephone logis attached to the data assessment narrative.

YES NO N/A

3.0 Data Completeness and Deliverables

3.1 Have any missing deliverables been received and added to the data package? [ ] ___ ✓

ACTION: Call lab for explanation/resubmittal of any missing deliverables. If lab cannot provide them, note the effect on review of the package under the "Contract Problems/Non-Compliance" section of reviewer narrative.

3.2 Was SAS-request included with package? [ ] ✓ ___

If no, a SAS-request can be retrieved from RSCC.

4.0 Cover Letter SDG Narrative

4.1 Is the Narrative or Cover Letter Present? ✓ ___ ___

4.2 Are Case Number and/or SAS number contained in the Narrative or Cover letter? ✓ ___ ___
SDG number

5.0 Traffic Reports and Laboratory Narrative

5.1 Are Traffic Report Forms present for all samples? ✓ ___ ___

ACTION: If no, contact lab for replacement of missing or illegible copies.

5.2 Do Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data? ___ ✓ ___

NOTE: Samples are not preserved.

ACTION: If samples were not iced upon receipt at the laboratory, flag all positive results "J" and all non-detects "UJ".

YES NO N/A

NOTE: Samples must be kept below 4°C from the time of collection through analysis. Degradation of some compounds occurs with heat. Samples should not be exposed to sunlight or temperatures above room temperature.

6.0 Special QC

6.1 Prior to preparation of stock solutions, acetonitrile, methanol, and water should be analyzed to determine possible interferences with analyte peaks. A different batch of solvent should be used if contamination is present.

6.2 Chromatograms are to be submitted showing that there are no interferences with analyte peaks.

Are these chromatograms present in package? [ ] ___ ✓

Are the chromatograms free of interferences? [ ] ___ ✓

ACTION: Ask lab for resubmittals. If deliverables are unavailable, judge the effect on the validity of the data. If questionable, contact SMO and note in data assessment.

7.0 Holding Times

7.1 Have any technical holding times, determined from date of collection to date of analysis, been exceeded?

A. For aqueous samples 7 days from sample collection to extraction ___ [ ] ✓
~~S - 6/20, 6/21~~

B. For soil/sediment samples 14 days from sample collection to extraction ___ ✓ ___
S - 6/20, 6/21 e - 6/27

C. For all samples extracts 40 days from time of extraction to time of analysis ___ ✓ ___
a - 6/29, 6/30

YES NO N/A

Holding Time Violations
Table 1

(See Traffic Report)

| Sample ID | Date Sampled | Date Received | Date Lab Extracted | Date Analyzed |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

8/21/00

ACTION: If technical holding times are exceeded, flag all positive results as estimated ("J") and sample quantitation limits as estimated ("UJ"), and document in the narrative that holding times were exceeded. The reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results must be qualified "J", but the reviewer may determine that non-detect data are unusable (R).

8.0 Surrogate Recovery

8.1 Are the Organic Analysis Data Sheets (Form I) present and complete with surrogate recoveries for each of the following matrices:

a. Water? [ ] ___ ✓

b. Soil/Solid? ✓ ___ ___

ACTION: Call lab for explanation/resubmittals. If missing deliverables or information are unavailable document the effect in the data assessment.

YES NO N/A

8.2 Was the surrogate % recovery out of specifications for any field sample, method blank or QC sample? lab used 22-128 ___ ✓ ___

8.3 Were surrogate retention times (RT) within ± 1.0% of the mean surrogate RT calculated from the initial calibration? ✓ ___ ___

ACTION: Circle outliers in red.

ACTION: If the retention time shift (RTS) or % recovery of the surrogate in the field or QC samples is out of specification, then all associated sample data should be qualified. Use **Table 2** below as a guide.

**Surrogate Recovery**

**TABLE 2**

**The following table summarizes the surrogate recovery criteria and the data qualificati.. guidelines for all associated field samples.**

| SURROGATE | NOT QUALIFIED | J | R | N |
|---|---|---|---|---|
| % RECOVERY - FIELD SAMPLES | | | | |
| Detects | 50 - 125% | < 50%; > 125% | | |
| Non-detects | ≥ 10% | < 10%* | < 10%* | |
| % RECOVERY - BLANKS AND QC SAMPLES ** | | | | |
| Detects | 50 - 125% | < 50%; > 125% | | |
| Non-detects | ≥ 20% | 10 - 19% | < 10% | |
| RTS - field samples | ± 1.0% | | > 1.5%; < -1.5% * | ± 1.1 - 1.5% * |
| RTS - QC samples | ± 1.0% | | > 1.5%; < -1.5% * | ± 1.1 - 1.5% * |

* Use professional judgement.
** If the surrogate recovery in a QC sample or blank was less than 50 percent or greater than 125 percent, then the field sample data should be qualified if the surrogate in the field sample is outside 50 - 125 percent recovery.

FORM 2
SOIL SV LC SURROGATE RECOVERY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Level: (low/med) LOW

| | CLIENT SAMPLE NO. | S1 (DNT) # | S2 # | S3 # | S4 # | S5 # | S6 # | S7 # | S8 # | TOT OUT |
|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0627XMB | 104 | | | | | | | | 0 |
| 02 | 0627XMBLCS | 104 | | | | | | | | 0 |
| 03 | 04089-1 | 104 | | | | | | | | 0 |
| 04 | 04089-2 | 108 | | | | | | | | 0 |
| 05 | 04089-3 | 104 | | | | | | | | 0 |
| 06 | 04089-4 | 104 | | | | | | | | 0 |
| 07 | 04089-5 | 104 | | | | | | | | 0 |
| 08 | 04089-5MS | 112 | | | | | | | | 0 |
| 09 | 04089-5MSD | 112 | | | | | | | | 0 |
| 10 | 04089-6 | 104 | | | | | | | | 0 |
| 11 | 04089-7 | 104 | | | | | | | | 0 |
| 12 | 04089-8 | 112 | | | | | | | | 0 |
| 13 | 04089-9 | 104 | | | | | | | | 0 |
| 14 | 04089-10 | 108 | | | | | | | | 0 |
| 15 | 04089-11 | 104 | | | | | | | | 0 |
| 16 | 04089-12 | 104 | | | | | | | | 0 |
| 17 | 04089-13 | 108 | | | | | | | | 0 |
| 18 | 04089-14 | 104 | | | | | | | | 0 |
| 19 | 04089-15 | 108 | | | | | | | | 0 |
| 20 | 04089-16 | 108 | | | | | | | | 0 |
| 21 | 04089-17 | 104 | | | | | | | | 0 |
| 22 | 04089-18 | 104 | | | | | | | | 0 |
| 23 | 04089-19 | 104 | | | | | | | | 0 |
| 24 | 04089-20 | 104 | | | | | | | | 0 |
| 25 | | | | | | | | | | |
| 26 | | | | | | | | | | |
| 27 | | | | | | | | | | |
| 28 | | | | | | | | | | |
| 29 | | | | | | | | | | |
| 30 | | | | | | | | | | |

QC LIMITS
(22-128)

S1 (DNT) = 3,4-Dinitrotoluene

# Column to be used to flag recovery values
* Values outside of laboratory QC limits
D Sample diluted

YES NO N/A

8.4 Are there any transcription/calculation errors between raw data and surrogate recoveries on Forms: __ [✓] __

ACTION: If large errors exist, call lab for explanation/ resubmittal, make necessary corrections and note errors in the data assessment.

9.0 QC Check Reference Sample

9.1 Is the QC Check Reference Sample Recovery Form present? (Created by Lab) [ ] __ [✓]

9.2 Was the QC Check Reference Sample analyzed at the required frequency (once per SDG or every 20 samples, for each matrix? [ ] __ [✓]

NOTE: The QC Check Form has to be created by the Lab. Concentration of the spiking solution is 5-10 times the estimated quantitation limits for all analytes listed in section 12 of the SAS.

NOTE: QC Check Reference Sample information is important, data is used to judge extraction efficiency.

ACTION: If any QC Check data are missing, call the lab for explanation/resubmittal. If the lab cannot provide missing deliverables, document the effect on the validity of the data in the data assessment. Positive hits should be flagged "J" and non-detects should be flagged "R".

9.3 How many QC check recoveries are outside QC limits of 70-125%?

| Water | Soil |
|---|---|
| NA out of ___ | NA out of ___ |

ACTION: If any recovery is greater than 125%, positive results should be flagged "J" for the affected compound.

YES NO N/A

When two or more analytes have recoveries above 10% but below 70% all associated data should be flagged "J" (positive and non-detects).

When one or more analytes have recoveries below 10% qualify all associated data "R".

Note in data assessment. If further assistance is required, contact SMO for instructions.

It should be noted for TPO action, if a laboratory fails to analyze a QC Check Reference Sample or if a laboratory consistently fails to generate acceptable recoveries.

10.0 Calibration Data

10.1 Initial Calibration

The initial calibration standards must be analyzed daily prior to any sample analysis. The lab may have to create two sets of initial standard solutions if several analytes coelute.

The initial calibration curve must be injected in triplicate for each of the 5 levels. triplicate not required

10.2 Are the chromatograms and data system printouts (Quant reports) present for initial and triplicate calibrations? ✓ ___ ___

10.3 Are the modified Initial Calibration Forms (Pest VI-1, VI-2 Forms) present? ✓ ___ ___

10.4 Are modified Forms present and completed for each analytical sequence and each column? ✓ ___ ___

ACTION: If any Calibration Standard chromatograms and forms are missing, contact the lab for resubmittals.

10.5 Are there any transcription/calculation errors between raw data and Forms? ___ ✓ ___

YES NO N/A

ACTION: If large errors exist, call lab for explanation/resubmittal. Make necessary corrections and document effect in data assessment. Check at least 2-3 values from each calibration standard and more if errors are found.

10:6 Do all standard retention times, including each compound in each level, fall within the windows established during the initial calibration analytical sequence? [✓] ___ ___

NOTE: All injections are taken into account: A total of 15 injections (three injections for each of the five levels). If the lab had to run two sets of standards there would be a total of 30 injections.

ACTION: The average retention time (RT) for each analyte is determined from the mean of the triplicate injection for each 5 point level of the initial calibration. The RT window for each analyte is equal to the average RT ± three (3) times the standard deviation. If the standard deviation comes out to equal zero, the window will be ±0.08. The (Pest form VI-1) Form should be modified to include the average of the three injections for each of the 5 levels.

10.7 Are the linearity criteria for the initial analyses within limits for both columns? (%RSD must be ≤20%) $R^2 > 0.990$ [✓] [ ] ___

ACTION: If no, qualify all associated positive results generated during the sequence "J" and all non-detects "UJ". When %RSD >90%, flag all non-detects results for that analyte as unusable "R".

10.8 Do the standards show degradation products of tetryl? ___ [✓] ___

NOTE: Degradation products of tetryl appear as a shoulder on the TNT peak. Peak heights rather than peak areas should be used when tetryl is present in concentrations that are significant relative to the concentration of TNT.

YES NO N/A

ACTION: If degradation is detected or suspected, qualify positive hits for tetryl and TNT as "J". If degradation is suspected, and tetryl is reported as non-detected, qualify the analyte as "UJ". Note in data assessment.

11.0 Continuing Calibration

11.1 Are Forms (Modified Pest VII-2) present for each continuing calibration? ✓ ___ ___

11.2 Are there any transcription/calculation errors between raw data and forms? ___ ✓ ___

ACTION: If large errors exist, call lab for explanation/resubmittals. Make any necessary corrections, and document effect in data assessment. Check at least 2-3 values from each calibration standard and more if errors are found.

11.3 Were continuing calibrations analyzed at the required frequency? (standard should bracket every 10 samples). ✓ ___ ___

ACTION: Criteria must be met. Determine effect on data. At a minimum, all data should be qualified "J", but the reviewer may determine that data are unusable "R". Document the data qualifications in data assessment.

11.4 Do all standard retention times for each continuing calibration fall within the windows established by the initial calibration? ✓ ___ ___

ACTION: If no, beginning with the samples which followed the last in-control standard, check to see if the chromatograms contain interfering peaks. If peaks are present, qualify positive results and non-detects for analytes outside their respective windows as unusable "R".

11.5 Are the RPD values for all continuing calibration standards ≤15%? ✓ ___ ___

YES NO N/A

ACTION: If the %RPD is >15% for the analyte being quantitated, qualify all associated positive results "J" and non-detects "UJ". The "associated samples" are those which followed the last in-control standard up to the next passing standard. If the %RPD is >90%, flag all non-detects for that analyte unusable "R".

11.6 Compare the peak heights of continuing calibration checks obtained during the day with peak heights obtained from first calibration check of the sequence.

Is the percent RPD for peak heights less than 20% for each of the analytes of each of the Continuing Calibration Checks? [ ] ___ ✓

ACTION: Use professional judgement to verify the reliability of the data.

12.0 Analytical Sequence

12.1 Is Form VIII present and completed for each column and each period of analyses? ✓ ___ ___
modified Form 8

ACTION: If no, contact lab for resubmittals.

12.2 Was the proper analytical sequence followed for each initial calibration and subsequent analyses? ✓ ___ ___

NOTE: Sequence is as follows: 5 point Initial Calibration, Method Blank, Laboratory Control Sample (LCS), Continuing Calibration, 10 sample extracts, Continuing Calibration, 10 sample extracts and so on. The sequence must always end with a Continuing Calibration. All sample extracts, Method Blanks, LCS, and continuing calibrations must be analyzed within 24 hours after the analysis of the Initial Calibration Standards and the calculation of the RT windows.

ACTION: Flag "J" all data generated outside an acceptable twenty-four hour sequence starting after the calculation of the RT windows resulting from the initial calibration unless the daily calibration meets the calibration criteria for all target analytes. If the daily calibration standard does not meet the

SAMPLE INFORMATION SUMMARY

Client SDG: VIEQ001 Sample Fraction: SV LC

/8330S

| QCGroup | Batch | DataFile | Sample Type | Client Id | Lab ID | SmplRef | Lab Prep | SDG |
|---|---|---|---|---|---|---|---|---|
| 7428806 | 1K0614.b | 1F14K4.d | CALIB_1 | | CAL1.46123 | 7428875 | | |
| 7428806 | 1K0614.b | 1F14K6.d | CALIB_2 | | CAL2.46124 | 7429667 | | |
| 7428806 | 1K0614.b | 1F14K8.d | CALIB_3 | | CAL3.46125 | 7429669 | | |
| 7428806 | 1K0614.b | 1F14K10.d | CALIB_4 | | CAL4.46126 | 7429660 | | |
| 7428806 | 1K0614.b | 1F14K12.d | CALIB_5 | | CAL5.46127 | 7429662 | | |
| 7428806 | 1K0614.b | 1F14K14.d | CALIB_6 | | CAL6.46128 | 7429664 | | |
| 7428806 | 1K0629.b | 1F29K1.d | CCALIB_4 | | MED.46126 | 7428831 | | |
| 7428806 | 1K0629.b | 1F29K18.d | CCALIB_4 | | MED.46126 | 7428893 | | |
| 7428806 | 1K0629.b | 1F29K32.d | CCALIB_4 | | MED.46126 | 7428894 | | |
| 7428806 | 1K0629.b | 1F29K4.d | BLANK | 0627XMB | METHOD BLANK | 7429942 | 0627X | VIEQ001 |
| 7428806 | 1K0629.b | 1F29K5.d | LCS | 0627XMBLCS | LAB SPIKE | 7429998 | 0627X | VIEQ001 |
| 7428806 | 1K0629.b | 1F29K12.d | [illegible] | 04089-5MS | 04089-5MS | 7430321 | 0627X | VIEQ001 |
| 7428806 | 1K0629.b | 1F29K13.d | MSD | 04089-5MSD | 04089-5MSD | 7430322 | 0627X | VIEQ001 |
| 7428806 | 1K0629.b | 1F29K7.d | SAMPLE | 04089-1 | LIA009 | 7430270 | 0627X | VIEQ001 |
| 7428806 | 1K0629.b | 1F29K8.d | SAMPLE | 04089-2 | LIA010 | 7430269 | 0627X | VIEQ001 |
| 7428806 | 1K0629.b | 1F29K9.d | SAMPLE | 04089-3 | LIA011 | 7430268 | 0627X | VIEQ001 |
| 7428806 | 1K0629.b | 1F29K10.d | SAMPLE | 04089-4 | LIA012 | 7430279 | 0627X | VIEQ001 |
| 7428806 | 1K0629.b | 1F29K11.d | SAMPLE | 04089-5 | LIA013 | 7429003 | 0627X | VIEQ001 |
| 7428806 | 1K0629.b | 1F29K14.d | SAMPLE | 04089-6 | LIA016 | 7430278 | 0627X | VIEQ001 |
| 7428806 | 1K0629.b | 1F29K15.d | SAMPLE | 04089-7 | LIA027 | 7430277 | 0627X | VIEQ001 |
| 7428806 | 1K0629.b | 1F29K16.d | SAMPLE | 04089-8 | LIA028 | 7430276 | 0627X | VIEQ001 |
| 7428806 | 1K0629.b | 1F29K19.d | SAMPLE | 04089-9 | LIA029 | 7430318 | 0627X | VIEQ001 |
| 7428806 | 1K0629.b | 1F29K20.d | SAMPLE | 04089-10 | LIA030 | 7430006 | 0627X | VIEQ001 |
| 7428806 | 1K0629.b | 1F29K21.d | SAMPLE | 04089-11 | UP-EAST-SS-01 | 7430275 | 0627X | VIEQ001 |
| 7428806 | 1K0629.b | 1F29K22.d | SAMPLE | 04089-12 | UP-EAST-SS-02 | 7430274 | 0627X | VIEQ001 |
| 7428806 | 1K0629.b | 1F29K23.d | SAMPLE | 04089-13 | UP-EAST-SS-03 | 7430273 | 0627X | VIEQ001 |
| 7428806 | 1K0629.b | 1F29K24.d | SAMPLE | 04089-14 | UP-EAST-SS-04 | 7430272 | 0627X | VIEQ001 |
| 7428806 | 1K0629.b | 1F29K25.d | SAMPLE | 04089-15 | LIA011D | 7430020 | 0627X | VIEQ001 |
| 7428806 | 1K0629.b | 1F29K26.d | SAMPLE | 04089-16 | LIA016D | 7429014 | 0627X | VIEQ001 |
| 7428806 | 1K0629.b | 1F29K27.d | SAMPLE | 04089-17 | LIA029D | 7430271 | 0627X | VIEQ001 |
| 7428806 | 1K0629.b | 1F29K28.d | SAMPLE | 04089-18 | LIA007 | 7430287 | 0627X | VIEQ001 |
| 7428806 | 1K0629.b | 1F29K29.d | SAMPLE | 04089-19 | LIA008 | 7430286 | 0627X | VIEQ001 |
| 7428806 | 1K0629.b | 1F29K30.d | SAMPLE | 04089-20 | LIA014 | 7430285 | 0627X | VIEQ001 |
| 7429267 | 1L0701.b | 1G01L3.d | CALIB_4 | | L1.4.461511 | 7429469 | | |
| 7429267 | 1L0701.b | 1G01L4.d | CALIB_4 | | L2.4.461517 | 7429470 | | |
| 7429267 | 1L0701.b | 1G01L5.d | CALIB_1 | | L1.1.46158 | 7429471 | | |
| 7429267 | 1L0701.b | 1G01L6.d | CALIB_1 | | L2.1.461514 | 7429472 | | |
| 7429267 | 1L0701.b | 1G01L7.d | CALIB_2 | | L1.2.46159 | 7429473 | | |
| 7429267 | 1L0701.b | 1G01L8.d | CALIB_2 | | L2.2.461515 | 7429474 | | |
| 7429267 | 1L0701.b | 1G01L9.d | CALIB_3 | | L1.3.461510 | 7429475 | | |
| 7429267 | 1L0701.b | 1G01L10.d | CALIB_3 | | L2.3.461516 | 7429464 | | |
| 7429267 | 1L0701.b | 1G01L11.d | CALIB_5 | | L1.5.461512 | 7429465 | | |
| 7429267 | 1L0701.b | 1G01L12.d | CALIB_5 | | L2.5.461518 | 7429466 | | |
| 7429267 | 1L0701.b | 1G01L13.d | CALIB_6 | | L1.6.461513 | 7429467 | | |
| 7429267 | 1L0701.b | 1G01L14.d | CALIB_6 | | L2.6.461519 | 7429468 | | |
| 7429267 | 1L0701.b | 1G01L36.d | CCALIB_4 | | L1.4.461511 | 7429486 | | |
| 7429267 | 1L0701.b | 1G01L37.d | CCALIB_4 | | L2.4.461517 | 7429487 | | |
| 7429267 | 1L0701.b | 1G01L48.d | CCALIB_4 | | L1.4.461511 | 7429492 | | |
| 7429267 | 1L0701.b | 1G01L49.d | CCALIB_4 | | L2.4.461517 | 7429493 | | |
| 7429267 | 1L0701.b | 1G01L57.d | CCALIB_4 | | L1.4.461511 | 7429702 | | |
| 7429267 | 1L0701.b | 1G01L58.d | CCALIB_4 | | L2.4.461517 | 7429900 | | |
| 7429267 | 1L0701.b | 1G01L38.d | BLANK | 0627XMB | METHOD BLANK | 7430206 | 0627X | VIEQ001 |
| 7429267 | 1L0701.b | 1G01L39.d | SAMPLE | 04089-1 | LIA009 | 7430190 | 0627X | VIEQ001 |

| QCGroup | Batch | DataFile | Sample Type | Client Id | Lab ID | SmplRef | Lab Prep | SDG |
|---|---|---|---|---|---|---|---|---|
| 7429267 | 1L0701.b | 1G01L40.d | SAMPLE | 04089-2 | LIA010 | 7430191 | 0627X | VIEQ001 |
| 7429267 | 1L0701.b | 1G01L41.d | SAMPLE | 04089-3 | LIA011 | 7430280 | 0627X | VIEQ001 |
| 7429267 | 1L0701.b | 1G01L42.d | SAMPLE | 04089-4 | LIA012 | 7430193 | 0627X | VIEQ001 |
| 7429267 | 1L0701.b | 1G01L43.d | SAMPLE | 04089-5 | LIA013 | 7430194 | 0627X | VIEQ001 |
| 7429267 | 1L0701.b | 1G01L44.d | SAMPLE | 04089-6 | LIA016 | 7430195 | 0627X | VIEQ001 |
| 7429267 | 1L0701.b | 1G01L45.d | SAMPLE | 04089-7 | LIA027 | 7430196 | 0627X | VIEQ001 |
| 7429267 | 1L0701.b | 1G01L46.d | SAMPLE | 04089-8 | LIA028 | 7430197 | 0627X | VIEQ001 |
| 7429267 | 1L0701.b | 1G01L47.d | SAMPLE | 04089-10 | LIA030 | 7430198 | 0627X | VIEQ001 |
| 7429267 | 1L0701.b | 1G01L50.d | SAMPLE | 04089-11 | UP-EAST-SS-01 | 7430199 | 0627X | VIEQ001 |
| 7429267 | 1L0701.b | 1G01L51.d | SAMPLE | 04089-12 | UP-EAST-SS-02 | 7430200 | 0627X | VIEQ001 |
| 7429267 | 1L0701.b | 1G01L52.d | SAMPLE | 04089-13 | UP-EAST-SS-03 | 7430201 | 0627X | VIEQ001 |
| 7429267 | 1L0701.b | 1G01L53.d | SAMPLE | 04089-14 | UP-EAST-SS-04 | 7430202 | 0627X | VIEQ001 |
| 7429267 | 1L0701.b | 1G01L54.d | SAMPLE | 04089-15 | LIA011D | 7430203 | 0627X | VIEQ001 |
| 7429267 | 1L0701.b | 1G01L55.d | SAMPLE | 04089-16 | LIA016D | 7430204 | 0627X | VIEQ001 |
| 7429267 | 1L0701.b | 1G01L56.d | SAMPLE | 04089-17 | LIA029D | 7430205 | 0627X | VIEQ001 |
| 7429775 | 1L0703.b | 1G03L1.d | CCALIB_3 | | L1.3.461510 | 7429873 | | |
| 7429775 | 1L0703.b | 1G03L2.d | CCALIB_3 | | L2.3.461516 | 7429879 | | |
| 7429775 | 1L0703.b | 1G03L13.d | CCALIB_3 | | L1.3.461510 | 7429875 | | |
| 7429775 | 1L0703.b | 1G03L14.d | CCALIB_3 | | L2.3.461516 | 7429877 | | |
| 7429775 | 1L0703.b | 1G03L3.d | SAMPLE | 04089-18 | LIA007 | 7430261 | 0627X | VIEQ001 |
| 7429775 | 1L0703.b | 1G03L4.d | SAMPLE | 04089-19 | LIA008 | 7430262 | 0627X | VIEQ001 |
| 7429775 | 1L0703.b | 1G03L5.d | SAMPLE | 04089-20 | LIA014 | 7430263 | 0627X | VIEQ001 |

FORM 6
SV LC INITIAL CALIBRATION DATA

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Instrument ID: TLCKUV1 Calibration Date(s): 06/14/00 06/14/00

Column: C-18 ID: 4.60 (mm) Calibration Time(s): 1327 2059

LAB FILE ID: RF0.02: 1F14K4 RF0.1: 1F14K6 RF0.25: 1F14K8
RF0.5: 1F14K10 RF1: 1F14K12

| COMPOUND | RF0.02 | RF0.1 | RF0.25 | RF0.5 | RF1 |
|---|---|---|---|---|---|
| HMX | 3900 | | 3268 | 3502 | 3703 |
| 1,3,5-TNB | 8150 | | 7380 | 7720 | 8158 |
| RDX | 4750 | | 3676 | 3838 | 4015 |
| 1,3-DNB | 11450 | | 10376 | 10798 | 11306 |
| Tetryl | 6600 | | 5720 | 5944 | 6191 |
| 2-AM-DNT | 8000 | | 6000 | 6348 | 6671 |
| 4-AM-DNT | 5500 | | 4596 | 4808 | 5040 |
| Nitrobenzene | 8850 | | 7908 | 8304 | 8643 |
| 2,4,6-TNT | 7900 | | 6504 | 6810 | 7140 |
| 2,4-DNT | 9850 | | 7996 | 8430 | 8859 |
| 2,6-DNT | 5100 | | 3772 | 4042 | 4258 |
| 2-NT | 5250 | | 3512 | 3714 | 4102 |
| 3-NT | 5150 | | 3720 | 3858 | 3967 |
| 4-NT | 4550 | | 3284 | 3402 | 3715 |
| 3,4-Dinitrotoluene | 4450 | | 3504 | 3688 | 3917 |

FORM 6
SV LC INITIAL CALIBRATION DATA

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Instrument ID: TLCKUV1 Calibration Date(s): 06/14/00 06/14/00

Column: C-18 ID: 4.60 (mm) Calibration Time(s): 1327 2059

RF2: 1F14K14

| COMPOUND | RF2 | CURVE | AVE RRF A1 | %RSD or R^2 |
|---|---|---|---|---|
| HMX | 3636 | AVRG | 3602 | 6.5 |
| 1,3,5-TNB | 8044 | AVRG | 7891 | 4.3 |
| RDX | 3964 | AVRG | 4049 | 10.2 |
| 1,3-DNB | 11217 | AVRG | 11029 | 4.0 |
| Tetryl | 6182 | AVRG | 6128 | 5.4 |
| 2-AM-DNT | 6579 | AVRG | 6720 | 11.3 |
| 4-AM-DNT | 4968 | AVRG | 4983 | 6.7 |
| Nitrobenzene | 8616 | AVRG | 8464 | 4.3 |
| 2,4,6-TNT | 7070 | AVRG | 7085 | 7.3 |
| 2,4-DNT | 8749 | AVRG | 8777 | 7.8 |
| 2,6-DNT | 4166 | AVRG | 4268 | 11.7 |
| 2-NT | 3879 | AVRG | 4091 | 16.7 |
| 3-NT | 4044 | AVRG | 4148 | 13.8 |
| 4-NT | 3567 | AVRG | 3704 | 13.5 |
| 3,4-Dinitrotoluene | 3850 | AVRG | 3882 | 9.2 |

FORM 6
SV LC INITIAL CALIBRATION DATA

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Instrument ID: TLCLUV1 Calibration Date(s): 07/01/00 07/01/00

Column: CN ID: 4.60 (mm) Calibration Time(s): 1542 2255

LAB FILE ID: RF0.02: 1G01L5 RF0.1: 1G01L7 RF0.25: 1G01L9
RF0.5: 1G01L3 RF1: 1G01L11

| COMPOUND | RF0.02 | RF0.1 | RF0.25 | RF0.5 | RF1 |
|---|---|---|---|---|---|
| HMX | 3650 | 2070 | 1948 | 2174 | 1841 |
| RDX | 3700 | 2960 | 3016 | 3184 | 2870 |
| 1,3,5-TNB | 8600 | 8860 | 8904 | 9786 | 8801 |
| 1,3-DNB | 12250 | 11320 | 11204 | 12172 | 11005 |
| 2-AM-DNT | 4750 | 3530 | 3536 | 3688 | 3406 |
| 4-AM-DNT | 3750 | 2790 | 2796 | 2866 | 2721 |
| 2,4,6-TNT | 6550 | 5440 | 5392 | 5792 | 5259 |
| 2,4-DNT | 7350 | 6540 | 6388 | 6814 | 6201 |
| 2,6-DNT | 4650 | 3390 | 3136 | 3328 | 3051 |
| 2-NT | 4200 | 3140 | 2988 | 3082 | 2889 |
| 3,4-Dinitrotoluene | 3150 | 2140 | 2064 | 2048 | 1937 |

FORM 6
SV LC INITIAL CALIBRATION DATA

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Instrument ID: TLCLUV1 Calibration Date(s): 07/01/00 07/01/00

Column: CN ID: 4.60 (mm) Calibration Time(s): 1542 2255

RF2: 1G01L13

| COMPOUND | RF2 | CURVE | COEFFICIENTS A0 | A1 | %RSD or R^2 |
|---|---|---|---|---|---|
| HMX | 1908 | LINR | -1.94e-002 | 5.308e-004 | 0.998 |
| RDX | 2952 | LINR | -8.07e-003 | 3.41e-004 | 0.999 |
| 1,3,5-TNB | 9050 | LINR | -3.26e-003 | 1.109e-004 | 0.999 |
| 1,3-DNB | 11362 | LINR | -3.41e-003 | 8.843e-005 | 0.999 |
| 2-AM-DNT | 3500 | LINR | -5.87e-003 | 2.875e-004 | 1.000 |
| 4-AM-DNT | 2806 | LINR | -1.01e-003 | 3.583e-004 | 1.000 |
| 2,4,6-TNT | 5424 | LINR | -4.73e-003 | 1.854e-004 | 0.999 |
| 2,4-DNT | 6408 | LINR | -4.43e-003 | 1.57e-004 | 0.999 |
| 2,6-DNT | 3149 | LINR | -7.6e-003 | 3.202e-004 | 0.999 |
| 2-NT | 2992 | LINR | -3.58e-003 | 3.366e-004 | 1.000 |
| 3,4-Dinitrotoluene | 1996 | LINR | -7.77e-003 | 5.056e-004 | 1.000 |

FORM 6
SV LC INITIAL CALIBRATION DATA

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Instrument ID: TLCLUV1 Calibration Date(s): 07/01/00 07/01/00

Column: CN ID: 4.60 (mm) Calibration Time(s): 1626 2338

LAB FILE ID: RF0.02: 1G01L6 RF0.1: 1G01L8 RF0.25: 1G01L10
RF0.5: 1G01L4 RF1: 1G01L12

| COMPOUND | RF0.02 | RF0.1 | RF0.25 | RF0.5 | RF1 |
|---|---|---|---|---|---|
| Tetryl | 3100 | 2120 | 2112 | 2184 | 2011 |
| Nitrobenzene | 8200 | 7340 | 6848 | 6912 | 6711 |
| 3-NT | 3300 | 3030 | 2832 | 2830 | 2733 |
| 4-NT | 3150 | 2760 | 2576 | 2550 | 2469 |
| TATB | 2350 | 1710 | 1364 | 1302 | 1252 |
| 3,4-Dinitrotoluene | 3150 | 2140 | 2064 | 2048 | 1937 |

FORM 6
SV LC INITIAL CALIBRATION DATA

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Instrument ID: TLCLUV1 Calibration Date(s): 07/01/00 07/01/00

Column: CN ID: 4.60 (mm) Calibration Time(s): 1626 2338

RF2: 1G01L14

| COMPOUND | RF2 | CURVE | COEFFICIENTS A0 | A1 | %RSD or R^2 |
|---|---|---|---|---|---|
| Tetryl | 2078 | LINR | -6.7e-003 | 4.851e-004 | 0.999 |
| Nitrobenzene | 6875 | LINR | -1.28e-003 | 1.462e-004 | 1.000 |
| 3-NT | 2806 | LINR | -2.55e-003 | 3.586e-004 | 1.000 |
| 4-NT | 2535 | LINR | -3.35e-003 | 3.971e-004 | 1.000 |
| TATB | 1278 | LINR | -1.94e-002 | 7.943e-004 | 1.000 |
| 3,4-Dinitrotoluene | 1996 | LINR | -7.77e-003 | 5.056e-004 | 1.000 |

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Instrument ID: TLCKUV1 Calibration Date: 06/29/00 Time: 1026

Lab File ID: 1F29K1 Init. Calib. Date(s): 06/14/00 06/14/00

Init. Calib. Times: 1327 2059

GC Column: C-18 ID: 4.60 (mm)

| COMPOUND | ICAL0.5 AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| HMX | 3601.90 | | 4060.0 | 0.01 | 12.7 | 15.0 | AVRG |
| 1,3,5-TNB | 7890.50 | | 8642.0 | 0.01 | 9.5 | 15.0 | AVRG |
| RDX | 4048.60 | | 4400.0 | 0.01 | 8.7 | 15.0 | AVRG |
| 1,3-DNB | 11029.4 | | 11796 | 0.01 | 7.0 | 15.0 | AVRG |
| Tetryl | 6127.50 | | 5420.0 | 0.01 | 11.5 | 15.0 | AVRG |
| 2-AM-DNT | 6719.60 | | 6954.0 | 0.01 | 3.5 | 15.0 | AVRG |
| 4-AM-DNT | 4982.50 | | 5270.0 | 0.01 | 5.8 | 15.0 | AVRG |
| Nitrobenzene | 8464.10 | | 8326.0 | 0.01 | 1.6 | 15.0 | AVRG |
| 2,4,6-TNT | 7084.90 | | 7212.0 | 0.01 | 1.8 | 15.0 | AVRG |
| 2,4-DNT | 8776.80 | | 9004.0 | 0.01 | 2.6 | 15.0 | AVRG |
| 2,6-DNT | 4267.60 | | 4394.0 | 0.01 | 3.0 | 15.0 | AVRG |
| 2-NT | 4091.40 | | 3762.0 | 0.01 | 8.0 | 15.0 | AVRG |
| 3-NT | 4147.80 | | 3862.0 | 0.01 | 6.9 | 15.0 | AVRG |
| 4-NT | 3703.60 | | 3404.0 | 0.01 | 8.1 | 15.0 | AVRG |
| 3,4-Dinitrotoluene | 3881.90 | | 3964.0 | 0.01 | 2.1 | 15.0 | AVRG |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Instrument ID: TLCKUV1 Calibration Date: 06/29/00 Time: 2004

Lab File ID: 1F29K18 Init. Calib. Date(s): 06/14/00 06/14/00

Init. Calib. Times: 1327 2059

GC Column: C-18 ID: 4.60 (mm)

| COMPOUND | ICAL0.5 AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| HMX | 3601.90 | | 3988.0 | 0.01 | 10.7 | 15.0 | AVRG |
| 1,3,5-TNB | 7890.50 | | 8546.0 | 0.01 | 8.3 | 15.0 | AVRG |
| RDX | 4048.60 | | 4302.0 | 0.01 | 6.2 | 15.0 | AVRG |
| 1,3-DNB | 11029.4 | | 11678 | 0.01 | 5.9 | 15.0 | AVRG |
| Tetryl | 6127.50 | | 5348.0 | 0.01 | 12.7 | 15.0 | AVRG |
| 2-AM-DNT | 6719.60 | | 6886.0 | 0.01 | 2.5 | 15.0 | AVRG |
| 4-AM-DNT | 4982.50 | | 5088.0 | 0.01 | 2.1 | 15.0 | AVRG |
| Nitrobenzene | 8464.10 | | 8272.0 | 0.01 | 2.3 | 15.0 | AVRG |
| 2,4,6-TNT | 7084.90 | | 7214.0 | 0.01 | 1.8 | 15.0 | AVRG |
| 2,4-DNT | 8776.80 | | 8972.0 | 0.01 | 2.2 | 15.0 | AVRG |
| 2,6-DNT | 4267.60 | | 4410.0 | 0.01 | 3.3 | 15.0 | AVRG |
| 2-NT | 4091.40 | | 3760.0 | 0.01 | 8.1 | 15.0 | AVRG |
| 3-NT | 4147.80 | | 3870.0 | 0.01 | 6.7 | 15.0 | AVRG |
| 4-NT | 3703.60 | | 3412.0 | 0.01 | 7.9 | 15.0 | AVRG |
| 3,4-Dinitrotoluene | 3881.90 | | 3994.0 | 0.01 | 2.9 | 15.0 | AVRG |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Instrument ID: TLCKUV1 Calibration Date: 06/30/00 Time: 0346

Lab File ID: 1F29K32 Init. Calib. Date(s): 06/14/00 06/14/00

Init. Calib. Times: 1327 2059

GC Column: C-18 ID: 4.60 (mm)

| COMPOUND | ICAL0.5 AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| HMX | 3601.90 | | 3990.0 | 0.01 | 10.8 | 15.0 | AVRG |
| 1,3,5-TNB | 7890.50 | | 8632.0 | 0.01 | 9.4 | 15.0 | AVRG |
| RDX | 4043.60 | | 4392.0 | 0.01 | 8.5 | 15.0 | AVRG |
| 1,3-DNB | 11029.4 | | 11762 | 0.01 | 6.6 | 15.0 | AVRG |
| Tetryl | 6127.50 | | 5392.0 | 0.01 | 12.0 | 15.0 | AVRG |
| 2-AM-DNT | 6719.60 | | 6910.0 | 0.01 | 2.8 | 15.0 | AVRG |
| 4-AM-DNT | 4982.50 | | 5122.0 | 0.01 | 2.8 | 15.0 | AVRG |
| Nitrobenzene | 8464.10 | | 8322.0 | 0.01 | 1.7 | 15.0 | AVRG |
| 2,4,6-TNT | 7084.90 | | 7268.0 | 0.01 | 2.6 | 15.0 | AVRG |
| 2,4-DNT | 8776.80 | | 9048.0 | 0.01 | 3.1 | 15.0 | AVRG |
| 2,6-DNT | 4267.60 | | 4470.0 | 0.01 | 4.7 | 15.0 | AVRG |
| 2-NT | 4091.40 | | 3786.0 | 0.01 | 7.5 | 15.0 | AVRG |
| 3-NT | 4147.80 | | 3838.0 | 0.01 | 7.5 | 15.0 | AVRG |
| 4-NT | 3703.60 | | 3408.0 | 0.01 | 8.0 | 15.0 | AVRG |
| 3,4-Dinitrotoluene | 3881.90 | | 3964.0 | 0.01 | 2.1 | 15.0 | AVRG |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Instrument ID: TLCLUV1 Calibration Date: 07/02/00 Time: 2001

Lab File ID: 1G01L36 Init. Calib. Date(s): 07/01/00 07/01/00

Init. Calib. Times: 1542 2255

GC Column: CN ID: 4.60 (mm)

| COMPOUND | ICAL0.5 AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| HMX | 0.50 | 0.53 | 2056.0 | 0.01 | 6.0 | 15.0 | LINR |
| RDX | 0.50 | 0.52 | 3084.0 | 0.01 | 4.0 | 15.0 | LINR |
| 1,3,5-TNB | 0.50 | 0.52 | 9356.0 | 0.01 | 4.0 | 15.0 | LINR |
| 1,3-DNB | 0.50 | 0.51 | 11658 | 0.01 | 2.0 | 15.0 | LINR |
| 2-AM-DNT | 0.50 | 0.51 | 3598.0 | 0.01 | 2.0 | 15.0 | LINR |
| 4-AM-DNT | 0.50 | 0.54 | 2998.0 | 0.01 | 8.0 | 15.0 | LINR |
| 2,4,6-TNT | 0.50 | 0.52 | 5624.0 | 0.01 | 4.0 | 15.0 | LINR |
| 2,4-DNT | 0.50 | 0.51 | 6534.0 | 0.01 | 2.0 | 15.0 | LINR |
| 2,6-DNT | 0.50 | 0.51 | 3256.0 | 0.01 | 2.0 | 15.0 | LINR |
| 2-NT | 0.50 | 0.55 | 3304.0 | 0.01 | 10.0 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.50 | 0.52 | 2096.0 | 0.01 | 4.0 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Instrument ID: TLCLUV1 Calibration Date: 07/02/00 Time: 2044

Lab File ID: 1G01L37 Init. Calib. Date(s): 07/01/00 07/01/00

Init. Calib. Times: 1626 2238

GC Column: CN ID: 4.60 (mm)

| COMPOUND | ICAL0.5 AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| Tetryl | 0.50 | 0.52 | 2190.0 | 0.01 | 4.0 | 15.0 | LINR |
| Nitrobenzene | 0.50 | 0.49 | 6680.0 | 0.01 | 2.0 | 15.0 | LINR |
| 3-NT | 0.50 | 0.49 | 2754.0 | 0.01 | 2.0 | 15.0 | LINR |
| 4-NT | 0.50 | 0.48 | 2420.0 | 0.01 | 4.0 | 15.0 | LINR |
| TATB | 0.50 | 0.49 | 1290.0 | 0.01 | 2.0 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.50 | 0.51 | 2036.0 | 0.01 | 2.0 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Instrument ID: TLCLUV1 Calibration Date: 07/03/00 Time: 0710

Lab File ID: 1G01L48 Init. Calib. Date(s): 07/01/00 07/01/00

Init. Calib. Times: 1542 2255

GC Column: CN ID: 4.60 (mm)

| COMPOUND | ICAL0.5 AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| HMX | 0.50 | 0.51 | 2004.0 | 0.01 | 2.0 | 15.0 | LINR |
| RDX | 0.50 | 0.51 | 3030.0 | 0.01 | 2.0 | 15.0 | LINR |
| 1,3,5-TNB | 0.50 | 0.51 | 9272.0 | 0.01 | 2.0 | 15.0 | LINR |
| 1,3-DNB | 0.50 | 0.51 | 11614 | 0.01 | 2.0 | 15.0 | LINR |
| 2-AM-DNT | 0.50 | 0.51 | 3570.0 | 0.01 | 2.0 | 15.0 | LINR |
| 4-AM-DNT | 0.50 | 0.53 | 2960.0 | 0.01 | 6.0 | 15.0 | LINR |
| 2,4,6-TNT | 0.50 | 0.51 | 5572.0 | 0.01 | 2.0 | 15.0 | LINR |
| 2,4-DNT | 0.50 | 0.51 | 6534.0 | 0.01 | 2.0 | 15.0 | LINR |
| 2,6-DNT | 0.50 | 0.51 | 3214.0 | 0.01 | 2.0 | 15.0 | LINR |
| 2-NT | 0.50 | 0.55 | 3300.0 | 0.01 | 10.0 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.50 | 0.53 | 2118.0 | 0.01 | 6.0 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Instrument ID: TLCLUV1 Calibration Date: 07/03/00 Time: 0754

Lab File ID: 1G01L49 Init. Calib. Date(s): 07/01/00 07/01/00

Init. Calib. Times: 1626 2338

GC Column: CN ID: 4.60 (mm)

| COMPOUND | ICAL0.5 AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| Tetryl | 0.50 | 0.52 | 2168.0 | 0.01 | 4.0 | 15.0 | LINR |
| Nitrobenzene | 0.50 | 0.48 | 6630.0 | 0.01 | 4.0 | 15.0 | LINR |
| 3-NT | 0.50 | 0.49 | 2726.0 | 0.01 | 2.0 | 15.0 | LINR |
| 4-NT | 0.50 | 0.48 | 2422.0 | 0.01 | 4.0 | 15.0 | LINR |
| TATB | 0.50 | 0.48 | 1272.0 | 0.01 | 4.0 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.50 | 0.50 | 2024.0 | 0.01 | 0.0 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Instrument ID: TLCLUV1 Calibration Date: 07/03/00 Time: 1525

Lab File ID: 1G01L57 Init. Calib. Date(s): 07/01/00 07/01/00

Init. Calib. Times: 1542 2255

GC Column: CN ID: 4.60 (mm)

| COMPOUND | ICAL0.5 AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| HMX | 0.50 | 0.53 | 2086.0 | 0.01 | 6.0 | 15.0 | LINR |
| RDX | 0.50 | 0.51 | 3064.0 | 0.01 | 2.0 | 15.0 | LINR |
| 1,3,5-TNB | 0.50 | 0.51 | 9344.0 | 0.01 | 2.0 | 15.0 | LINR |
| 1,3-DNB | 0.50 | 0.51 | 11618 | 0.01 | 2.0 | 15.0 | LINR |
| 2-AM-DNT | 0.50 | 0.51 | 3564.0 | 0.01 | 2.0 | 15.0 | LINR |
| 4-AM-DNT | 0.50 | 0.53 | 2980.0 | 0.01 | 6.0 | 15.0 | LINR |
| 2,4,6-TNT | 0.50 | 0.52 | 5608.0 | 0.01 | 4.0 | 15.0 | LINR |
| 2,4-DNT | 0.50 | 0.51 | 6512.0 | 0.01 | 2.0 | 15.0 | LINR |
| 2,6-DNT | 0.50 | 0.50 | 3200.0 | 0.01 | 0.0 | 15.0 | LINR |
| 2-NT | 0.50 | 0.54 | 3222.0 | 0.01 | 8.0 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.50 | 0.52 | 2088.0 | 0.01 | 4.0 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Instrument ID: TLCLUV1 Calibration Date: 07/03/00 Time: 1608

Lab File ID: 1G01L58 Init. Calib. Date(s): 07/01/00 07/01/00

Init. Calib. Times: 1626 2338

GC Column: CN ID: 4.60 (mm)

| COMPOUND | ICAL0.5 AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| Tetryl | 0.50 | 0.55 | 2280.0 | 0.01 | 10.0 | 15.0 | LINR |
| Nitrobenzene | 0.50 | 0.48 | 6588.0 | 0.01 | 4.0 | 15.0 | LINR |
| 3-NT | 0.50 | 0.48 | 2716.0 | 0.01 | 4.0 | 15.0 | LINR |
| 4-NT | 0.50 | 0.47 | 2398.0 | 0.01 | 6.0 | 15.0 | LINR |
| TATB | 0.50 | 0.49 | 1288.0 | 0.01 | 2.0 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.50 | 0.51 | 2054.0 | 0.01 | 2.0 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Instrument ID: TLCLUV1 Calibration Date: 07/03/00 Time: 1708

Lab File ID: 1G03L1 Init. Calib. Date(s): 07/01/00 07/01/00

Init. Calib. Times: 1542 2255

GC Column: CN ID: 4.60 (mm)

| COMPOUND | AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| HMX | 0.25 | 0.24 | 1944.0 | 0.01 | 4.0 | 15.0 | LINR |
| RDX | 0.25 | 0.24 | 2920.0 | 0.01 | 4.0 | 15.0 | LINR |
| 1,3,5-TNB | 0.25 | 0.24 | 8604.0 | 0.01 | 4.0 | 15.0 | LINR |
| 1,3-DNB | 0.25 | 0.24 | 10892 | 0.01 | 4.0 | 15.0 | LINR |
| 2-AM-DNT | 0.25 | 0.24 | 3356.0 | 0.01 | 4.0 | 15.0 | LINR |
| 4-AM-DNT | 0.25 | 0.25 | 2852.0 | 0.01 | 0.0 | 15.0 | LINR |
| 2,4,6-TNT | 0.25 | 0.24 | 5232.0 | 0.01 | 4.0 | 15.0 | LINR |
| 2,4-DNT | 0.25 | 0.24 | 6196.0 | 0.01 | 4.0 | 15.0 | LINR |
| 2,6-DNT | 0.25 | 0.23 | 3016.0 | 0.01 | 8.0 | 15.0 | LINR |
| 2-NT | 0.25 | 0.26 | 3080.0 | 0.01 | 4.0 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.25 | 0.27 | 2176.0 | 0.01 | 8.0 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Instrument ID: TLCLUV1 Calibration Date: 07/03/00 Time: 1751

Lab File ID: 1G03L2 Init. Calib. Date(s): 07/01/00 07/01/00

Init. Calib. Times: 1626 2338

GC Column: CN ID: 4.60 (mm)

| COMPOUND | AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| Tetryl | 0.25 | 0.22 | 1912.0 | 0.01 | 12.0 | 15.0 | LINR |
| Nitrobenzene | 0.25 | 0.24 | 6696.0 | 0.01 | 4.0 | 15.0 | LINR |
| 3-NT | 0.25 | 0.24 | 2752.0 | 0.01 | 4.0 | 15.0 | LINR |
| 4-NT | 0.25 | 0.24 | 2412.0 | 0.01 | 4.0 | 15.0 | LINR |
| TATB | 0.25 | 0.25 | 1348.0 | 0.01 | 0.0 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.25 | 0.24 | 2004.0 | 0.01 | 4.0 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Instrument ID: TLCLUV1 Calibration Date: 07/04/00 Time: 0402

Lab File ID: 1G03L13 Init. Calib. Date(s): 07/01/00 07/01/00

Init. Calib. Times: 1542 2255

GC Column: CN ID: 4.60 (mm)

| COMPOUND | AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| HMX | 0.25 | 0.23 | 1908.0 | 0.01 | 8.0 | 15.0 | LINR |
| RDX | 0.25 | 0.23 | 2764.0 | 0.01 | 8.0 | 15.0 | LINR |
| 1,3,5-TNB | 0.25 | 0.23 | 8488.0 | 0.01 | 8.0 | 15.0 | LINR |
| 1,3-DNB | 0.25 | 0.23 | 10776 | 0.01 | 8.0 | 15.0 | LINR |
| 2-AM-DNT | 0.25 | 0.23 | 3284.0 | 0.01 | 8.0 | 15.0 | LINR |
| 4-AM-DNT | 0.25 | 0.24 | 2748.0 | 0.01 | 4.0 | 15.0 | LINR |
| 2,4,6-TNT | 0.25 | 0.24 | 5196.0 | 0.01 | 4.0 | 15.0 | LINR |
| 2,4-DNT | 0.25 | 0.23 | 6016.0 | 0.01 | 8.0 | 15.0 | LINR |
| 2,6-DNT | 0.25 | 0.23 | 3020.0 | 0.01 | 8.0 | 15.0 | LINR |
| 2-NT | 0.25 | 0.27 | 3236.0 | 0.01 | 8.0 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.25 | 0.27 | 2200.0 | 0.01 | 8.0 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Instrument ID: TLCLUV1 Calibration Date: 07/04/00 Time: 0446

Lab File ID: 1G03L14 Init. Calib. Date(s): 07/01/00 07/01/00

Init. Calib. Times: 1626 2338

GC Column: CN ID: 4.60 (mm)

| COMPOUND | AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| Tetryl | 0.25 | 0.22 | 1912.0 | 0.01 | 12.0 | 15.0 | LINR |
| Nitrobenzene | 0.25 | 0.24 | 6552.0 | 0.01 | 4.0 | 15.0 | LINR |
| 3-NT | 0.25 | 0.24 | 2708.0 | 0.01 | 4.0 | 15.0 | LINR |
| 4-NT | 0.25 | 0.24 | 2420.0 | 0.01 | 4.0 | 15.0 | LINR |
| TATB | 0.25 | 0.24 | 1288.0 | 0.01 | 4.0 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.25 | 0.25 | 2032.0 | 0.01 | 0.0 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

YES NO N/A

criteria for some analytes the reviewer might reject

those values. In any case, if the 24 hour sequence is exceeded it should be noted in the data assessment under contract non-compliance.

13.0 Method Blanks

13.1 Is the Method Blank Summary (Form IV) present for each of the following matrices?
a. water [ ] ___ ✓
b. soil ✓ ___ ___

13.2 Frequency of Analysis:

Has a Method/Prep blank been analyzed at the same time for each batch of samples extracted. ✓ ___ ___

ACTION: If any method blank data are missing, call lab for explanation/resubmittal. If method blank data are not available, reject "R" all associated positive data.

13.3 Are the positive hits present in the blank less than detection limit? not + ✓ ___ ___

ACTION: If hits are ≥ detection limits, analysis should be discontinued. All associated samples must be re-prepared and re-analyzed with a new blank.
If lab did not follow this action, note in data assessment. Follow guidelines under contamination section.

13.4 Chromatography: review the method blank raw data chromatograms, quant reports or data system printouts.

Is the chromatographic performance (baseline stability) for each instrument acceptable? ✓ ___ ___

ACTION: Use professional judgement to determine the effect on the data.

YES NO N/A

14.0 Contamination

NOTE: "Water blanks", "drill blanks", and distilled water blanks" are validated like any other sample, and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

14.1 Did the lab run an instrument blank following a sample analysis which contained an analyte(s) at high concentration(s) to evaluate possible sample cross-contamination? [ ] ___ ✓

ACTION: Sample analysis results after the high concentration sample must be evaluated for carryover. Sample cross-contamination should be noted for TPO action if an effect on the data is suspected. An Instrument Blank is not required in the methodology.

14.2 Do any Method Blanks have positive results (TCL)? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample dilution factor. ___ ✓ ___

14.3 Are there field/rinse/equipment blanks associated with every sample? [ ] ✓ ___

ACTION: Note in data assessment that there is no associated field/rinse/equipment blank. no QC BLKS

14.4 Do any field/rinse blanks have positive results (TCL)? ___ [ ] ✓

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: All field blank results associated with a particular group of samples (may exceed one per case) must be used to qualify data. Blanks may not be qualified because of contamination in another blank. Field blanks must be qualified for surrogate recovery, instrument performance criteria, or calibration QC problems.

FORM 4
SV LC METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

0627XMB

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Lab File ID: 1F29K4 Lab Sample ID: METHOD BLANK

Instrument ID: TLCKUV1 Date Extracted: 06/27/00

Matrix: (soil/water) SOIL Date Analyzed: 06/29/00

Level:(low/med) LOW Time Analyzed: 1222

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

| | CLIENT SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED |
|---|---|---|---|---|
| 01 | 0627XMBLCS | LAB SPIKE | 1F29K5 | 06/29/00 |
| 02 | 04089-1 | LIA009 | 1F29K7 | 06/29/00 |
| 03 | 04089-2 | LIA010 | 1F29K8 | 06/29/00 |
| 04 | 04089-3 | LIA011 | 1F29K9 | 06/29/00 |
| 05 | 04089-4 | LIA012 | 1F29K10 | 06/29/00 |
| 06 | 04089-5 | LIA013 | 1F29K11 | 06/29/00 |
| 07 | 04089-5MS | 04089-5MS | 1F29K12 | 06/29/00 |
| 08 | 04089-5MSD | 04089-5MSD | 1F29K13 | 06/29/00 |
| 09 | 04089-6 | LIA016 | 1F29K14 | 06/29/00 |
| 10 | 04089-7 | LIA027 | 1F29K15 | 06/29/00 |
| 11 | 04089-8 | LIA028 | 1F29K16 | 06/29/00 |
| 12 | 04089-9 | LIA029 | 1F29K19 | 06/29/00 |
| 13 | 04089-10 | LIA030 | 1F29K20 | 06/29/00 |
| 14 | 04089-11 | UP-EAST-SS-01 | 1F29K21 | 06/29/00 |
| 15 | 04089-12 | UP-EAST-SS-02 | 1F29K22 | 06/29/00 |
| 16 | 04089-13 | UP-EAST-SS-03 | 1F29K23 | 06/29/00 |
| 17 | 04089-14 | UP-EAST-SS-04 | 1F29K24 | 06/29/00 |
| 18 | 04089-15 | LIA011D | 1F29K25 | 06/29/00 |
| 19 | 04089-16 | LIA016D | 1F29K26 | 06/30/00 |
| 20 | 04089-17 | LIA029D | 1F29K27 | 06/30/00 |
| 21 | 04089-18 | LIA007 | 1F29K28 | 06/30/00 |
| 22 | 04089-19 | LIA008 | 1F29K29 | 06/30/00 |
| 23 | 04089-20 | LIA014 | 1F29K30 | 06/30/00 |
| 24 | | | | |
| 25 | | | | |
| 26 | | | | |
| 27 | | | | |
| 28 | | | | |
| 29 | | | | |
| 30 | | | | |

COMMENTS: No Contamination



FORM IV SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

0627XMB

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: METHOD BLANK

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K4

Level: (low/med) LOW Date Received: _____

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/27/00

Concentrated Extract Volume: 20.0 (mL) Date Analyzed: 06/29/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 91-20-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

YES NO N/A

ACTION: Follow the directions in **Table 3** below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If any blanks are grossly contaminated, all associated data should be qualified as unusable (R) (see item # 12.3).

| Sample conc > CRQL but < 5x blank | Sample conc < CRQL & is < 5x blank value | Sample conc > CRQL & > 5x blank value |
|---|---|---|
| Flag sample result with a "U" | Report CRQL & qualify "U" | No qualification is needed |

NOTE: Analytes qualified "U" for blank contamination are still considered as "hits" when qualifying for calibration or other QC criteria.

15.0 Target Compound List (TCL) Analytes (Form I)

15.1 Are the Organic Analysis Data Sheets (Form I) present with required header information on each page, for each of the following:

a. Samples ? [✓] ___ ___

b. Laboratory Control Samples? [✓] ___ ___

c. Blanks? [✓] ___ ___

d. Matrix spikes and matrix spike duplicates? [✓] ___ ___

e. Lab duplicate? [ ] ___ [✓]

| | YES | NO | N/A |
|---|---|---|---|
| 15.2 Are the Chromatograms, and the data system printouts (Quant Reports) included in the sample package for each of the following: | | | |
| a. Samples? | [✓] | ___ | ___ |
| b. Laboratory Control Samples? | [✓] | ___ | ___ |
| c. Blanks? | [✓] | ___ | ___ |
| d. Matrix spikes and Matrix spike duplicates? | [✓] | ___ | ___ |
| e. Lab duplicate? | [ ] | ___ | ✓ |

ACTION: If any data are missing, Contact Lab for resubmittals.

| | | | |
|---|---|---|---|
| 15.3 Are the response factors shown in the Quant Report? | [ ] | ✓ | ___ |
| 15.4 Is chromatographic performance acceptable with respect to: | | | |
| Baseline stability? | [✓] | ___ | ___ |
| Resolution? | [✓] | ___ | ___ |
| Peak shape? | [✓] | ___ | ___ |
| Full-scale graph (attenuation)? | [✓] | ___ | ___ |
| Other: _____ | [ ] | ___ | ___ |

ACTION: Use professional judgement to determine the acceptability of the data.

16.0 <u>Compound Identification</u>

| | | | |
|---|---|---|---|
| 16.1 Is Form X completed for every sample in which an analyte was detected? | [ ] | ✓ | ___ |

ACTION: If no, contact lab for resubmittals.

not provided - data validator calculated %Ds - see next pg

YES NO N/A

16.2 Are there any transcription/calculation errors between raw data and Forms? ___ [ ] /

ACTION: If large errors exist, call lab for explanation/resubmittals. Make any necessary corrections and note effect in data assessment. Check at least 2-3 values from each calibration standard and more if errors are found.

16.3 Are retention times (RT) of sample analytes within the established RT windows for both analyses? [ ] ___ /

ACTION: Qualify as unusable "R" all positive results which were not confirmed by second HPLC column analysis. Also qualify as unusable "R" all positive results not meeting RT window unless associated standard compounds are similarly biased. The reviewer should use professional judgement to assign an appropriate quantitation limit.

16.4 Is the percent difference (%D) calculated for the positive sample results on the two HPLC columns <25%? [/] ___ X

EW 8/21/00

ACTION: If the reviewer finds neither column shows interference for the positive hits, the data should be flagged as follows:

| % Difference | Qualifier |
|---|---|
| 25-90% | J |
| >90% | R |

NOTE: The lower of the two values is reported on Form I. If using professional judgement, the reviewer determines that the higher result was more acceptable, the reviewer should replace the value and indicate the reason for the change in the data assessment.

LIA009 HMX 55% J
RDX 38% J

LIA012 HMX 21%
RDX 8%

LIA016 2,4,6-TNT 8%

LIA016D 2,4,6-TNT 5%

YES NO N/A

16.5 Check chromatograms for false negatives, interferences and degradation. Tetryl decomposes rapidly in methanol/water solutions as well as with heat. All samples expected to contain tetryl should not be exposed to temperatures above room temperature. Degradation products of tetryl appear as a shoulder on the TNT peak. Peak heights rather than peak areas should be used when tetryl is present in concentrations that are significant relative to the concentration of TNT.

ACTION: Use professional judgement to determine qualification of analytes.

17.0 <u>Compound Quantitation and Reported Detection Limits</u>

17.1 Are there any transcription/calculation errors in Form I results? Check at least two positive values. Verify that the calculations were adjusted for percent moisture. Were any errors found? — ✓ —

NOTE: Single peak analyte results can be checked for rough agreement between quantitative results obtained on the two HPLC columns. The reviewer should use professional judgement to decide whether a much larger concentration obtained on one column versus the other indicates the presence of an interfering compound. If an interfering compound is indicated, the lower of the two values should be reported and qualified as presumptively present at an approximated quantity "JN". This necessitates a determination of an estimated concentration on the confirmation column. The narrative should indicate that the presence of interferences has interfered with the evaluation of the second column confirmation.

17.2 Are the CRQLs adjusted to reflect sample dilutions for each Form I? — ✓ — —

no DLs

YES NO N/A

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note in data assessment.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" and its associated value on the original Form I and substituting the data from the analysis of the diluted sample. Specify which Form I is to be used, then draw a red "X" with a red pencil across the entire page of all Form I's that should not be used, including any in the summary package.

18.0 Lab Duplicates

18.1 Were any lab duplicates submitted for for each extraction batch?
a. waters [ ] ✓ ___
b. soils [ ] ✓ ___

18.2 Are the Relative Percent Difference (RPD) values for the analytes reported in the duplicate samples <20%? (depending on the SAS-request; the criteria might be <40%). [ ] ___ ✓

ACTION: Compare the reported results for lab duplicates and calculate the relative percent difference.

ACTION: Any gross variation between duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of lab duplicates should be confirmed by contacting the lab.

ACTION: Flag all associated data with an * for "out of control" duplicate.

19.0 Matrix Spikes

19.1 Is the Matrix Spike/Matrix Spike Duplicate recovery Form present? ✓ ___ ___

| | YES | NO | N/A |
|---|---|---|---|
| 19.2 Were the matrix spikes analyzed at the required frequency? (one per matrix and per SDG). | ✓ | | |

ACTION: If any matrix spike data are missing, contact the lab for resubmittals.

| | YES | NO | N/A |
|---|---|---|---|
| 19.3 The matrix spike consists of all target analytes at concentrations 5-10 times the estimated quantitation limits listed in Table 1/Method 8330. Were the correct analytes and were the concentrations within range? | ✓ | | |

NOTE: Field blanks cannot be used for Matrix spike analysis. If field/rinse blanks were MS/MSD, then make note under Contract non-compliance.

19.4 How many spike recoveries are outside the QC limits of 50-140%?

| Water | Soil |
|---|---|
| _____ out of ___ | 0 out of 28 |

19.5 How many RPD's for Matrix Spike and Matrix Spike duplicate recoveries are outside QC limits of 20% (depending what is stated in the SAS-request)?

| Water | Soil |
|---|---|
| _____ out of ___ | 0 out of 14 |

ACTION: Flag all associated data "N" for "out of control" matrix spike for the field sample used for the MS/MSD.

ACTION: No additional action is taken on MS/MSD data alone. However using informed professional judgement, the data reviewer may use the matrix spike data results in conjunction with other QC criteria and determine the need for some qualification of the data.

FORM 3
SOIL SV LC MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix Spike - Sample No.: 04089-5 Level:(low/med) LOW

| COMPOUND | SPIKE ADDED (ug/Kg) | SAMPLE CONC (ug/Kg) | MS CONC (ug/Kg) | MS % REC# | QC. LIMITS REC. |
|---|---|---|---|---|---|
| 2-NT | 2500 | 0.00 | 2500 | 100 | 52-138 |
| 3-NT | 2500 | 0.00 | 2600 | 104 | 69-137 |
| 4-NT | 2500 | 0.00 | 2500 | 100 | 54-166 |
| 1,3-DNB | 2500 | 0.00 | 2900 | 116 | 50-132 |
| 2,4-DNT | 2500 | 0.00 | 2800 | 112 | 54-120 |
| 2,6-DNT | 2500 | 0.00 | 2900 | 116 | 59-122 |
| 2-AM-DNT | 2500 | 0.00 | 2800 | 112 | 50-150 |
| 4-AM-DNT | 2500 | 0.00 | 3000 | 120 | 58-126 |
| HMX | 2500 | 0.00 | 3100 | 124 | 29-156 |
| Nitrobenzene | 2500 | 0.00 | 2800 | 112 | 52-152 |
| RDX | 2500 | 0.00 | 2800 | 112 | 54-166 |
| Tetryl | 2500 | 0.00 | 2300 | 92 | 41-165 |
| 1,3,5-TNB | 2500 | 0.00 | 3000 | 120 | 47-123 |
| 2,4,6-TNT | 2500 | 0.00 | 2900 | 116 | 74-119 |

# Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS:

FORM 3

# SOIL SV LC MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix Spike - Sample No.: 04089-5 Level:(low/med) LOW

| COMPOUND | SPIKE ADDED (ug/Kg) | MSD CONC (ug/Kg) | MSD % REC# | AVG % REC | % RPD$# | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| 2-NT | 2500 | 2500 | 100 | 100 | 0.00 | 40 | 52-138 |
| 3-NT | 2500 | 2600 | 104 | 104 | 0.00 | 30 | 69-137 |
| 4-NT | 2500 | 2500 | 100 | 100 | 0.00 | 30 | 54-166 |
| 1,3-DNB | 2500 | 2900 | 116 | 116 | 0.00 | 30 | 50-132 |
| 2,4-DNT | 2500 | 2800 | 112 | 112 | 0.00 | 30 | 54-120 |
| 2,6-DNT | 2500 | 2900 | 116 | 116 | 0.00 | 30 | 59-122 |
| 2-AM-DNT | 2500 | 2800 | 112 | 112 | 0.00 | 30 | 50-150 |
| 4-AM-DNT | 2500 | 3000 | 120 | 120 | 0.00 | 30 | 58-126 |
| HMX | 2500 | 3100 | 124 | 124 | 0.00 | 60 | 29-156 |
| Nitrobenzene | 2500 | 2800 | 112 | 112 | 0.00 | 30 | 52-152 |
| RDX | 2500 | 2800 | 112 | 112 | 0.00 | 30 | 54-166 |
| Tetryl | 2500 | 2300 | 92 | 92 | 0.00 | 30 | 41-165 |
| 1,3,5-TNB | 2500 | 3100 | 124* | 122 | 3.3 | 30 | 47-123 N |
| 2,4,6-TNT | 2500 | 2900 | 116 | 116 | 0.00 | 30 | 74-119 |

$ %RPD calculated using the spike and spike duplicate concentrations as per SW846 8000B

# Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 14 outside limits
Spike Recovery: 1 out of 28 outside limits

COMMENTS: _____

FORM 3
SOIL SV LC LAB CONTROL SAMPLE

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix Spike - Sample No.: 0627XMB Level:(low/med) LOW

| COMPOUND | SPIKE ADDED (ug/Kg) | SAMPLE CONC (ug/Kg) | LCS CONC (ug/Kg) | LCS % REC# | QC. LIMITS REC. |
|---|---|---|---|---|---|
| 2-NT | 2500 | 0.00 | 2500 | 100 | 52-138 |
| 3-NT | 2500 | 0.00 | 2600 | 104 | 69-137 |
| 4-NT | 2500 | 0.00 | 2500 | 100 | 54-166 |
| 1,3-DNB | 2500 | 0.00 | 2900 | 116 | 50-132 |
| 2,4-DNT | 2500 | 0.00 | 2800 | 112 | 54-120 |
| 2,6-DNT | 2500 | 0.00 | 2800 | 112 | 59-122 |
| 2-AM-DNT | 2500 | 0.00 | 2800 | 112 | 50-150 |
| 4-AM-DNT | 2500 | 0.00 | 2900 | 116 | 58-126 |
| HMX | 2500 | 0.00 | 3100 | 124 | 29-156 |
| Nitrobenzene | 2500 | 0.00 | 2700 | 108 | 52-152 |
| RDX | 2500 | 0.00 | 2800 | 112 | 54-166 |
| Tetryl | 2500 | 0.00 | 2200 | 88 | 41-165 |
| 1,3,5-TNB | 2500 | 0.00 | 3000 | 120 | 47-123 |
| 2,4,6-TNT | 2500 | 0.00 | 2800 | 112 | 74-119 |

# Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 14 outside limits

COMMENTS:

## MULTI-MEDIA GC ANALYSIS
## FIELD DUPLICATE SAMPLE SUMMARY

**Sample ID:** LIA011 **Duplicate Sample ID:** LIA011D

**Water:** **RPD > 30%** **Soil:** **RPD > 50%**

| Compound | Sample Conc. | Dup. Sample Conc. | RPD |
|---|---|---|---|
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |

**Comments:** No positive results. No qualifications were required.

# MULTI-MEDIA GC ANALYSIS
## FIELD DUPLICATE SAMPLE SUMMARY

**Sample ID:** LIA016 **Duplicate Sample ID:** LIA016D

**Water:** **RPD > 30%** **Soil:** **RPD > 50%**

| Compound | Sample Conc. | Dup. Sample Conc. | RPD |
|---|---|---|---|
| 2,4,6-TNT | 1300 | 4100 | 104 |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |

**Comments:** 2,4,6-TNT J+

# MULTI-MEDIA GC ANALYSIS
## FIELD DUPLICATE SAMPLE SUMMARY

**Sample ID:** LIA029 **Duplicate Sample ID:** LIA029D

**Water:** **RPD > 30%** **Soil:** **RPD > 50%**

| Compound | Sample Conc. | Dup. Sample Conc. | RPD |
|---|---|---|---|
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |

**Comments:** No positive results. No qualifications were required.

## MULTI-MEDIA GC ANALYSIS
## FIELD DUPLICATE SAMPLE SUMMARY

**Sample ID:** LIA014 **Duplicate Sample ID:** LIA014D

**Water:** **RPD > 30%** **Soil:** **RPD > 50%**

| Compound | Sample Conc. | Dup. Sample Conc. | RPD |
|---|---|---|---|
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |

**Comments:** LIA014D not provided. No qualifications were required.

HEARTLAND
ENVIRONMENTAL SERVICES, INC.

# MULTI-MEDIA GC ANALYSIS

| | |
|---|---|
| CASE/SDG NUMBER: | VIEQ001 |
| LABORATORY: | STL Tallahassee |
| CLIENT: | CH2M HILL |
| PROJECT: | Vieques (Camp Garcia Live Impact Area) |
| REVIEWER: | Erica K. Ketcham |
| DATE: | August 21, 2000 |
| QA/QC LEVEL: | DQO Level IV |
| STATEMENT OF WORK: | SW-846 Method 8332 |
| ANALYSIS MODIFICATIONS: | Region II |
| NUMBER OF SAMPLES: | 20 |
| SAMPLE MATRIX: | soil |
| NUMBER OF MS/MSDs: | 1 |

## MULTI-MEDIA GC ANALYSIS
## HOLDING TIMES

| | Water | Soil | Analysis |
|---|---|---|---|
| CLP: | 7 days from sampling | 14 days from sampling | 40 days from VTSR |
| SW846: | 7 days from sampling | 14 days from sampling | 40 days from VTSR |
| Region I: | 7 days from sampling | 7 days from sampling | 40 days from VTSR |
| Region II: | 7 days from sampling | 7 days from sampling | 40 days from VTSR |
| Region III: | 7 days from sampling | 7 days from sampling | 40 days from VTSR |
| NYSDEC: | 5 days from VTSR | 5 days from VTSR | 40 days from VTSR |

DA - The number of days that the holding time was exceeded.

| | |
|---|---|
| DA ≤ 5: | Qualify all positive results as estimated (J). |
| DA > 5 ≤ 15: | Qualify all positive results as estimated (J) and all non detects as estimated (UJ). |
| DA > 15: | Qualify all positive results as estimated (J) and reject (R) all non detects. |

**s - 06/20/00, 06/21/00** **e - 06/30/00** **a - 07/15/00**

**All associated samples met holding time requirements for extraction and/or analysis. No qualifications are required.**

SAMPLE INFORMATION SUMMARY

Client SDG: VIEQ001 Sample Fraction: SV LC ING

| QCGroup | Batch | DataFile | Sample Type | Client Id | Lab ID | SmplRef | Lab Prep | SDG |
|---|---|---|---|---|---|---|---|---|
| 9702513 | 1J0714.b | 1G14J4.d | CALIB_2 | | CAL2.46179 | 7431286 | | |
| 9702513 | 1J0714.b | 1H14J1.d | CALIB_3 | | CAL3.461710 | 7431288 | | |
| 9702513 | 1J0714.b | 1G14J6.d | CALIB_4 | | CAL4.461711 | 7431287 | | |
| 9702513 | 1J0714.b | 1G14J7.d | CALIB_5 | | CAL5.461712 | 7431273 | | |
| 9702513 | 1J0714.b | 1G14J8.d | CALIB_1 | | CAL1.46178 | 7431281 | | |
| 9702513 | 1J0714.b | 1G14J24.d • | CCALIB_3 | | MED.461710 | 7431431 | | |
| 9702513 | 1J0714.b | 1G14J39.d • | CCALIB_3 | | MED.461710 | 7431437 | | |
| 9702513 | 1J0714.b | 1G14J53.d • | CCALIB_3 | | MED.461710 | 7431462 | | |
| 9702513 | 1J0714.b | 1G14J25.d | BLANK | 0630AMB | METHOD BLANK | 9807781 | 0630A | VIEQ001 |
| 9702513 | 1J0714.b | 1G14J26.d | LCS | 0630AMBLCS | LAB SPIKE | 9807782 | 0630A | VIEQ001 |
| 9702513 | 1J0714.b | 1G14J33.d | MS | 04089-5MS | 04089-5MS | 9807784 | 0630A | VIEQ001 |
| 9702513 | 1J0714.b | 1G14J34.d | MSD | 04089-5MSD | 04089-5MSD | 9807785 | 0630A | VIEQ001 |
| 9702513 | 1J0714.b | 1G14J28.d | SAMPLE | 04089-1 | LIA009 | 9807761 | 0630A | VIEQ001 |
| 9702513 | 1J0714.b | 1G14J29.d | SAMPLE | 04089-2 | LIA010 | 9807762 | 0630A | VIEQ001 |
| 9702513 | 1J0714.b | 1G14J30.d | SAMPLE | 04089-3 | LIA011 | 9807763 | 0630A | VIEQ001 |
| 9702513 | 1J0714.b | 1G14J31.d | SAMPLE | 04089-4 | LIA012 | 9807764 | 0630A | VIEQ001 |
| 9702513 | 1J0714.b | 1G14J32.d | SAMPLE | 04089-5 | LIA013 | 9807765 | 0630A | VIEQ001 |
| 9702513 | 1J0714.b | 1G14J35.d | SAMPLE | 04089-6 | LIA016 | 9807793 | 0630A | VIEQ001 |
| 9702513 | 1J0714.b | 1G14J36.d | SAMPLE | 04089-7 | LIA027 | 9807767 | 0630A | VIEQ001 |
| 9702513 | 1J0714.b | 1G14J37.d | SAMPLE | 04089-8 | LIA028 | 9807768 | 0630A | VIEQ001 |
| 9702513 | 1J0714.b | 1G14J40.d | SAMPLE | 04089-9 | LIA029 | 9807769 | 0630A | VIEQ001 |
| 9702513 | 1J0714.b | 1G14J41.d | SAMPLE | 04089-10 | LIA030 | 9807770 | 0630A | VIEQ001 |
| 9702513 | 1J0714.b | 1G14J42.d | SAMPLE | 04089-11 | UP-EAST-SS-01 | 9807771 | 0630A | VIEQ001 |
| 9702513 | 1J0714.b | 1G14J43.d | SAMPLE | 04089-12 | UP-EAST-SS-02 | 9807772 | 0630A | VIEQ001 |
| 9702513 | 1J0714.b | 1G14J44.d | SAMPLE | 04089-13 | UP-EAST-SS-03 | 9807773 | 0630A | VIEQ001 |
| 9702513 | 1J0714.b | 1G14J45.d | SAMPLE | 04089-14 | UP-EAST-SS-04 | 9807774 | 0630A | VIEQ001 |
| 9702513 | 1J0714.b | 1G14J46.d | SAMPLE | 04089-15 | LIA011D | 9807775 | 0630A | VIEQ001 |
| 9702513 | 1J0714.b | 1G14J47.d | SAMPLE | 04089-16 | LIA016D | 9807776 | 0630A | VIEQ001 |
| 9702513 | 1J0714.b | 1G14J48.d | SAMPLE | 04089-17 | LIA029D | 9807777 | 0630A | VIEQ001 |
| 9702513 | 1J0714.b | 1G14J49.d | SAMPLE | 04089-18 | LIA007 | 9807778 | 0630A | VIEQ001 |
| 9702513 | 1J0714.b | 1G14J50.d | SAMPLE | 04089-19 | LIA008 | 9807779 | 0630A | VIEQ001 |
| 9702513 | 1J0714.b | 1G14J51.d | SAMPLE | 04089-20 | LIA014 | 9807780 | 0630A | VIEQ001 |
| 9808070 | 1J0718.b | 1G18J3.d | CALIB_1 | | CAL1.46178 | 9808136 | | |
| 9808070 | 1J0718.b | 1G18J4.d | CALIB_2 | | CAL2.46179 | 9808137 | | |
| 9808070 | 1J0718.b | 1G18J5.d | CALIB_3 | | CAL3.46203 | 9808138 | | |
| 9808070 | 1J0718.b | 1G18J6.d | CALIB_4 | | CAL4.461711 | 9808146 | | |
| 9808070 | 1J0718.b | 1G18J7.d | CALIB_5 | | CAL5.461712 | 9808149 | | |
| 9808070 | 1J0718.b | 1G18J24.d • | CCALIB_3 | | MED.46203 | 9808153 | | |
| 9808070 | 1J0718.b | 1G18J14.d | BLANK | 0630AMB | METHOD BLANK | 9808278 | 0630A | VIEQ001 |
| 9808070 | 1J0718.b | 1G18J15.d | SAMPLE | 04089-4 | LIA012 | 9808271 | 0630A | VIEQ001 |
| 9808070 | 1J0718.b | 1G18J16.d | SAMPLE | 04089-6 | LIA016 | 9808272 | 0630A | VIEQ001 |
| 9808070 | 1J0718.b | 1G18J17.d | SAMPLE | 04089-16 | LIA016D | 9808284 | 0630A | VIEQ001 |

FORM 6
SV LC INITIAL CALIBRATION DATA

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Instrument ID: TLCJUV1 Calibration Date(s): 07/14/00 07/14/00

Column: C-18 ID: 4.60 (mm) Calibration Time(s): 1105 1324

LAB FILE ID: RF0.2: 1G14J8 RF0.5: 1G14J4 RF0.75: 1H14J1
RF1: 1G14J6 RF2: 1G14J7

| COMPOUND | RF0.2 | RF0.5 | RF0.75 | RF1 | RF2 |
|---|---|---|---|---|---|
| Nitroglycerin | 6720 | 7072 | 6652 | 7426 | 6876 |
| Pentaerythritol tetranitrate | 4240 | 3550 | 3429 | 3606 | 3297 |
| 3,4-Dinitrotoluene | 13255 | 13636 | 13873 | 14684 | 13649 |

FORM 6
SV LC INITIAL CALIBRATION DATA

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Instrument ID: TLCJUV1 Calibration Date(s): 07/14/00 07/14/00

Column: C-18 ID: 4.60 (mm) Calibration Time(s): 1105 1324

| COMPOUND | CURVE | COEFFICIENTS A0 | A1 | %RSD or R^2 |
|---|---|---|---|---|
| Nitroglycerin | LINR | -5.45e-003 | 1.442e-004 | 0.997 |
| Pentaerythritol tetranitrate | LINR | -6.65e-002 | 3.106e-004 | 0.998 |
| 3,4-Dinitrotoluene | LINR | -9.11e-003 | 7.268e-005 | 0.998 |

FORM 6
SV LC INITIAL CALIBRATION DATA

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Instrument ID: TLCJUV1 Calibration Date(s): 07/18/00 07/18/00

Column: CN ID: 4.60 (mm) Calibration Time(s): 1446 1659

LAB FILE ID: RF0.2: 1G18J3 RF0.5: 1G18J4 RF0.75: 1G18J5
RF1: 1G18J6 RF2: 1G18J7

| COMPOUND | RF0.2 | RF0.5 | RF0.75 | RF1 | RF2 |
|---|---|---|---|---|---|
| Nitroglycerin | 13135 | 14838 | 13749 | 14583 | 14795 |
| Pentaerythritol tetranitrate | 10515 | 9942 | 9261 | 9763 | 9629 |
| 3,4-Dinitrotoluene | 27845 | 29590 | 27832 | 30122 | 30705 |

FORM VI SV LC

FORM 6
SV LC INITIAL CALIBRATION DATA

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Instrument ID: TLCJUV1 Calibration Date(s): 07/18/00 07/18/00

Column: CN ID: 4.60 (mm) Calibration Time(s): 1446 1659

| COMPOUND | CURVE | COEFFICIENTS A0 | A1 | %RSD or R^2 |
|---|---|---|---|---|
| Nitroglycerin | LINR | 2.791e-002 | 6.68e-005 | 0.999 |
| Pentaerythritol tetranitrate | LINR | -7 54e-003 | 1.044e-004 | 0.999 |
| 3,4-Dinitrotoluene | LINR | 3.87e-002 | 3.206e-005 | 0.999 |

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Instrument ID: TLCJUV1 Calibration Date: 07/14/00 Time: 2225

Lab File ID: 1G14J24 Init. Calib. Date(s): 07/14/00 07/14/00

Init. Calib. Times: 1105 1324

GC Column: C-18 ID: 4.60 (mm)

| COMPOUND | AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| Nitroglycerin | 0.75 | 0.74 | 6912.0 | 0.01 | 1.3 | 15.0 | LINR |
| Pentaerythritol tetranitrate | 0.75 | 0.67 | 3150.7 | 0.01 | 13.7 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.75 | 0.74 | 13789 | 0.01 | 1.3 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Instrument ID: TLCJUV1 Calibration Date: 07/19/00 Time: 0228

Lab File ID: 1G18J24 Init. Calib. Date(s): 07/18/00 07/18/00

Init. Calib. Times: 1446 1659

GC Column: CN ID: 4.60 (mm)

| COMPOUND | AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| Nitroglycerin | 0.75 | 0.70 | 13513 | 0.01 | 6.7 | 15.0 | LINR |
| Pentaerythritol tetranitrate | 0.75 | 0.67 | 8662.7 | 0.01 | 10.7 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.75 | 0.72 | 28169 | 0.01 | 4.0 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ00[illegible]

Instrument ID: TLCJUV1 Calibration Date: 07/15/00 Time: 0646

Lab File ID: 1G14J39 Init. Calib. Date(s): 07/14/00 07/14/00

Init. Calib. Times: 1105 1324

GC Column: C-18 ID: 4.60 (mm)

| COMPOUND | AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| Nitroglycerin | 0.75 | 0.72 | 6728.0 | 0.0[illegible] | 4.0 | 15.0 | LINR |
| Pentaerythritol tetranitrate | 0.75 | 0.75 | 3518.7 | 0.01 | 0.0 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.75 | 0.77 | 14337 | 0.01 | 2.7 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Instrument ID: TLCJUV1 Calibration Date: 07/15/00 Time: 1434

Lab File ID: 1G14J53 Init. Calib. Date(s): 07/14/00 07/14/00

Init. Calib. Times: 1105 1324

GC Column: C-18 ID: 4.60 (mm)

| COMPOUND | AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| Nitroglycerin | 0.75 | 0.77 | 7142.7 | 0.01 | 2.7 | 15.0 | LINR |
| Pentaerythritol tetranitrate | 0.75 | 0.82 | 3806.7 | 0.01 | 9.3 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.75 | 0.80 | 14756 | 0.01 | 6.7 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

## MULTI-MEDIA GC ANALYSIS
## BLANK SUMMARY

1. Blank qualification guidelines:

   a) If a compound is found in the blank but not in the sample, no action is taken.

   b) Any compound detected in the sample, which was also detected in the associated blank, must be qualified by elevating the limit of detection or adjusting the limit of detection to the sample result, when the sample concentration is less than five (5) times the blank concentration.

   c) The reviewer should take note that the blank analysis may not involve the same weights, volumes or dilution factors as associated samples. These factors must be taken into consideration when applying the 5X and 10X criteria.

   d) In addition, the reviewer must review the trip blanks, rinseate blanks and field blanks (if they were submitted with the data package) and all associated samples. Apply the same data validation guidelines used in assessing the method blanks.

   e) Qualification/Action codes:

      U - The sample result is greater than the CRQL and less than five times (5X) the blank value. Cross out the "B" flag and qualify the sample result with a "U".

      CRQL - The sample result is less than the CRQL and less than five times (5X) the blank value. Reject the sample result, cross out the "B" flag, and report the CRQL.

      No Action - The sample result is greater than the CRQL and greater than five times (5X) the blank value.

FORM 4
SV LC METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

0630AMB

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Lab File ID: 1G14J25 Lab Sample ID: METHOD BLANK

Instrument ID: TLCJUV1 Date Extracted: 06/30/00

Matrix: (soil/water) SOIL Date Analyzed: 07/14/00

Level: (low/med) LOW Time Analyzed: 2258

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

| | CLIENT SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED |
|---|---|---|---|---|
| 01 | 0630AMBLCS | LAB SPIKE | 1G14J26 | 07/14/00 |
| 02 | 04089-1 | LIA009 | 1G14J28 | 07/15/00 |
| 03 | 04089-2 | LIA010 | 1G14J29 | 07/15/00 |
| 04 | 04089-3 | LIA011 | 1G14J30 | 07/15/00 |
| 05 | 04089-4 | LIA012 | 1G14J31 | 07/15/00 |
| 06 | 04089-5 | LIA013 | 1G14J32 | 07/15/00 |
| 07 | 04089-5MS | 04089-5MS | 1G14J33 | 07/15/00 |
| 08 | 04089-5MSD | 04089-5MSD | 1G14J34 | 07/15/00 |
| 09 | 04089-6 | LIA016 | 1G14J35 | 07/15/00 |
| 10 | 04089-7 | LIA027 | 1G14J36 | 07/15/00 |
| 11 | 04089-8 | LIA028 | 1G14J37 | 07/15/00 |
| 12 | 04089-9 | LIA029 | 1G14J40 | 07/15/00 |
| 13 | 04089-10 | LIA030 | 1G14J41 | 07/15/00 |
| 14 | 04089-11 | UP-EAST-SS-01 | 1G14J42 | 07/15/00 |
| 15 | 04089-12 | UP-EAST-SS-02 | 1G14J43 | 07/15/00 |
| 16 | 04089-13 | UP-EAST-SS-03 | 1G14J44 | 07/15/00 |
| 17 | 04089-14 | UP-EAST-SS-04 | 1G14J45 | 07/15/00 |
| 18 | 04089-15 | LIA011D | 1G14J46 | 07/15/00 |
| 19 | 04089-16 | LIA016D | 1G14J47 | 07/15/00 |
| 20 | 04089-17 | LIA029D | 1G14J48 | 07/15/00 |
| 21 | 04089-18 | LIA007 | 1G14J49 | 07/15/00 |
| 22 | 04089-19 | LIA008 | 1G14J50 | 07/15/00 |
| 23 | 04089-20 | LIA014 | 1G14J51 | 07/15/00 |
| 24 | | | | |
| 25 | | | | |
| 26 | | | | |
| 27 | | | | |
| 28 | | | | |
| 29 | | | | |
| 30 | | | | |

COMMENTS: No Contamination



FORM IV SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

0630AMB

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix: (soil/water) SOIL Lab Sample ID: METHOD BLANK

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J25

Level: (low/med) LOW Date Received: _____

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0(mL) Date Analyzed: 07/14/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1000 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1000 | U |

FORM I SV LC

FORM 2
SOIL SV LC SURROGATE RECOVERY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Level: (low/med) LOW

| | CLIENT SAMPLE NO. | S1 (DNT) # | S2 # | S3 # | S4 # | S5 # | S6 # | S7 # | S8 # | TOT OUT |
|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0630AMB | 96 | | | | | | | | 0 |
| 02 | 0630AMBLCS | 100 | | | | | | | | 0 |
| 03 | 04089-1 | 96 | | | | | | | | 0 |
| 04 | 04089-2 | 84 | | | | | | | | 0 |
| 05 | 04089-3 | 96 | | | | | | | | 0 |
| 06 | 04089-4 | 100 | | | | | | | | 0 |
| 07 | 04089-5 | 93 | | | | | | | | 0 |
| 08 | 04089-5MS | 100 | | | | | | | | 0 |
| 09 | 04089-5MSD | 100 | | | | | | | | 0 |
| 10 | 04089-6 | 92 | | | | | | | | 0 |
| 11 | 04089-7 | 93 | | | | | | | | 0 |
| 12 | 04089-8 | 96 | | | | | | | | 0 |
| 13 | 04089-9 | 100 | | | | | | | | 0 |
| 14 | 04089-10 | 104 | | | | | | | | 0 |
| 15 | 04089-11 | 97 | | | | | | | | 0 |
| 16 | 04089-12 | 100 | | | | | | | | 0 |
| 17 | 04089-13 | 97 | | | | | | | | 0 |
| 18 | 04089-14 | 96 | | | | | | | | 0 |
| 19 | 04089-15 | 100 | | | | | | | | 0 |
| 20 | 04089-16 | 96 | | | | | | | | 0 |
| 21 | 04089-17 | 100 | | | | | | | | 0 |
| 22 | 04089-18 | 97 | | | | | | | | 0 |
| 23 | 04089-19 | 93 | | | | | | | | 0 |
| 24 | 04089-20 | 93 | | | | | | | | 0 |
| 25 | | | | | | | | | | |
| 26 | | | | | | | | | | |
| 27 | | | | | | | | | | |
| 28 | | | | | | | | | | |
| 29 | | | | | | | | | | |
| 30 | | | | | | | | | | |

S1 (DNT) = 3,4-Dinitrotoluene QC LIMITS (22-128)

# Column to be used to flag recovery values
* Values outside of laboratory QC limits
D Sample diluted

FORM 3
SOIL SV LC MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix Spike - Sample No.: 04089-5 Level:(low/med) LOW

| COMPOUND | SPIKE ADDED (ug/Kg) | SAMPLF CONC (ug/Kg) | MS CONC (ug/Kg) | MS % REC# | QC. LIMITS REC. |
|---|---|---|---|---|---|
| Nitroglycerin | 2900 | 0.00 | 3200 | 110 | 48-152 |

| COMPOUND | SPIKE ADDED (ug/Kg) | MSD CONC (ug/Kg) | MSD % REC# | AVG % REC | % RPD$# | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| Nitroglycerin | 2900 | 3000 | 103 | 106 | 6.4 | 50 | 48-152 |

$ %RPD calculated using the spike and spike duplicate concentrations as per SW846 8000B

# Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 1 outside limits
Spike Recovery: 0 out of 2 outside limits

COMMENTS: _____

FORM 3
SOIL SV LC LAB CONTROL SAMPLE

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ001

Matrix Spike - Sample No.: 0630AMB Level:(low/med) LOW

| COMPOUND | SPIKE ADDED (ug/Kg) | SAMPLE CONC (ug/Kg) | LCS CONC (ug/Kg) | LCS % REC# | QC. LIMITS REC. |
|---|---|---|---|---|---|
| Nitroglycerin | 2500 | 0.00 | 2700 | 108 | 48-152 |

# Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS:

## MULTI-MEDIA GC ANALYSIS
## FIELD DUPLICATE SAMPLE SUMMARY

**Sample ID:** LIA011 **Duplicate Sample ID:** LIA011D

**Water:** **RPD > 30%** **Soil:** **RPD > 50%**

| Compound | Sample Conc. | Dup. Sample Conc. | RPD |
|---|---|---|---|
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |

**Comments:** No positive results. No qualifications were required.

# MULTI-MEDIA GC ANALYSIS
# FIELD DUPLICATE SAMPLE SUMMARY

**Sample ID:** LIA016 **Duplicate Sample ID:** LIA016D

**Water:** **RPD > 30%** **Soil:** **RPD > 50%**

| Compound | Sample Conc. | Dup. Sample Conc. | RPD |
|---|---|---|---|
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |

**Comments:** No positive results. No qualifications were required.

## MULTI-MEDIA GC ANALYSIS
## FIELD DUPLICATE SAMPLE SUMMARY

**Sample ID:** LIA029 **Duplicate Sample ID:** LIA029D

**Water:** **RPD > 30%** **Soil:** **RPD > 50%**

| Compound | Sample Conc. | Dup. Sample Conc. | RPD |
|---|---|---|---|
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |

**Comments:** No positive results. No qualifications were required.

## MULTI-MEDIA GC ANALYSIS
## FIELD DUPLICATE SAMPLE SUMMARY

**Sample ID:** LIA014 **Duplicate Sample ID:** LIA014D

**Water:** **RPD > 30%** **Soil:** **RPD > 50%**

| Compound | Sample Conc. | Dup. Sample Conc. | RPD |
|---|---|---|---|
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |

**Comments:** LIA014D not provided. No qualifications were required.

## MULTI-MEDIA GC ANALYSIS
## SAMPLE RESULT VERIFICATION

1. Were the sample results reported within the calibration range (YES/NO)? YES

2. Was the percent moisture reported for all soil samples (YES/NO/NA)? YES

3. Was the data reported on a dry weight basis (YES/NO/NA)? YES

4. Did the GC chromatograms exhibit interferences, off scale peaks or elevated baseline (YES/NO)? NO

5. Did the data contain elevated detection limits that could not be verified (YES/NO)? NO

6. Were any computational or transcription errors found (YES/NO)? NO

**Specific Comments:**

quantitation by linear regression

no QC blanks

confirmation data not provided

**Reviewer** Erica K Ketchum **Date:** 8/21/00

## Two Digit Code Definitions for Comment Field

During DV, the validator will apply a two-letter code to the right of each project qualifier applied. This code represents why the compound/element was flagged. The data entry personnel will enter this code into the comment field of the database.

| Code | Definition |
|---|---|
| TN | Tune |
| BS | Blank Spike/LCS |
| IS | Internal Standard |
| MS | Matrix Spike and/or Matrix Spike Duplicate Recovery |
| MD | Matrix Spike/Matrix Spike Duplicate Precision |
| 2S | Second Source |
| SD | Serial Dilution |
| SS | Spiked Surrogate |
| LR | Analyte present above linear (or calibration) range |
| IC | Initial Calibration |
| CC | Continuing Calibration Verification |
| PD | Pesticide Degradation |
| LD | Lab Duplicate |
| 2C | Second Column (Confirmation) |
| HT | Holding Time |
| PS | Post Spike |
| BL | Blank |
| RE | Re-extraction |
| DL | Dilution |
| IB | In Between |
| FD | Field Duplicate |
| OT | Other |

INORGANIC REGIONAL DATA ASSESSMENT

Region II

CASE NO. _____

SITE Vieques

LABORATORY STL

NO. OF SAMPLES/ MATRIX 32 soils

SDG# Vieq 001

REVIEWER (IF NOT ESD) Heartland ES

SOW# _____

REVIEWER'S NAME P. Humburg

DPO: ACTION _____ FYI _____

COMPLETION DATE 8/21/00

DATA ASSESSMENT SUMMARY

| | | ICP | AA | Hg | CYANIDE |
|---|---|---|---|---|---|
| 1. | HOLDING TIMES | O | NA | O | NA |
| 2. | CALIBRATIONS | ✓ | ✓ | ✓ | ✓ |
| 3. | BLANKS | ✓ | ✓ | ✓ | ✓ |
| 4. | ICS | ✓ | ✓ | ✓ | ✓ |
| 5. | LCS | ✓ | ✓ | ✓ | ✓ |
| 6. | DUPLICATE ANALYSIS | ✓ | ✓ | ✓ | ✓ |
| 7. | MATRIX SPIKE | ✓ | ✓ | ✓ | ✓ |
| 8. | MSA | ✓ | ✓ | ✓ | ✓ |
| 9. | SERIAL DILUTION | ✓ | ✓ | ✓ | ✓ |
| 10 | SAMPLE VERIFICATION | ✓ | ✓ | ✓ | ✓ |
| | OTHER QC | ✓ | ✓ | ✓ | ✓ |
| 12. | OVERALL ASSESSMENT | ✓ | ✓ | ✓ | ✓ |

O = Data has no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.

X = Problems, but do not affect data.

ACTION ITEMS: _____

_____

_____

AREAS OF CONCERN: _____

_____

_____

NOTABLE PERFORMANCE: _____

_____

_____

| | Form I to IX | Yes | No | N/A |
|---|---|---|---|---|
| 1.6.1 | Are all the Form I through Form IX labeled with: | | | |
| | Laboratory name? | [✓] | | |
| | Case/SAS number? | [ ] | | ✓ |
| | EPA sample No.? | [✓] | | |
| | SDG No.? | [✓] | | |
| | Contract No.? | [ ] | | ✓ |
| | Correct units? | [✓] | | |
| | Matrix? | [✓] | | |

ACTION: If no for any of the above, note under Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

| | | | | |
|---|---|---|---|---|
| 1.6.2 | Do any computation/transcription errors exceed 10% of reported values on Forms I-IX for: | | | |
| | (NOTE: Check all forms against raw data.) | | | |
| | (a) all analytes analyzed by ICP? | [✓] | | |
| | (b) all analytes analyzed by GFAA? | [ ] | | ✓ |
| | (c) all analytes analyzed by AA Flame? | [ ] | | ✓ |
| | (d) Mercury? | [✓] | | |
| | (e) Cyanide? | [ ] | | ✓ |

ACTION: If yes, prepare Telephone Log, contact laboratory for corrected data and correct errors with red pencil and initial.

le: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

| | | YES | NO | N/A |
|---|---|---|---|---|
| .7 | Raw Data | | | |
| .7.1 | Digestion Log* for flame AA/ICP (Form XIII) present? | [✓] | | |
| | Digestion Log for furnace AA Form XIII present? | [ ] | | ✓ |
| | Distillation Log for mercury Form XIII present? | [✓] | | |
| | Distillation Log for cyanides Form XIII present? | [ ] | | ✓ |
| | Are pH values (pH<2 for all metals, pH>12 for cyanide) present? | [ ] | | ✓ |
| | *Weights, dilutions and volumes used to obtain values. | | | |
| | Percent solids calculation present for soils/sediments? | [✓] | | |
| | Are preparation dates present on sample preparation logs/bench sheets? | [✓] | | |
| .7.2 | Measurement read out record present? ICP | [✓] | | |
| | Flame AA | [ ] | | ✓ |
| | Furnace AA | [ ] | | ✓ |
| | Mercury | [✓] | | |
| | Cyanides | [ ] | | ✓ |
| .7.3 | Are all raw data to support all sample analyses and QC operations present? | [✓] | | |
| | Legible? | [✓] | | |
| | Properly Labeled? | [✓] | | |

ACTION: If no for any of the above questions in sections A.1.7.1 through A.1.7.3, write Telephone Record Log and contact laboratory for resubmittals.

| | | YES | NO | N/A |
|---|---|---|---|---|
| 8 | Holding Times - (aqueous and soil samples ) | | | |
| | (Examine sample traffic reports and digestion/distillation logs.) | | | |
| | Mercury analysis (28 days). . . . . exceeded? | ___ | [✓] | ___ |
| | Cyanide distillation (14 days). . . . . exceeded? | ___ | [___] | ✓ |
| | Other Metals analysis (6 months). . . . exceeded? | ___ | [✓] | ___ |
| | NOTE: Prepare a list of all samples and analytes for which holding times have been exceeded. Specify the number of days from date of collection to the date of preparation (from raw data). Attach to checklist. | | | |
| | ACTION: If yes, reject (red-line) values less than Instrument Detection Limit (IDL) and flag as estimated (J) the values above IDL even though sample(s) was preserved properly. | | | |
| 8.2 | Is pH of aqueous samples for: | | | |
| | Metals Analysis >2? | ___ | [___] | ✓ |
| | Cyanides Analysis <12? | ___ | [___] | ✓ |
| | Action: If yes, flag the associated metals and cyanides data as estimated. | | | |
| 9 | Form I (Final Data) | | | |
| 9.1 | Are all Form I's present and complete? | [✓] | ___ | ___ |
| | ACTION: If no, prepare telephone record log and contact laboratory for submittal. | | | |
| 9.2 | Are correct units (ug/l for waters and mg/kg for soils) indicated on Form I's? | [✓] | ___ | ___ |
| | Are soil sample results for each parameter corrected for percent solids? | [✓] | ___ | ___ |

| | | YES | NO | N/A |
|---|---|---|---|---|
| | Are the correct concentration qualifiers used with final data? | [✓] | | |
| | ACTION: If no for any of the above, prepare Telephone Record Log, and contact laboratory for corrected data. | | | |
| 1.9.3 | Are EPA sample # s and corresponding laboratory sample ID # s the same as on the Cover Page, Form I's and in the raw data? | [✓] | | |
| | Was a brief physical description of samples given on Form I's? | [✓] | | |
| | Was the dilution of any sample diluted beyond the requirements of the contract noted on Form I or Form XIV? | | [✓] | |
| | ACTION: If no for any of the above, note under Contract-Problem/Non-Compliance of the "Data Assessment Narrative". | | | |
| 1.10 | Calibration | | | |
| 1.10.1 | Is record of at least 2 point calibration present for ICP analysis? | [✓] | | |
| | Is record of 5 point calibration present for Hg analysis? | [✓] | | |
| | Is record of 4 point calibration present for: | | | |
| | Flame AA? | [ ] | | ✓ |
| | Furnace AA? | [ ] | | ✓ |
| | Cyanides? | [ ] | | ✓ |
| | Is one calibration standard at the CRDL level for all AA (except Hg) and cyanides analyses? | [✓] | | |
| | ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of | | | |

| | YES | NO | N/A |
|---|---|---|---|
| 10.2 Is correlation coefficient less than 0.995 for: | | | |
| Mercury Analysis? | | ✓ | |
| Cyanide Analysis? | | | ✓ |
| Atomic Absorption Analysis? | | | ✓ |

ACTION: If yes, flag the associated data as estimated.

NOTE: The data validator shall calculate the correlation coefficient using concentrations of the standards and the corresponding instrument response ( e.g. absorbance, peak area, peak height, etc.).

10 In the instance where less than 4 standards are measured in absorbance (or peak area, peak height, etc.) mode, are the remaining standards analyzed in concentration mode immediately after calibration within ±10% of the true values? [✓]

ACTION: If no, flag the associated data as estimated if standards are not within ±10% of true values. Do not flag the data as estimated in linear range indicated by good recovery of standard(s).

11 Form II A (Initial and Continuing Calibration Verification)-

| | | | |
|---|---|---|---|
| 11.1 Present and complete for every metal and cyanide? | ✓ | | |
| Present and complete for AA and ICP when both are used for the same analyte? | | | ✓ |

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

11.2 Circle on each Form IIA all percent recoveries that are outside the contract windows.
Are all calibration standards (initial and continuing) within control limits:

| | | | |
|---|---|---|---|
| Metals- 90-110%R? | ✓ | | |
| Hg - 80-120%R? | ✓ | | |

| | YES | NO | N/A |
|---|---|---|---|
| ACTION: Flag as estimated (J) all positive data (not flagged with a "U") analyzed between a calibration standard with %R between 75-89% (65-79% for Hg; 70-84% for CN) or 111-125% (121-135% for Hg; 116-130% for CN) recovery and nearest good calibration standard. Qualify results <IDL as estimated (UJ) if the ICV or CCV %R is 75-89% (CN, 70-84% ; HG, 65-79%). Reject (red-line) as unacceptable data if recovery of the ICV or CCV is outside the range 75-125% (CN, 70-130%; Hg, 65-135%). Qualify five samples on either side of verification standard out of control limits. | | | |
| .1 Was continuing calibration performed every 10 samples or every 2 hours? | [✓] | ___ | ___ |
| Was ICV for cyanides distilled? | [___] | ___ | ✓ |
| ACTION: If no for any of the above, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative". | | | |
| 12 Form II B (CRDL Standards for AA and ICP) - | | | |
| 12.1 Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)? | [✓] | ___ | ___ |
| Was a mid-range calib. verification standard distilled and analyzed for cyanide analysis? | [___] | ___ | ✓ |
| Was a 2xCRDL ( or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? (Note: CRI for AL,Ba,Ca,Fe,Mg,Na,or K is not required.) | [✓] | ___ | ___ |
| ACTION: If no for any of the above, flag as estimated all data falling within the affected ranges. The affected ranges are: AA Analysis - **True Value ± CRDL; ICP Analysis - **True Value ± 2CRDL; CN Analysis - **True Value ± 0.5 x True Value. | | | |



rue value of CRA, CRI or mid-range standard. Substitute IDL for CRDL when IDL > CRDL.
[illegible] mid-range standard from the calibration range.

| | | YES | NO | N/A |
|---|---|---|---|---|
| 1.12.2 | Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run? | [✓] | | |
| | ACTION: If no, write in Contract Problem/Non-Compliance Section of the "Data Assessment Narrative". | | | |
| 1.12.3 | Circle on each Form IIB all the percent recoveries that are outside the acceptance windows. | | | |
| | Are CRA and CRI standards within control limits: | | | |
| | Metals 80 - 120%R? | [ ] | ✓ | |
| | Is mid-range standard within control limits: | | | |
| | Cyanide 80 - 120%R? | [ ] | | ✓ |
| | ACTION: Flag as estimated all sample results within the affected range if the recovery of the standard is between 50-79%; flag only positive data within the affected range if the recovery is between 121-150%; reject all data within the affected range if the recovery is less than 50%; reject only positive data within the affected range if the recovery is greater than 150%. Qualify 50% of the samples on either side of CRI standard outside the control limits. | | | |
| | Note: Flag or reject the final results only when sample raw data are within the affected ranges and the CRDL standards are outside the acceptance windows. | | | |
| .13 | Form III (Initial and Continuing Calibration Blanks) | | | |
| .13.1 | Present and complete? | [✓] | | |
| | For both AA and ICP when both are used for the same analyte? | [ ] | | ✓ |
| | Was an initial calibration blank analyzed? | [✓] | | |
| | Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)? | [✓] | | |

| | | YES | NO | N/A |
|---|---|---|---|---|
| | ACTION: If no, prepare Telephone Record Log, contact laboratory and write in the Contract-Problems/ Non-Compliance section of the "Data Assessment Narrative". | | | |
| 13.2 | Circle on each Form III all calibration blank values that are above CRDL (or 2 x IDL when IDL > CRDL). | | | |
| | Are all calibration blanks (when IDL<CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)? | [✓] | ___ | ___ |
| | Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)? | [✓] | ___ | ___ |
| | ACTION: If no for any of the above, flag as estimated (J) positive sample results when raw sample value is less than or equal to calibration blank value analyzed between calibration blank with value over CRDL (or 2xIDL) and nearest good calibration blank. Flag five samples on either side of the calibration blank outside the control limits. | | | |
| 14 | FORM III (Preparation Blank) - (Note: The preparation blank for mercury is the same as the calibration blank.) | | | |
| 4.1 | Was one prep. blank analyzed for: | | | |
| | each Sample Delivery Group (SDG)? | [✓] | ___ | ___ |
| | each batch of digested samples? | [✓] | ___ | ___ |
| | each matrix type? | [✓] | ___ | ___ |
| | both AA and ICP when both are used for the same analyte? | [___] | ___ | ✓ |
| | ACTION: If no for any of the above, flag as estimated (J) all the associated positive data <10 x IDLs for which prep. blank was not analyzed. | | | |
| | NOTE: If only one blank was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J). | | | |

| | | YES | NO | N/A |
|---|---|---|---|---|
| 1.14.2 | Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL? | ___ | [✓] | ___ |
| | If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep. blank? | ___ | [✓] | ___ |
| | ACTION: If yes, reject (red-line) all associated data greater than CRDL concentration but less than ten times the prep. blank value. | | | |
| 1.14.3 | Is concentration of prep. blank value (Form III) less than two times IDL, when IDL is greater than CRDL? | [✓] | ___ | ___ |
| | ACTION: If no, reject (red-line) all positive sample results when sample raw data are less than 10 times the prep. blank value. | | | |
| 1. | Is concentration of prep. blank below the negative CRDL? | ___ | [✓] | ___ |
| | ACTION: If yes, reject (red-line) all associated sample results less than 10xCRDL. | | | |
| .15 | Form IV (ICP Interference Check Sample) | | | |
| .15.1 | Present and complete? | [✓] | ___ | ___ |
| | (NOTE: Not required for furnace AA, flame AA, mercury, cyanide and Ca, Mg, K and Na.) | | | |
| | Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)? | [✓] | ___ | ___ |
| | ACTION: If no, flag as estimated (J) all the samples for which AL, Ca, Fe, or Mg is higher than in ICS. | | | |
| 1.15.2 | Circle all values on each Form IV that are more than ± 20% of true or established mean value. | | | |
| | Are all Interference Check Sample results inside the control limits (± 20%)? | [✓] | ___ | ___ |
| | If no, is concentration of Al, Ca, Fe, or Mg lower than the respective concentration in ICS? | [✓] | ___ | ___ |

| | | YES | NO | N/A |
|---|---|---|---|---|
| | **ACTION:** If no, flag as estimated (J) those positive results for which ICS recovery is between 121-150%; flag all sample results as estimated if ICS recovery falls within 50-79%; reject (red-line) those sample results for which ICS recovery is less than 50%; if ICS recovery is above 150%, reject positive results only (not flagged with a "U"). | | | |
| .16 | Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distillation)- ( Note: Not required for Ca, Mg, K, and Na (both matrices), Al, and Fe (soil only.) | | | |
| .1 | Present and complete for: each SDG? | [✓] | ___ | ___ |
| | each matrix type? | [✓] | ___ | ___ |
| | each conc. range (i.e. low, med., high)? | [✓] | ___ | ___ |
| | For both AA and ICP when both are used for the same analyte? | [___] | ___ | ✓ |
| | **ACTION:** If no for any of the above, flag as estimated (J) all the positive data less than four times the spiking levels specified in SOW for which spiked sample was not analyzed. | | | |
| | **NOTE:** If one spiked sample was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J). | | | |
| 16.2 | Was field blank used for spiked sample? | ___ | [✓] | ___ |
| | **ACTION:** If yes, flag all positive data less than 4 x spike added as estimated (J) for which field blank was used as spiked sample. | | | |
| .3 | Circle on each Form VA all spike recoveries that are outside control limits (75% to 125%). | | | |
| | Are all recoveries within control limits? | [___] | ✓ | ___ |
| | If no, is sample concentration greater than or equal to four times spike concentration? | [___] | ✓ | ___ |

| | YES | NO | N/A |
|---|---|---|---|
| **ACTION:** If yes, disregard spike recoveries for analytes whose concentrations are greater than or equal to four times spike added. If no, circle those analytes on Form V for which sample concentration is less than four times the spike concentration. | | | |
| Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA? | [✓] | ___ | ___ |
| **ACTION:** If no, write in the Contract - Problem/Non - Compliance section of "Data Assessment Narrative". | | | |
| .16.4 Aqueous<br>Are any spike recoveries: | | | |
| (a) less than 30%? | ___ | [___] | ✓ |
| (b) between 30-74%? | ___ | [___] | ✓ |
| (c) between 126-150%? | ___ | [___] | ✓ |
| (d) greater than 150%? | ___ | [___] | ✓ |
| **ACTION:** If less than 30%, reject all associated aqueous data; if between 30-74%, flag all associated aqueous data as estimated (J); if between 126-150%, flag as estimated (J) all associated aqueous data not flagged with a "U"; if greater than 150%, reject (red-line) all associated aqueous data not flagged with a "U". | | | |
| .16.5 Soil/Sediment<br>Are any spike recoveries: | | | |
| (a) less than 10%? | ___ | [✓] | ___ |
| (b) between 10-74%? | ✓ | [___] | ___ |
| (c) between 126-200%? | ✓ | [___] | ___ |
| (d) greater than 200%? | ✓ | [___] | ___ |

| | | YES | NO | N/A |
|---|---|---|---|---|
| | ACTION: If less than 10%, reject all associated data; if between 10-74%, flag all associated data as estimated; if between 126-200%, flag as estimated all associated data was not flagged with a "U"; if greater than 200%, reject all associated data not flagged with a "U". | | | |
| .17 | Form VI (Lab Duplicates) | | | |
| .17.1 | Present and complete for: each SDG? | [___] | ___ | ✓ |
| | each matrix type? | [___] | ___ | ✓ |
| | each concentration range (i.e. low, med., high)? | [___] | ___ | ✓ |
| | both AA and ICP when both are used for the same analyte? | [___] | ___ | ✓ |
| | ACTION: If no for any the above, flag as estimated (J) all the data ≥CRDL* for which duplicate sample was not analyzed. | | | |
| | Note: 1. If one duplicate sample was analyzed for more than 20 samples, then first 20 samples do not have to be flagged as estimated. | | | |
| | 2. If percent solids for soil sample and its duplicate differ by more than 1%, prepare a Form VI for each duplicate pair, report concentrations in ug/L on wet weight basis and calculate RPD or Difference for each analyte. | | | |
| .17.2 | Was field blank used for duplicate analysis? | ___ | [___] | ✓ |
| | ACTION: If yes, flag all data ≥CRDL* as estimated (J) for which field blank was used as duplicate. | | | |
| .17.3 | Are all values within control limits (RPD 20% or difference ≤ ±CRDL)? | [___] | ___ | ✓ |
| | If no, are all results outside the control limits flagged with an * on Form I's and VI? | [___] | ___ | ✓ |
| | ACTION: If no, write in the Contract - Problems/Non-Compliance section of "Data Assessment Narrative". | | | |

| | YES | NO | N/A |
|---|---|---|---|

NOTE: 1. RPD is not calculable for an analyte of the sample - duplicate pair when both values are less than IDL.
2. If the result of lab duplicate analyzed by GFAA is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, do not apply precision criteria to metals analyzed by GFAA.

.17.4 Aqueous

Circle on each Form VI all values that are:

RPD > 50%, or
Difference > CRDL*

| | | | |
|---|---|---|---|
| Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL? | ___ | [___] | ✓ |
| Is any difference** between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL? | ___ | [___] | ✓ |

ACTION: If yes, flag the associated data as estimated.

17.5 Soil/Sediment

Circle on each Form VI all values that are:

RPD > 100%, or

Difference > 2 x CRDL*

| | | | |
|---|---|---|---|
| Is any RPD (where sample and duplicate are both greater than or equal to 5 times *CRDL) : > 100%? | ___ | [___] | ✓ |
| Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x*CRDL) : > 2x*CRDL? | ___ | [___] | ✓ |

*Substitute IDL for CRDL when IDL > CRDL.
**Use absolute values of sample and duplicate to calculate the difference.

| | | YES | NO | N/A |
|---|---|---|---|---|
| | ACTION: If yes, flag the associated data as estimated. | | | |
| 18 | Field Duplicates | | | |
| 18.1 | Were field duplicates analyzed? | [✓] | ___ | ___ |

ACTION: If yes, prepare a Form VI for each aqueous field duplicate pair. Prepare a Form VI for each soil duplicate pair, if percent solids for sample and its duplicate differ by more than 1%; report concentrations of soils in ug/l on wet weight basis and calculate RPDs or Difference for each analyte.

NOTE: 1. Do not calculate RPD when both values are less than IDL.
2. Flag all associated data only for field duplicate pair.

18.2 Aqueous

Circle all values on self prepared Form VI for field duplicates that are:

RPD > 50%, or
Difference > CRDL*

| | | | |
|---|---|---|---|
| Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL? | ___ | [___] | ✓ |
| Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL? | ___ | [___] | ✓ |

ACTION: If yes, flag the associated data as estimated.

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

| | | YES | NO | N/A |
|---|---|---|---|---|
| .18.3 | Soil/Sediment | | | |
| | Circle all values on self prepared Form VI for field duplicates that are: | | | |
| | RPD >100%, or | | | |
| | Difference > 2 x CRDL* | | | |
| | Is any RPD (where sample and duplicate are both greater than 5 times *CRDL) : >100%? | ___ | [✓] | ___ |
| | Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x *CRDL ): >2x *CRDL? | ___ | [✓] | ___ |
| | ACTION: If yes, flag the associated data as estimated. | | | |
| 19 | Form VII (Laboratory Control Sample) (Note: LCS - not required for aqueous Hg and cyanide analyses.) | | | |
| 19.1 | Was one LCS prepared and analyzed for: | | | |
| | each SDG? | [✓] | ___ | ___ |
| | each batch samples digested/distilled? | [✓] | ___ | ___ |
| | both AA and ICP when both are used for the same analyte? | [___] | ___ | ✓ |
| | ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory for submittal of results of LCS. Flag as estimated (J) all the data for which LCS was not analyzed. | | | |
| | NOTE: If only one LCS was analyzed for more than 20 samples, then first 20 samples close to LCS do not have to be flagged as estimated. | | | |



Substitute IDL for CRDL when IDL > CRDL.
Use absolute values of sample and duplicate to calculate the difference.

| | YES | NO | N/A |
|---|---|---|---|

1.19.2 Aqueous LCS

Circle on each Form VII the LCS percent recoveries outside control limits (80 - 120%) except for aqueous Ag and Sb.

| Is any LCS recovery: | | | |
|---|---|---|---|
| less than 50%? | ___ | [ ___ ] | ✓ |
| between 50% and 79%? | ___ | [ ___ ] | ✓ |
| between 121% and 150%? | ___ | [ ___ ] | ✓ |
| greater than 150%? | ___ | [ ___ ] | ✓ |

ACTION: Less than 50%, reject (red-line) all data; between 50% and 79%, flag all associated data as estimated (J); between 121% and 150%, flag all positive (not flagged with a "U") results as estimated; greater than 150%, reject all positive results.

.19.3 Solid LCS

NOTE: 1. If "Found" value of LCS is rejectable due to duplicate injections or analytical spike recovery criteria, regardless of LCS recovery, flag the associated data as estimated (J).
2. If IDL of an analyte is equal to or greater than true value of LCS, disregard the "Action" below even though LCS is out of control limits.

Is LCS "Found" value higher than the control limits on Form VII? ___ [ ✓ ] ___

ACTION: If yes, qualify all associated positive data as estimated.

Is LCS "Found" value lower than the Control limits on Form VII? ___ [ ✓ ] ___

ACTION: If yes, qualify all associated data as estimated.

*Savannah Laboratories*

# TOTAL METALS

- 5a -

SPIKE SAMPLE RECOVERY

SAMPLE NO.

LIA013S

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VTEQ001

Matrix (soil/water): SOIL Level (low/med): LOW

% Solids for Sample: 86.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| Analyte | Control Limit %R | Spiked Sample Result (SSR) | C | Sample Result (SR) | C | Spike Added (SA) | %R | Q | M |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | 12280 | | 8612 | | 232.6 | 1577 | | P |
| Antimony | 75 - 125 | 27.69 | | 2.326 | U | 58.14 | 48 | N | P |
| Arsenic | 75 - 125 | 219.7 | | 11.85 | | 232.6 | 89 | | P |
| Barium | 75 - 125 | 394.7 | | 124.2 | | 232.6 | 116 | | P |
| Beryllium | 75 - 125 | 5.463 | | 0.1605 | B | 5.814 | 91 | | P |
| Cadmium | 75 - 125 | 13.25 | | 2.015 | | 5.814 | 193 | N | P |
| Chromium | 75 - 125 | 40.14 | | 18.54 | | 23.26 | 93 | | P |
| Cobalt | 75 - 125 | 62.81 | | 9.024 | | 58.14 | 93 | | P |
| Copper | 75 - 125 | 70.58 | | 37.48 | | 29.07 | 114 | | P |
| Iron | | 22760 | | 25760 | | 116.3 | -2580 | | P |
| Lead | 75 - 125 | 58.96 | | 7.059 | | 58.14 | 89 | | P |
| Manganese | | 872.1 | | 740.9 | | 58.14 | 225 | | P |
| Mercury | 80 - 120 | 0.0562 | | 0.0233 | U | 0.0581 | 97 | | CV |
| Nickel | 75 - 125 | 59.54 | | 7.092 | | 58.14 | 90 | | P |
| Selenium | 75 - 125 | 205.6 | | 0.8263 | B | 232.6 | 88 | | P |
| Silver | 75 - 125 | 6.190 | | 1.163 | U | 5.814 | 106 | | P |
| Thallium | 75 - 125 | 215.8 | | 1.163 | U | 232.6 | 93 | | P |
| Tin | 75 - 125 | 105.6 | | 5.814 | U | 116.3 | 91 | | P |
| Vanadium | 75 - 125 | 134.6 | | 89.67 | | 58.14 | 77 | | P |
| Zinc | 75 - 125 | 414.7 | | 107.4 | | 58.14 | 529 | N | P |

Comments:

000048171

*Savannah Laboratories*

# TOTAL METALS

- 5a -

## SPIKE SAMPLE RECOVERY

SAMPLE NO.

LIA013SD

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ001

Matrix (soil/water): SOIL Level (low/med): LOW

% Solids for Sample: 86.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| Analyte | Control Limit %R | Spiked Sample Result (SSR) | C | Sample Result (SR) | C | Spike Added (SA) | %R | Q | M |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | 12700 | | 8612 | | 232.6 | 1758 | | P |
| Antimony | 75 - 125 | 28.17 | | 2.326 | U | 58.14 | 48 | N | P |
| Arsenic | 75 - 125 | 225.6 | | 11.85 | | 232.6 | 92 | | P |
| Barium | 75 - 125 | 402.5 | | 124.2 | | 232.6 | 120 | | P |
| Beryllium | 75 - 125 | 5.633 | | 0.1605 | B | 5.814 | 94 | | P |
| Cadmium | 75 - 125 | 7.469 | | 2.015 | | 5.814 | 94 | | P |
| Chromium | 75 - 125 | 39.90 | | 18.54 | | 23.26 | 92 | | P |
| Cobalt | 75 - 125 | 64.79 | | 9.024 | | 58.14 | 96 | | P |
| Copper | 75 - 125 | 74.22 | | 37.48 | | 29.07 | 126 | N | P |
| Iron | | 24630 | | 25760 | | 116.3 | -972 | | P |
| Lead | 75 - 125 | 61.12 | | 7.059 | | 58.14 | 93 | | P |
| Manganese | | 883.0 | | 740.9 | | 58.14 | 244 | | P |
| Mercury | 80 - 120 | 0.0540 | | 0.0233 | U | 0.0581 | 93 | | CV |
| Nickel | 75 - 125 | 60.24 | | 7.092 | | 58.14 | 91 | | P |
| Selenium | 75 - 125 | 212.6 | | 0.8263 | B | 232.6 | 91 | | P |
| Silver | 75 - 125 | 6.369 | | 1.163 | U | 5.814 | 110 | | P |
| Thallium | 75 - 125 | 221.0 | | 1.163 | U | 232.6 | 95 | | P |
| Tin | 75 - 125 | 108.5 | | 5.814 | U | 116.3 | 93 | | P |
| Vanadium | 75 - 125 | 140.3 | | 89.67 | | 58.14 | 87 | | P |
| Zinc | 75 - 125 | DM 82.00 169.8 | | 107.4 | | 58.14 | 107 | | P |

Comments:

*Savannah Laboratories*

# TOTAL METALS
- 5b -
## POST DIGEST SPIKE SAMPLE RECOVERY

SAMPLE NO.

LIA013A

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ001

Matrix (soil/water): SOIL Level (low/med): LOW

Concentration Units: ug/L

| Analyte | Control Limit %R | Spiked Sample Result (SSR) | C | Sample Result (SR) | C | Spike Added (SA) | %R | Q | M |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | 75050 | | 74060 | | 2000 | 49 | | P |
| Antimony | | 492.3 | | 20.00 | U | 500.0 | 98 | | P |
| Arsenic | | 1948 | | 101.9 | | 2000 | 92 | | P |
| Barium | | 3152 | | 1068 | | 2000 | 104 | | P |
| Beryllium | | 47.82 | | 1.380 | B | 50.00 | 93 | | P |
| Cadmium | | 61.38 | | 17.33 | | 50.00 | 88 | | P |
| Chromium | | 345.8 | | 159.5 | | 200.0 | 93 | | P |
| Cobalt | | 540.7 | | 77.61 | | 500.0 | 93 | | P |
| Copper | | 586.4 | | 322.3 | | 250.0 | 106 | | P |
| Iron | | 219000 | | 221500 | | 1000 | -250 | | P |
| Lead | | 528.8 | | 60.70 | | 500.0 | 94 | | P |
| Manganese | | 6724 | | 6371 | | 500.0 | 71 | | P |
| Mercury | | 1.03 | | 0.400 | U | 1.00 | 103 | | CV |
| Nickel | | 515.2 | | 60.99 | | 500.0 | 91 | | P |
| Selenium | | 1847 | | 7.106 | B | 2000 | 92 | | P |
| Silver | | 54.32 | | 10.00 | U | 50.00 | 109 | | P |
| Thallium | | 1892 | | 10.00 | U | 2000 | 95 | | P |
| Tin | | 970.3 | | 50.00 | U | 1000 | 97 | | P |
| Vanadium | | 1231 | | 771.2 | | 500.0 | 92 | | P |
| Zinc | | 1377 | | 923.4 | | 500.0 | 91 | | P |

Comments:

# TOTAL METALS
- 7 -
## LABORATORY CONTROL SAMPLE

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ001

Solid LCS Source: CPI

Aqueous LCS Source: CPI

| Analyte | Aqueous (ug/L) True | Found | %R | Solid (mg/kg) True | Found | C Limits | | %R | |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | 214 | 244 | 159 | 268 | 114 | |
| Antimony | | | | 50.0 | 50.2 | 37.3 | 62.7 | 100 | |
| Arsenic | | | | 200 | 192 | 149 | 251 | 96 | |
| Barium | | | | 200 | 217 | 149 | 251 | 109 | |
| Beryllium | | | | 5.00 | 5.08 | 3.80 | 6.20 | 102 | |
| Cadmium | | | | 5.00 | 5.06 | 3.80 | 6.20 | 101 | |
| Chromium | | | | 20.0 | 21.0 | 15.0 | 25.0 | 105 | |
| Cobalt | | | | 50.0 | 52.3 | 37.3 | 62.7 | 105 | |
| Copper | | | | 25.0 | 26.7 | 18.7 | 31.3 | 107 | |
| Iron | | | | 109 | 123 | 81.3 | 137 | 113 | |
| Lead | | | | 50.0 | 51.8 | 37.3 ~~62.7~~ | 62.7 ~~64.2~~ | 104 | |
| Manganese | | | | 50.0 | 53.1 | 37.3 | 62.7 | 106 | |
| Mercury | | | | 1.40 | 1.67 | 1.10 | 1.70 | 119 | |
| Nickel | | | | 50.0 | 51.6 | 37.3 | 62.7 ~~67.6~~ | 103 | |
| Selenium | | | | 200 | 190 | 149 | 251 | 95 | |
| Silver | | | | 5.00 | 5.48 | 3.80 | 6.20 | 110 | |
| Thallium | | | | 200 | 206 | 149 | 251 | 103 | |
| Tin | | | | 100 | 99.7 | 74.6 | 125 | 100 | |
| Vanadium | | | | 50.0 | 50.5 | 37.3 | 62.7 | 101 | |
| Zinc | | | | 50.0 | 50.2 | 37.3 | 62.7 | 100 | |

# TOTAL METALS
- 9 -
## ICP SERIAL DILUTIONS

SAMPLE NO.

LIA013L

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ001

Matrix (soil/water): SOIL Level (low/med): LOW

Concentration Units: ug/L

| Analyte | Initial Sample Result (I) | C | Serial Dilution Result (S) | C | % Difference | Q | M |
|---|---|---|---|---|---|---|---|
| Aluminum | 74060 | | 75620 | | 2.1 | | P |
| Antimony | 20.00 | U | 100.0 | U | | | P |
| Arsenic | 101.9 | | 111.8 | | 9.7 | | P |
| Barium | 1068 | | 1098 | | 2.8 | | P |
| Beryllium | 1.380 | B | 20.00 | U | | | P |
| Cadmium | 17.33 | | 17.47 | B | 0.8 | | P |
| Chromium | 159.5 | | 169.7 | | 6.4 | | P |
| Cobalt | 77.61 | | 81.51 | | 5.0 | | P |
| Copper | 322.3 | | 331.8 | | 2.9 | | P |
| Iron | 221500 | | 242900 | | 9.7 | | P |
| Lead | 60.70 | | 67.28 | | 10.8 | | P |
| Manganese | 6371 | | 6952 | | 9.1 | | P |
| Mercury | 0.400 | U | 2.00 | U | | | CV |
| Nickel | 60.99 | | 64.31 | B | 5.4 | | P |
| Selenium | 7.106 | B | 50.00 | U | | | P |
| Silver | 10.00 | U | 50.00 | U | | | P |
| Thallium | 10.00 | U | 50.00 | U | | | P |
| Tin | 50.00 | U | 250.0 | U | | | P |
| Vanadium | 771.2 | | 816.6 | | 5.9 | | P |
| Zinc | 923.4 | | 1021 | | 10.5 | | P |

| | | YES | NO | N/A |
|---|---|---|---|---|
| .20 | Form IX (ICP Serial Dilution) - | | | |
| | NOTE: Serial dilution analysis is required only for initial concentrations equal to or greater than 10 x IDL. | | | |
| .20.1 | Was Serial Dilution analysis performed for: each SDG? | ✓ | | |
| | each matrix type? | ✓ | | |
| | each concentration range (i.e. low, med.)? | ✓ | | |
| | ACTION: If no for any of the above, flag as estimated all the positive data ≥ 10xIDLs or ≥ CRDL when 10xIDL ≤ CRDL for which Serial Dilution Analysis was not performed. | | | |
| .20.2 | Was field blank(s) used for Serial Dilution Analysis? | | ✓ | |
| | ACTION: If yes, flag all associated data ≥ 10 x IDL as estimated (J). If 10xIDL ≤ CRDL, flag all data ≥ CRDL. | | | |
| .20.3 | Are results outside control limit flagged with an "E" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater. | ✓ | | |
| | ACTION: If no, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative". | | | |
| .20.4 | Circle on each Form IX all percent difference that are outside the control limits for initial concentrations equal to or greater than 10 x IDLs only. | | | |
| | Are any % difference values: | | | |
| | > 10%? | | ✓ | |
| | ≥ 100%? | | ✓ | |

| | | YES | NO | N/A |
|---|---|---|---|---|
| | ACTION: Flag as estimated (J) all the associated sample data ≥ 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which percent difference is greater than 10% but less than 100%. Reject (red-line) all the associated sample results equal to or greater than 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which PD is greater than or equal to 100%. | | | |
| | Note: Flag or reject on Form I's only the sample results whose associated raw data are ≥ 10xIDL (or ≥ CRDL when 10xIDL≤ CRDL) | | | |
| 1.21 | Furnace Atomic Absorbtion (AA) QC Analysis | | | |
| 1 .1 | Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed by GFAA? | [___] | ___ | ✓ |
| | ACTION: If no, reject the data on Form I's for which duplicate injections were not performed. | | | |
| 1.21.2 | Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or Coefficient of Variation (CV) for concentration greater than CRDL? | [___] | ___ | ✓ |
| | Was a dilution analyzed for sample with analytical spike recovery less than 40%? | [___] | ___ | ✓ |
| | ACTION: If no for any of the above, flag all the associated data as estimated. | | | |
| 1.21.3 | Is *analytical spike recovery outside the control limits (85-115%) for any sample? | ___ | [___] | ✓ |
| | ACTION: If yes, flag the affected sample results if the recovery is between 10-84%; if the recovery is between 115-200%, flag the associated positive sample results as estimated; reject the associated sample results if the recovery is less than 10%; reject positive sample results if the recovery is greater than 200%. | | | |

| | | YES | NO | N/A |
|---|---|---|---|---|
| | NOTE: Reject or flag the data only when the affected sample(s) was not subsequently analyzed by Method of Standard Addition. | | | |
| 1.22 | Form VIII (Method of Standard Addition Results) | | | |
| 1.22.1 | Present? | [ ] | | ✓ |
| | If no, is any Form I result coded with "S" or a "+"? | | [ ] | ✓ |
| | ACTION: If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII. | | | |
| 1.22.2 | Is coefficient of correlation for MSA less than 0.990 for any sample? | | [ ] | ✓ |
| | ACTION: If yes, reject (red-line) the affected data. | | | |
| 1.22.3 | Was *MSA required for any sample but not performed? | | [ ] | ✓ |
| | Is coefficient of correlation for MSA less than 0.995? | | [ ] | ✓ |
| | Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run? | | [ ] | ✓ |
| | ACTION: If yes for any of the above, flag all the associated data as estimated (J). | | | |
| 1.22.4 | Was proper quantitation procedure followed correctly as outlined in the SOW on page E-23? | [ ] | | ✓ |
| | ACTION: If no, note exception under Contract Problem/ Non-Compliance section of the "Data Assessment Narrative", and prepare a separate list. | | | |

| | | YES | NO | N/A |
|---|---|---|---|---|
| ..23 | Dissolved/Total or Inorganic/Total Analytes - | | | |
| ..23.1 | Were any analyses performed for dissolved as well as total analytes on the same sample(s). | ___ | [___] | ✓ |
| | Were any analyses performed for inorganic as well as total (organic + inorganic) analytes on the same sample(s)? | ___ | [___] | ✓ |
| | NOTE: 1. If yes, prepare a list comparing differences between all dissolved (or inorganic) and total analytes. Compute the differences as a percent of the total analyte only when dissolved concentration is greater than CRDL as well as total concentration. 2. Apply the following questions only if inorganic (or dissolved ) results are (i) above CRDL, and (ii) greater than total constituents. 3. At least one preparation blank, ICS, and LCS should be analyzed in each analytical run. | | | |
| ..23.2 | Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%? | ___ | [___] | ✓ |
| .23.3 | Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 50%? | ___ | [___] | ✓ |
| | ACTION: If more than 10%, flag both dissolved (or inorganic) and total values as estimated (J); if more than 50%, reject (red-line) the data for both values. | | | |
| 1.24 | Form I (Field Blank) - | | | |
| | (Note: Designate 'Field Blank' as such on Form I.) | | | |
| 1.24.1 | Circle all field blank values on Form I that are greater than CRDL, (or 2 x IDL when IDL > CRDL). | | | |
| | Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples? | [___] | ___ | ✓ |

| | YES | NO | N/A |
|---|---|---|---|
| If no, was field blank value already rejected due to other QC criteria? | [ ] | ___ | ✓ |

ACTION: If no, reject (except field blank results) all associated positive sample data less than or equal to five times the field blank value. Reject on Form I's the soil sample results that when converted to ug/L on wet basis are less than or equal to five times the field blank value in ug/L.

1.25 Form X, XI, XII (Verification of Instrumental Parameters).

| | | YES | NO | N/A |
|---|---|---|---|---|
| 1.25.1 | Is verification report present for: | | | |
| | Instrument Detection Limits (quarterly)? | ✓ [ ] | ___ | ___ |
| | ICP Interelement Correction Factors (annually)? | [✓] | ___ | ___ |
| | ICP Linear Ranges (quarterly)? | [✓] | ___ | ___ |

ACTION: If no, contact TPO of the lab.

.25.2 Form X (Instrument Detection Limits) - (Note: IDL is not required for Cyanide.)

| | | YES | NO | N/A |
|---|---|---|---|---|
| .25.2.1 | Are IDLs present for: all the analytes? | [✓] | ___ | ___ |
| | all the instruments used? | [✓] | ___ | ___ |
| | For both AA and ICP when both are used for the same analyte? | [ ] | ___ | ✓ |

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

| | | YES | NO | N/A |
|---|---|---|---|---|
| .25.. | Is IDL greater than CRDL for any analyte? | ___ | [✓] | ___ |
| | If yes, is the concentration on Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL. | [✓] | ___ | ___ |

| | YES | NO | N/A |
|---|---|---|---|
| **Action** : If no, flag as estimated all values less than five times IDL of the instrument whose IDL exceeds CRDL. | | | |
| ..25.3 Form XI (Linear Ranges) | | | |
| ..25.3.1 Was any sample result higher than high linear range of ICP. | ___ | [✓] | ___ |
| Was any sample result higher than the highest calibration standard for non-ICP parameters? | ___ | [✓] | ___ |
| If yes for any of the above, was the sample diluted to obtain the result on Form I? | [✓] | ___ | ___ |
| **ACTION**: If no, flag the result reported on Form I as estimated(J). | | | |
| .26 Percent Solids of Sediments | | | |
| 26.1 Are percent solids in sediment(s): < 50%? | ___ | [✓] | ___ |
| < 10%? | ___ | [___] | ___ |

**ACTION**: If yes, qualify as estimated all the results of a sample that has per cent solids between 10%-50% (i.e. moisture content between 50%-90%). Reject all the results of a sample that has per cent solids less than 10% (i.e. moisture content greater than 90%).

**NOTE**: Reject or flag(J) only the sample results that were not previously rejected or flaged due to other QC criteria.

SEVERN TRENT SERVICES

## CASE NARRATIVE

SDG# VIEQ001
SL PROJECT#s S004089

Metals Fraction

The following samples were analyzed according to SW-846 Methods 6010B and 7471A.

| SL# | SAMPLE DESCRIPTION | MATRIX |
|---|---|---|
| S004089*1 | LIA009 | Solid |
| S004089*2 | LIA010 | Solid |
| S004089*3 | LIA011 | Solid |
| S004089*4 | LIA012 | Solid |
| S004089*5 | LIA013 | Solid |
| S004089*6 | LIA016 | Solid |
| S004089*7 | LIA027 | Solid |
| S004089*8 | LIA028 | Solid |
| S004089*9 | LIA029 | Solid |
| S004089*10 | LIA030 | Solid |
| S004089*11 | UP-EAST-SS-01 | Solid |
| S004089*12 | UP-EAST-SS-02 | Solid |
| S004089*13 | UP-EAST-SS-03 | Solid |
| S004089*14 | UP-EAST-SS-04 | Solid |
| S004089*15 | LIA011D | Solid |
| S004089*16 | LIA016D | Solid |
| S004089*17 | LIA029D | Solid |
| S004089*18 | LIA007 | Solid |
| S004089*19 | LIA008 | Solid |
| S004089*20 | LIA014 | Solid |

Sample S004089-5 (LIA013) was the designated matrix spike/matrix spike duplicate. The MS/MSD percent recoveries were not within advisory limits for antimony, cadmium, copper, and zinc. All data were flagged with an "N". The MS/MSD percent recoveries were not within advisory limits for aluminum, iron , and manganese due to the abundance of target analytes in relation to the spike added.

The relative percent difference exceeded the advisory limits for cadmium and zinc. All data were flagged with an "*".

*Savannah Laboratories*

# TOTAL METALS
- Cover Page -
## INORGANIC ANALYSIS DATA PACKAGE

Cc ıct: SDG No.: VIEQ001

Lab Code: SLSAV Case No.: SAS No.:

SOW No.: SW-846

| Sample No. | Lab Sample ID. |
|---|---|
| LIA009 | S004089-1 |
| LIA030 | S004089-10 |
| UP-EAST-SS-01 | S004089-11 |
| UP-EAST-SS-02 | S004089-12 |
| UP-EAST-SS-03 | S004089-13 |
| UP-EAST-SS-04 | S004089-14 |
| LIA011D | S004089-15 |
| LIA016D | S004089-16 |
| LIA029D | S004089-17 |
| LIA007 | S004089-18 |
| LIA008 | S004089-19 |
| LIA010 | S004089-2 |
| LIA014 | S004089-20 |
| LIA011 | S004089-3 |
| LIA012 | S004089-4 |
| LIA013 | S004089-5 |
| LIA013S | S004089-5S |

Were ICP interelement corrections applied? Yes/No YES

Were ICP background corrections applied? Yes/No YES

If yes-were raw data generated before application of background corrections? Yes/No NO

**Comments:**

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 above. 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.

S .ture: _____ Name: _____

Date: _____ Title: _____

*Savannah Laboratories*

# TOTAL METALS
## - Cover Page -
## INORGANIC ANALYSIS DATA PACKAGE

Co ict: SDG No.: VIEQ001

Lab Code: SLSAV Case No.: SAS No.:

SOW No.: SW-846

| Sample No. | Lab Sample ID. |
|---|---|
| LIA013SD | S004089-5SD |
| LIA016 | S004089-6 |
| LIA027 | S004089-7 |
| LIA028 | S004089-8 |
| LIA029 | S004089-9 |

Were ICP interelement corrections applied? Yes/No YES

Were ICP background corrections applied? Yes/No YES

If yes-were raw data generated before application of background corrections? Yes/No NO

**Comments:**

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 above. 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.

S ture: Name:

Date: Title:

HEARTLAND ENVIRONMENTAL SERVICES, INC.

# Data Validation Report

Copy

CH2M HILL
Vieques PR
SDG #: VIEQ002 and VIEQ003

**HEARTLAND**
**ENVIRONMENTAL SERVICES, INC.**

# Data Validation Report

| | |
|---|---|
| SDG#: | VIEQ002 |
| Date: | September 6, 2000 |
| Client Name: | CH2M Hill |
| Project/Site Name: | Vieques |
| Date Sampled: | June 21, 2000 |
| Number of Samples: | 10 Non-Aqueous Sample(s) with 0 MS/MSD(s) |
| Laboratory: | STL |
| Validation Guidance: | National Functional Guidelines for Organic and Inorganic Data, February, 1994, Region II Modifications |
| QA/QC Level: | DQO Level IV |
| Method(s) Utilized: | SW846 Third Edition |
| Analytical Fractions: | Explosives, Nitroglycerin, PETN and Metals |

Analytical data in this report were screened to determine usability of results and also to determine contractual compliance relative to these requirements and deliverables. This screening assumes analytical results are correct as reported and merely provides an interpretation of the reported quality control results. A minimum of 10% of all laboratory calculations have been verified as part of this validation. All instrument output, i.e. spectra, chromatograms, etc., for each sample have been carefully reviewed. The end-user is urged to review the Specific Findings and associated Data Qualifications presented in this report. Annotated Form 1s or spreadsheets for all samples reviewed are included after the Data Assessment Narratives. Form 1s for MS/MSD samples or spreadsheets are not annotated.

The release of this Data Validation Report is authorized by the following signature:

Lisa L. Jameau — 9-6-00

for Eugene M. Watson, Vice President — Date

4127 Plaza 94 South • St. Charles, MO 63304
(636) 936-1332 • Fax (636) 936-1335

**SDG# VIEQ002**

**Samples and Fractions Reviewed**

Sample Identifications Analytical Fractions

| CH2M HILL ID | MATRIX | EXP | | NITR | | PETN | | MET | |
|---|---|---|---|---|---|---|---|---|---|
| LIA014D | SOIL | | X | | X | | X | | X |
| LIA017 | SOIL | | X | | X | | X | | X |
| LIA018 | SOIL | | X | | X | | X | | X |
| LIA021 | SOIL | | X | | X | | X | | X |
| LIA022 | SOIL | | X | | X | | X | | X |
| LIA023 | SOIL | | X | | X | | X | | X |
| LIA023D | SOIL | | X | | X | | X | | X |
| LIA024 | SOIL | | X | | X | | X | | X |
| LIA025 | SOIL | | X | | X | | X | | X |
| LIA026 | SOIL | | X | | X | | X | | X |
| Total Billable Samples (Water/Soil) | | 0 | 10 | 0 | 10 | 0 | 10 | 0 | 10 |

EXP= Explosives
NITR= Nitroglycerin
PETN= Pentaerythritol Tetranitrate
MET= Metals

# DATA ASSESSMENT NARRATIVES

# DATA ASSESSMENT NARRATIVE

# EXPLOSIVES

## General

The organic findings offered in this screening report assumes that all analytical results are correct as reported and is based upon the examination of the reported holding times, blank analysis results, surrogate and matrix spike recoveries, HPLC performance, and calibration results. This report was prepared in compliance relative to the analytical and deliverable requirements specified in the SW-846 Method 8330; Region II Data Validation Guidelines, Revision 1.3, September, 1994; and DQO Level IV requirements. All comments made within this report should be considered when examining the analytical results. Please refer the specific findings found in each category to the Summary of Data Qualifications table.

## SDG# VIEQ002

A validation was performed on the Explosives data from SDG VIEQ002. The data was evaluated based on the following parameters.

| | | |
|---|---|---|
| * | • | Data Completeness |
| * | • | Holding Times |
| * | • | HPLC Performance |
| | • | Calibrations |
| * | • | Blanks |
| * | • | Surrogate Recoveries |
| | • | Matrix Spike/Matrix Spike Duplicates |
| * | • | Field Duplicates |
| * | • | Compound Identification |
| | • | Compound Quantitation |

* - All criteria were met for this parameter.

## Initial Calibration

The samples were analyzed more than twenty-four hours after the analysis of the initial calibration. The associated continuing calibration exhibited one (1) compound with a non-compliant %D. Based on the Region II validation guidelines, for the following samples and compound, the positive results are qualified as estimated, J IC, and the non-detect results are qualified as estimated, UJ IC.

| | |
|---|---|
| All Samples | Tetryl |

## Continuing Calibration

The continuing calibration analyzed on 07/04/00 at 14:57 exhibited one (1) compound on column CN with a %D greater than 15%. For the following samples and non-compliant compound, the positive results are qualified as estimated, J CC, and the non-detect results are qualified as estimated, UJ CC.

| | |
|---|---|
| All Samples | Tetryl |

## Matrix Spike/Matrix Spike Duplicates

The MS/MSD pair of sample LIA022 exhibited 0% MS and MSD recoveries for two (2) compounds. For the following sample and non-compliant compounds, the positive results are qualified as estimated, J MS, and the non-detect results are rejected, R MS.

| | |
|---|---|
| LIA022 | 4-AM-DNT |
| | 2,4,6-TNT |

## Compound Quantitation

All positive results exhibiting column quantitation %Ds greater than 25% but ≤ 90% are qualified as estimated, J 2C.

All positive results exhibiting column quantitation %Ds greater than 90% are rejected, R 2C.

## System Performance and Overall Assessment

The data required qualifications.

# GLOSSARY OF DATA QUALIFIERS

## QUALIFICATION CODES

**U** = Not detected

**J** = Estimated value

**UJ** = Reported quantitation limit is qualified as estimated

**NJ** = Result is considered presumptively present at an estimated concentration

**R** = Result is rejected and unusable

**D** = Result value is based on dilution analysis

## METHOD BLANK QUALIFICATION CODES

**CRQL =** The sample result for the blank contaminant is less than the sample CRQL and is less than 5X the method blank value. The sample result for the blank contaminant is rejected and the CRQL for that compound is reported.

**U =** The sample result for the blank contaminant is greater than the sample CRQL and is less than 5X the method blank value. The sample result for the blank contaminant is qualified as non detected at the compound value reported.

**No Action =** The sample result for the blank contaminant is greater than the sample CRQL and is greater than 5X the method blank value. The sample result for the blank contaminant is not qualified with any blank qualifiers.

## Two Digit Code Definitions for Comment Field

| Code | Definition |
|---|---|
| TN | Tune |
| BS | Blank Spike/LCS |
| IS | Internal Standard |
| MS | Matrix Spike and/or Matrix Spike Duplicate Recovery |
| MD | Matrix Spike/Matrix Spike Duplicate Precision |
| 2S | Second Source |
| SD | Serial Dilution |
| SS | Spiked Surrogate |
| LR | Analyte present above linear (or calibration) range |
| IC | Initial Calibration |
| CC | Continuing Calibration Verification |
| PD | Pesticide Degradation |
| LD | Lab Duplicate |
| 2C | Second Column (Confirmation) |
| HT | Holding Time |
| PS | Post Spike |
| BL | Blank |
| RE | Re-extraction |
| DL | Dilution |
| IB | In Between |
| FD | Field Duplicate |
| OT | Other |

# SUMMARY OF DATA QUALIFICATIONS

| SAMPLE ID | COMPOUND ID | DL | QL | CODE |
|---|---|---|---|---|
| All Samples | Tetryl | +/- | J/UJ | IC |
| All Samples | Tetryl | +/- | J/UJ | CC |
| LIA022 | 4-AM-DNT<br>2,4,6-TNT | +/- | J/R | MS |
| All Samples | All P > 25%<br>But ≤ 90% | + | J | 2C |
| All Samples | All P > 90% | + | R | 2C |

* DL denotes the Form I qualifier supplied by the laboratory
QL denotes the qualifier used by the data validation firm
+ in the DL column denotes a positive result
- in the DL column denotes a non detect result

# DATA ASSESSMENT NARRATIVE

# NITROGLYCERIN AND PENTAERYTHRITOL TETRANITRATE

**General**

The organic findings offered in this screening report assumes that all analytical results are correct as reported and is based upon the examination of the reported holding times, blank analysis results, surrogate and matrix spike recoveries, GC performance, and calibration results. This report was prepared in compliance relative to the analytical and deliverable requirements specified in the SW-846 Method 8332; Region II Data Validation Guidelines, where applicable; and DQO Level IV requirements. All comments made within this report should be considered when examining the analytical results. Please refer the specific findings found in each category to the Summary of Data Qualifications table.

**SDG# VIEQ002**

A validation was performed on the Nitroglycerin and Pentaerythritol Tetranitrate data from SDG VIEQ002. The data was evaluated based on the following parameters.

* • Data Completeness
* • Holding Times
* • GC Performance
* • Calibrations
* • Blanks
* • Surrogate Recoveries
* • Matrix Spike/Matrix Spike Duplicates
* • Field Duplicates
* • Compound Identification
* • Compound Quantitation

* - All criteria were met for this parameter.

**System Performance and Overall Assessment**

The data did not require qualifications.

# GLOSSARY OF DATA QUALIFIERS

## QUALIFICATION CODES

**U** = Not detected

**J** = Estimated value

**UJ** = Reported quantitation limit is qualified as estimated

**NJ** = Result is considered presumptively present at an estimated concentration

**R** = Result is rejected and unusable

**D** = Result value is based on dilution analysis

## METHOD BLANK QUALIFICATION CODES

**CRQL =** The sample result for the blank contaminant is less than the sample CRQL and is less than 5X the method blank value. The sample result for the blank contaminant is rejected and the CRQL for that compound is reported.

**U =** The sample result for the blank contaminant is greater than the sample CRQL and is less than 5X the method blank value. The sample result for the blank contaminant is qualified as non detected at the compound value reported.

**No Action =** The sample result for the blank contaminant is greater than the sample CRQL and is greater than 5X the method blank value. The sample result for the blank contaminant is not qualified with any blank qualifiers.

## Two Digit Code Definitions for Comment Field

| Code | Definition |
|---|---|
| TN | Tune |
| BS | Blank Spike/LCS |
| IS | Internal Standard |
| MS | Matrix Spike and/or Matrix Spike Duplicate Recovery |
| MD | Matrix Spike/Matrix Spike Duplicate Precision |
| 2S | Second Source |
| SD | Serial Dilution |
| SS | Spiked Surrogate |
| LR | Analyte present above linear (or calibration) range |
| IC | Initial Calibration |
| CC | Continuing Calibration Verification |
| PD | Pesticide Degradation |
| LD | Lab Duplicate |
| 2C | Second Column (Confirmation) |
| HT | Holding Time |
| PS | Post Spike |
| BL | Blank |
| RE | Re-extraction |
| DL | Dilution |
| IB | In Between |
| FD | Field Duplicate |
| OT | Other |

# SUMMARY OF DATA QUALIFICATIONS

| SAMPLE ID | COMPOUND ID | DL | QL | CODE |
|---|---|---|---|---|

NO QUALIFICATIONS WERE REQUIRED.

* DL denotes the Form I qualifier supplied by the laboratory
QL denotes the qualifier used by the data validation firm
+ in the DL column denotes a positive result
- in the DL column denotes a non detect result

# DATA ASSESSMENT NARRATIVE
# METALS

General

The inorganic findings offered in this screening report assumes that all analytical results are correct as reported and is based upon the examination of the reported holding times, blank analysis results, matrix spike and LCS recoveries, matrix duplicates and calibration results. This report was prepared in compliance relative to the analytical and deliverable requirements specified in the SW846 methods: the Evaluation of Metals Data for the Contract Laboratory Program Jan. 1992 and DQO Level IV requirements. All comments made within this report should be considered when examining the analytical results. Please refer the specific findings found in each category to the Summary of Data Qualification table.

## SDGs # VIEQ002

A validation was performed on the Metals Data from SDG VIEQ002. The data was evaluated based on the following parameters.

| | | |
|---|---|---|
| * | • | Data Completeness |
| * | • | Holding Times |
| * | • | Calibrations |
| * | • | Blanks |
| * | • | Interferences |
| * | • | Matrix Spike Recovery |
| * | • | Matrix Duplicates |
| * | • | Field Duplicates |
| * | • | Laboratory Control Samples |
| * | • | Serial Dilutions |

* - All criteria were met for this parameter.

## Calibration Verification Standard results

The CRI standards for Manganese, Lead and Zinc were also greater than the control limits but the data was not affected due to high concentrations of Manganese, Lead and Zinc in the samples(OT).

1. All sample results left with a "B" qualifier after all other qualifications, will be qualified with a "J" (IB) qualifier in place of the "B". Value is below the CRDL but greater than the IDL.

# SUMMARY OF DATA QUALIFICATIONS

| Sample ID | Analyte | DL | QL |
|---|---|---|---|
| 1. all "B" results | all analytes | B | J |

# ANNOTATED FORM 1s

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089A-1

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Matrix: (soil/water) SOIL Lab Sample ID: LIA014D

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G17K17

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/28/00

Concentrated Extract Volume: 20.0 (mL) Date Analyzed: 07/17/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | ~~U~~ UJ IC, |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 98-95-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2.6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EMK
8/31/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089A-2

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Matrix: (soil/water) SOIL Lab Sample ID: LIA017

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G17K18

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/28/00

Concentrated Extract Volume: 20.0 (mL) Date Analyzed: 07/17/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | ~~U~~ UJ |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 98-95-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EXK
8/3/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089A-3

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Matrix: (soil/water) SOIL Lab Sample ID: LIA018

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G17K19

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/28/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 07/17/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | ~~U~~ UJ |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 98-95-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EXR
8/31/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089A-4

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Matrix: (soil/water) SOIL Lab Sample ID: LIA021

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G17K20

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/28/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 07/17/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | ~~U~~ |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 98-95-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

US TCC

EXX
8/31/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089A-5

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Matrix: (soil/water) SOIL Lab Sample ID: LIA022

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G17K21

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/28/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 07/17/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q | |
|---|---|---|---|---|
| 2691-41-0 | HMX | 500 | U | |
| 99-35-4 | 1,3,5-TNB | 250 | U | |
| 121-82-4 | RDX | 120 | ~~JP~~ | R 2C |
| 99-65-0 | 1,3-DNB | 250 | U | |
| 479-45-8 | Tetryl | 500 | ~~U~~ | UJ IC,C |
| 355-72-78-2 | 2-AM-DNT | 620 | | J 2C |
| 19406-51-0 | 4-AM-DNT | 640 | | R 2C,M |
| 98-95-3 | Nitrobenzene | 250 | U | |
| 118-96-7 | 2,4,6-TNT | 13000 | | J MS |
| 121-14-2 | 2,4-DNT | 250 | U | |
| 606-20-2 | 2,6-DNT | 500 | U | |
| 88-72-2 | 2-NT | 250 | U | |
| 99-08-1 | 3-NT | 250 | U | |
| 99-99-0 | 4-NT | 250 | U | |

Ekx
8/31/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089A-6

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Matrix: (soil/water) SOIL Lab Sample ID: LIA023

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G17K24

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/28/00

Concentrated Extract Volume: 20.0 (mL) Date Analyzed: 07/18/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | ~~U~~ UJ TC |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 98-95-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EMK
3/31/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089A-7

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Matrix: (soil/water) SOIL Lab Sample ID: LIA023D

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G17K25

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/28/00

Concentrated Extract Volume: 20.0 (mL) Date Analyzed: 07/18/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | ~~U~~ UJ IC, |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 98-95-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EM
8/31/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089A-8

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Matrix: (soil/water) SOIL Lab Sample ID: LIA024

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G17K26

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/28/00

Concentrated Extract Volume: 20.0 (mL) Date Analyzed: 07/18/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | ~~U~~ |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 98-95-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EAK
3/31/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089A-9

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Matrix: (soil/water) SOIL Lab Sample ID: LIA025

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G17K27

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/28/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 07/18/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | ~~U~~ UJ JC cc |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 98-95-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EJK
3/31/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089A-10

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Matrix: (soil/water) SOIL Lab Sample ID: LIA026

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G17K28

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/28/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 07/18/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | ~~U~~ |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 98-95-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EKK
8/31/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089A-5MS

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Matrix: (soil/water) SOIL Lab Sample ID: 04089A-5MS LA022M

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G17K22

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/28/00

Concentrated Extract Volume: 20.0 (mL) Date Analyzed: 07/17/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 3000 | |
| 99-35-4 | 1,3,5-TNB | 3000 | |
| 121-82-4 | RDX | 3600 | |
| 99-65-0 | 1,3-DNB | 2900 | |
| 479-45-8 | Tetryl | 2800 | |
| 355-72-78-2 | 2-AM-DNT | 3500 | |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 98-95-3 | Nitrobenzene | 2800 | |
| 118-96-7 | 2,4,6-TNT | 11000 | |
| 121-14-2 | 2,4-DNT | 2900 | |
| 606-20-2 | 2,6-DNT | 3000 | |
| 88-72-2 | 2-NT | 2700 | |
| 99-08-1 | 3-NT | 2800 | |
| 99-99-0 | 4-NT | 2800 | |

EKK
9/5/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089A-5MSD

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ00.

Matrix: (soil/water) SOIL Lab Sample ID: 04089A-5MSD LIA002

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G17K23

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/28/00

Concentrated Extract Volume: 20.0 (mL) Date Analyzed: 07/17/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 3000 | |
| 99-35-4 | 1,3,5-TNB | 3000 | |
| 121-82-4 | RDX | 2800 | |
| 99-65-0 | 1,3-DNB | 2900 | |
| 479-45-8 | Tetryl | 2800 | |
| 355-72-78-2 | 2-AM-DNT | 3400 | |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 98-95-3 | Nitrobenzene | 2900 | |
| 118-96-7 | 2,4,6-TNT | 8100 | |
| 121-14-2 | 2,4-DNT | 2900 | |
| 606-20-2 | 2,6-DNT | 3000 | |
| 88-72-2 | 2-NT | 2700 | |
| 99-08-1 | 3-NT | 2900 | |
| 99-99-0 | 4-NT | 2700 | |

EMC
9/5/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089A-1

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Matrix: (soil/water) SOIL Lab Sample ID: LIA014D

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G17J11

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 18 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0(mL) Date Analyzed: 07/17/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1200 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1200 | U |

EK
9/1/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089A-2

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Matrix: (soil/water) SOIL Lab Sample ID: LIA017

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G17J12

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 22 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0 (mL) Date Analyzed: 07/17/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1300 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1300 | U |

EXL
9/1/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089A-3

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Matrix: (soil/water) SOIL Lab Sample ID: LIA018

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G17J13

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 25 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0 (mL) Date Analyzed: 07/17/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1300 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1300 | U |

EWK
9/1/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089A-4

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Matrix: (soil/water) SOIL Lab Sample ID: LIA021

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G17J14

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 12 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0(mL) Date Analyzed: 07/17/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1100 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1100 | U |

EXK
9/1/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089A-5

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Matrix: (soil/water) SOIL Lab Sample ID: LIA022

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G17J15

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 11 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0 (mL) Date Analyzed: 07/17/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1100 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1100 | U |

EVL
9/1/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089A-6

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project:

SDG No.: VIEQ002

Matrix: (soil/water) SOIL Lab Sample ID: LIA023

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G17J18

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 12 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0 (mL) Date Analyzed: 07/17/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1100 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1100 | U |

EXK
9/1/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089A-7

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Matrix: (soil/water) SOIL Lab Sample ID: LIA023D

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G17J19

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 15 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0 (mL) Date Analyzed: 07/17/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1200 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1200 | U |

EAL
9/1/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089A-8

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Matrix: (soil/water) SOIL Lab Sample ID: LIA024

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G17J20

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 16 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0(mL) Date Analyzed: 07/17/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1200 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1200 | U |

EK
9/1/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089A-9

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Matrix: (soil/water) SOIL Lab Sample ID: LIA025

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G17J21

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 9 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0(mL) Date Analyzed: 07/17/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1100 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1100 | U |

EAL
9/1/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089A-10

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project:

SDG No.: VIEQ002

Matrix: (soil/water) SOIL Lab Sample ID: LIA026

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G17J22

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 11 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0 (mL) Date Analyzed: 07/17/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1100 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1100 | U |

EAK
9/1/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089A-5MS

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Matrix: (soil/water) SOIL Lab Sample ID: 04089A-5MS

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G17J16

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 11 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0(mL) Date Analyzed: 07/17/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 5600 | |
| 78-11-5 | Pentaerythritol tetranitrate | 1100 | U |

EKK
9/5/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04089A-5MSD

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Matrix: (soil/water) SOIL Lab Sample ID: 04089A-5MSD

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G17J17

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 11 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0 (mL) Date Analyzed: 07/17/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 4700 | |
| 78-11-5 | Pentaerythritol tetranitrate | 1100 | U |

EK
9/5/00

FORM I SV LC

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# TOTAL METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

LIA014D

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ002

Matrix (soil/water): SOIL Lab Sample ID: S004089A-1

Level (low/med): LOW Date Received: 22-JUN-2000

% Solids: 82.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 17000 | | | P |
| 7440-36-0 | Antimony | 2.4 | U | | P |
| 7440-38-2 | Arsenic | 4.0 | | | P |
| 7440-39-3 | Barium | 97 | | | P |
| 7440-41-7 | Beryllium | 0.25 | B | | P |
| 7440-43-9 | Cadmium | 1.4 | | | P |
| 7440-47-3 | Chromium | 110 | | | P |
| 7440-48-4 | Cobalt | 24 | | | P |
| 7440-50-8 | Copper | 41 | | | P |
| 7439-89-6 | Iron | 33000 | | | P |
| 7439-92-1 | Lead | 3.8 | | | P |
| 7439-96-5 | Manganese | 930 | | | P |
| 7439-97-6 | Mercury | 0.016 | B | | CV |
| 7440-02-0 | Nickel | 67 | | | P |
| 7782-49-2 | Selenium | 1.2 | U | | P |
| 7440-22-4 | Silver | 1.2 | U | | P |
| 7440-28-0 | Thallium | 1.2 | U | | P |
| 7440-31-5 | Tin | 6.1 | U | | P |
| 7440-62-2 | Vanadium | 64 | | | P |
| 7440-66-6 | Zinc | 51 | | | P |

J IB

JIB

9/5/0

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

*Savannah Laboratories*

# TOTAL METALS
-1-
## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.
LIA017

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ002

Matrix (soil/water): SOIL Lab Sample ID: S004089A-2

Level (low/med): LOW Date Received: 22-JUN-2000

% Solids: 78.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 3400 | | | P | |
| 7440-36-0 | Antimony | 2.3 | U | | P | |
| 7440-38-2 | Arsenic | 4.8 | | | P | |
| 7440-39-3 | Barium | 37 | | | P | |
| 7440-41-7 | Beryllium | 0.075 | ~~B~~ | | P | J I B |
| 7440-43-9 | Cadmium | 0.37 | ~~B~~ | | P | J I B |
| 7440-47-3 | Chromium | 7.2 | | | P | |
| 7440-48-4 | Cobalt | 2.9 | | | P | |
| 7440-50-8 | Copper | 11 | | | P | |
| 7439-89-6 | Iron | 5200 | | | P | |
| 7439-92-1 | Lead | 1.2 | | | P | |
| 7439-96-5 | Manganese | 160 | | | P | |
| 7439-97-6 | Mercury | 0.013 | ~~B~~ | | CV | J I B |
| 7440-02-0 | Nickel | 3.5 | ~~B~~ | | P | J I B |
| 7782-49-2 | Selenium | 1.2 | U | | P | |
| 7440-22-4 | Silver | 1.2 | U | | P | |
| 7440-28-0 | Thallium | 1.2 | U | | P | |
| 7440-31-5 | Tin | 5.8 | U | | P | |
| 7440-62-2 | Vanadium | 26 | | | P | |
| 7440-66-6 | Zinc | 14 | | | P | |

9/5/00

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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# TOTAL METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

LIA018

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ002

Matrix (soil/water): SOIL Lab Sample ID: S004089A-3

Level (low/med): LOW Date Received: 22-JUN-2000

% Solids: 75.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 16000 | | | P |
| 7440-36-0 | Antimony | 2.7 | U | | P |
| 7440-38-2 | Arsenic | 12 | | | P |
| 7440-39-3 | Barium | 360 | | | P |
| 7440-41-7 | Beryllium | 0.37 | ~~B~~ | | P |
| 7440-43-9 | Cadmium | 2.0 | | | P |
| 7440-47-3 | Chromium | 17 | | | P |
| 7440-48-4 | Cobalt | 18 | | | P |
| 7440-50-8 | Copper | 61 | | | P |
| 7439-89-6 | Iron | 39000 | | | P |
| 7439-92-1 | Lead | 10 | | | P |
| 7439-96-5 | Manganese | 1400 | | | P |
| 7439-97-6 | Mercury | 0.019 | ~~B~~ | | CV |
| 7440-02-0 | Nickel | 10 | | | P |
| 7782-49-2 | Selenium | 1.3 | U | | P |
| 7440-22-4 | Silver | 1.3 | U | | P |
| 7440-28-0 | Thallium | 1.3 | U | | P |
| 7440-31-5 | Tin | 6.7 | U | | P |
| 7440-62-2 | Vanadium | 170 | | | P |
| 7440-66-6 | Zinc | 60 | | | P |

J I B

J I B

9/5/0

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

*Savannah Laboratories*

# TOTAL METALS
-1-
## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.
LIA021

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ002

Matrix (soil/water): SOIL Lab Sample ID: S004089A-4

Level (low/med): LOW Date Received: 22-JUN-2000

% Solids: 88.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 15000 | | | P |
| 7440-36-0 | Antimony | 0.76 | ~~B~~ | | P |
| 7440-38-2 | Arsenic | 10 | | | P |
| 7440-39-3 | Barium | 110 | | | P |
| 7440-41-7 | Beryllium | 0.35 | ~~B~~ | | P |
| 7440-43-9 | Cadmium | 2.6 | | | P |
| 7440-47-3 | Chromium | 19 | | | P |
| 7440-48-4 | Cobalt | 18 | | | P |
| 7440-50-8 | Copper | 65 | | | P |
| 7439-89-6 | Iron | 37000 | | | P |
| 7439-92-1 | Lead | 33 | | | P |
| 7439-96-5 | Manganese | 830 | | | P |
| 7439-97-6 | Mercury | 0.056 | | | CV |
| 7440-02-0 | Nickel | 11 | | | P |
| 7782-49-2 | Selenium | 1.1 | U | | P |
| 7440-22-4 | Silver | 1.1 | U | | P |
| 7440-28-0 | Thallium | 1.1 | U | | P |
| 7440-31-5 | Tin | 5.7 | U | | P |
| 7440-62-2 | Vanadium | 140 | | | P |
| 7440-66-6 | Zinc | 60 | | | P |

J I B

J I B

9/5/00

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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# TOTAL METALS
-1-
## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

LIA022

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ002

Matrix (soil/water): SOIL Lab Sample ID: S004089A-5

Level (low/med): LOW Date Received: 22-JUN-2000

% Solids: 89.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 22000 | | | P |
| 7440-36-0 | Antimony | 2.2 | U | | P |
| 7440-38-2 | Arsenic | 7.6 | | | P |
| 7440-39-3 | Barium | 73 | | | P |
| 7440-41-7 | Beryllium | 0.29 | ~~B~~ | | P |
| 7440-43-9 | Cadmium | 1.4 | | | P |
| 7440-47-3 | Chromium | 41 | | | P |
| 7440-48-4 | Cobalt | 21 | | | P |
| 7440-50-8 | Copper | 54 | | | P |
| 7439-89-6 | Iron | 43000 | | | P |
| 7439-92-1 | Lead | 5.6 | | | P |
| 7439-96-5 | Manganese | 1100 | | | P |
| 7439-97-6 | Mercury | 0.086 | | | CV |
| 7440-02-0 | Nickel | 27 | | | P |
| 7782-49-2 | Selenium | 1.1 | U | | P |
| 7440-22-4 | Silver | 1.1 | U | | P |
| 7440-28-0 | Thallium | 2.2 | U | | P |
| 7440-31-5 | Tin | 5.6 | U | | P |
| 7440-62-2 | Vanadium | 130 | | | P |
| 7440-66-6 | Zinc | 62 | | | P |

J IB

PBK 9/5/00

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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# TOTAL METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

LIA023

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ002

Matrix (soil/water): SOIL Lab Sample ID: S004089A-6

Level (low/med): LOW Date Received: 22-JUN-2000

% Solids: 88.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 20000 | | | P | |
| 7440-36-0 | Antimony | 0.69 | ~~B~~ | | P | J I B |
| 7440-38-2 | Arsenic | 9.3 | | | P | |
| 7440-39-3 | Barium | 120 | | | P | |
| 7440-41-7 | Beryllium | 0.37 | ~~B~~ | | P | J I B |
| 7440-43-9 | Cadmium | 1.6 | | | P | |
| 7440-47-3 | Chromium | 45 | | | P | |
| 7440-48-4 | Cobalt | 17 | | | P | |
| 7440-50-8 | Copper | 48 | | | P | |
| 7439-89-6 | Iron | 46000 | | | P | |
| 7439-92-1 | Lead | 16 | | | P | |
| 7439-96-5 | Manganese | 790 | | | P | |
| 7439-97-6 | Mercury | 0.0090 | ~~B~~ | | CV | J I B |
| 7440-02-0 | Nickel | 22 | | | P | |
| 7782-49-2 | Selenium | 1.0 | U | | P | |
| 7440-22-4 | Silver | 1.0 | U | | P | |
| 7440-28-0 | Thallium | 1.0 | U | | P | |
| 7440-31-5 | Tin | 5.2 | U | | P | |
| 7440-62-2 | Vanadium | 150 | | | P | |
| 7440-66-6 | Zinc | 46 | | | P | |

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Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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# TOTAL METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

LIA023D

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ002

Matrix (soil/water): SOIL Lab Sample ID: S004089A-7

Level (low/med): LOW Date Received: 22-JUN-2000

% Solids: 85.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 22000 | | | P | |
| 7440-36-0 | Antimony | 0.77 | ~~B~~ | | P | J I B |
| 7440-38-2 | Arsenic | 9.6 | | | P | |
| 7440-39-3 | Barium | 140 | | | P | |
| 7440-41-7 | Beryllium | 0.39 | ~~B~~ | | P | J I B |
| 7440-43-9 | Cadmium | 1.5 | | | P | |
| 7440-47-3 | Chromium | 44 | | | P | |
| 7440-48-4 | Cobalt | 25 | | | P | |
| 7440-50-8 | Copper | 61 | | | P | |
| 7439-89-6 | Iron | 45000 | | | P | |
| 7439-92-1 | Lead | 15 | | | P | |
| 7439-96-5 | Manganese | 1200 | | | P | |
| 7439-97-6 | Mercury | 0.012 | ~~B~~ | | CV | J I B |
| 7440-02-0 | Nickel | 31 | | | P | |
| 7782-49-2 | Selenium | 1.2 | U | | P | |
| 7440-22-4 | Silver | 1.2 | U | | P | |
| 7440-28-0 | Thallium | 1.2 | U | | P | |
| 7440-31-5 | Tin | 5.9 | U | | P | |
| 7440-62-2 | Vanadium | 140 | | | P | |
| 7440-66-6 | Zinc | 49 | | | P | |

MB 9/5/0

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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# TOTAL METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

LIA024

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ002

Matrix (soil/water): SOIL Lab Sample ID: S004089A-8

Level (low/med): LOW Date Received: 22-JUN-2000

% Solids: 84.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 25000 | | | P | |
| 7440-36-0 | Antimony | 2.4 | U | | P | |
| 7440-38-2 | Arsenic | 4.3 | | | P | |
| 7440-39-3 | Barium | 55 | | | P | |
| 7440-41-7 | Beryllium | 0.28 | ~~B~~ | | P | J I B |
| 7440-43-9 | Cadmium | 1.7 | | | P | |
| 7440-47-3 | Chromium | 53 | | | P | |
| 7440-48-4 | Cobalt | 21 | | | P | |
| 7440-50-8 | Copper | 73 | | | P | |
| 7439-89-6 | Iron | 43000 | | | P | |
| 7439-92-1 | Lead | 12 | | | P | |
| 7439-96-5 | Manganese | 790 | | | P | |
| 7439-97-6 | Mercury | 0.014 | ~~B~~ | | CV | J I B |
| 7440-02-0 | Nickel | 34 | | | P | |
| 7782-49-2 | Selenium | 1.2 | U | | P | |
| 7440-22-4 | Silver | 1.2 | U | | P | |
| 7440-28-0 | Thallium | 1.2 | U | | P | |
| 7440-31-5 | Tin | 6.0 | U | | P | |
| 7440-62-2 | Vanadium | 130 | | | P | |
| 7440-66-6 | Zinc | 66 | | | P | |

VBW 9/5/00

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

*Savannah Laboratories*

# TOTAL METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

LIA025

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ002

Matrix (soil/water): SOIL Lab Sample ID: S004089A-9

Level (low/med): LOW Date Received: 22-JUN-2000

% Solids: 91.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 22000 | | | P | |
| 7440-36-0 | Antimony | 0.56 | ~~B~~ | | P | J I B |
| 7440-38-2 | Arsenic | 4.7 | | | P | |
| 7440-39-3 | Barium | 62 | | | P | |
| 7440-41-7 | Beryllium | 0.27 | ~~B~~ | | P | J I B |
| 7440-43-9 | Cadmium | 2.0 | | | P | |
| 7440-47-3 | Chromium | 43 | | | P | |
| 7440-48-4 | Cobalt | 19 | | | P | |
| 7440-50-8 | Copper | 72 | | | P | |
| 7439-89-6 | Iron | 39000 | | | P | |
| 7439-92-1 | Lead | 10 | | | P | |
| 7439-96-5 | Manganese | 830 | | | P | |
| 7439-97-6 | Mercury | 0.021 | ~~B~~ | | CV | J I B |
| 7440-02-0 | Nickel | 29 | | | P | |
| 7782-49-2 | Selenium | 1.1 | U | | P | |
| 7440-22-4 | Silver | 1.1 | U | | P | |
| 7440-28-0 | Thallium | 1.1 | U | | P | |
| 7440-31-5 | Tin | 5.5 | U | | P | |
| 7440-62-2 | Vanadium | 120 | | | P | |
| 7440-66-6 | Zinc | 81 | | | P | |

MBK 9/5/00

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

*Savannah Laboratories*

# TOTAL METALS
-1-
## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.
LIA026

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ002

Matrix (soil/water): SOIL Lab Sample ID: S004089A-10

Level (low/med): LOW Date Received: 22-JUN-2000

% Solids: 89.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 20000 | | | P | |
| 7440-36-0 | Antimony | 0.90 | ~~B~~ | | P | J I B |
| 7440-38-2 | Arsenic | 7.3 | | | P | |
| 7440-39-3 | Barium | 46 | | | P | |
| 7440-41-7 | Beryllium | 0.26 | ~~B~~ | | P | J I B |
| 7440-43-9 | Cadmium | 1.4 | | | P | |
| 7440-47-3 | Chromium | 40 | | | P | |
| 7440-48-4 | Cobalt | 16 | | | P | |
| 7440-50-8 | Copper | 51 | | | P | |
| 7439-89-6 | Iron | 33000 | | | P | |
| 7439-92-1 | Lead | 6.8 | | | P | |
| 7439-96-5 | Manganese | 750 | | | P | |
| 7439-97-6 | Mercury | 0.038 | | | CV | |
| 7440-02-0 | Nickel | 24 | | | P | |
| 7782-49-2 | Selenium | 1.0 | U | | P | |
| 7440-22-4 | Silver | 1.0 | U | | P | |
| 7440-28-0 | Thallium | 1.0 | U | | P | |
| 7440-31-5 | Tin | 5.1 | U | | P | |
| 7440-62-2 | Vanadium | 100 | | | P | |
| 7440-66-6 | Zinc | 53 | | | P | |

9/5/00

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

# DATA VALIDATION WORKSHEETS

DPO: [ ]ACTION [ ]FYI REGION II

# ORGANIC REGIONAL DATA ASSESSMENT SUMMARY

CASE/SAS NO.: _____ LABORATORY: STL Tallahassee

SDG NO.: VIEQ002 DATA USER: EPA Region II

SOW: ~~OLM03.2~~ SW846 REVIEW COMPLETION DATE: 8/31/00

NO. OF SAMPLES: ____ WATER 10 SOIL ____ OTHER

REVIEWER: [ ] ESD [ ] ESAT [✓] OTHER, CONTRACTOR HESI

| QC ITEM | VOA | BNA | PES | EXP | 8332 |
|---|---|---|---|---|---|
| HOLDING TIMES | | | | O | O |
| GC-MS PERFORMANCE | | | | O | O |
| INITIAL CALIBRATIONS | | | | M | O |
| CONTINUING CAL | | | | M | O |
| FIELD BLANKS (F = | | | | — | — |
| LABORATORY BLANKS | | | | O | O |
| SURROGATES | | | | O | O |
| MATRIX MS/MSD | | | | X | O |
| QC SAMPLES (LCS, PVS) | | | | O | O |
| INTERNAL STANDARDS | | | | — | — |
| COMPOUND ID | | | | O | O |
| COMPOUND Quant | | | | X | O |
| SYSTEM PERFORMANCE | | | | O | O |
| OVERALL ASSESSMENT | | | | D | D |

O = No problems or minor problems that do not affect data usability.
X = No more than about 5% of the data points are qualified as either estimated or unusable.
M = More than about 5% of the data points are qualified as either estimated or unusable.
Z = More than about 5% of the data points are qualified as unusable.

DPO ACTION ITEMS: _____

YES NO N/A

CASE NUMBER: VIEQ002 LAB: STL Tallahassee

SITE: CH2M Hill - Vieques PR Camp Garcia Live Impact Area

1.0 Introduction

1.1 The attached Standard Operating Procedure (SOP) is applicable to nitro substituted aromatics and nitro substituted amines by High Performance Liquid Chromatography (HPLC) data. Its scope is not only to facilitate the data validation process of the data reported by the contracting laboratory but also to ensure that the data is being reviewed in a uniform manner.

1.2 The SOP is based upon the quality control and quality assurance requirement specified in the analytical **Method 8330, November 1992 (Revision 0).**

2.0 Responsibilities

2.1 The reviewer must be knowledgeable of the analytical method and its QC criteria.

2.2 The reviewer must complete and/or file the following:

**Data Assessment Checklist**- The data reviewer evaluates each criterion carefully and checks if data is in compliance, non-compliance or not applicable.

**Data Assessment Narrative**- The data reviewer must present professional judgement, address areas of concern and comment on the validity of the overall data package. The reviewer must explain the reasons for rejecting and/or qualifying the data.

**Rejection Summary Form**-The reviewer must submit a completed form using a ratio format.

**Organic Regional Data Assessment Summary**- A completed form must be submitted.

**Telephone Record Log**-All phone conversations must be transcribed by the reviewer. Upon completion of the data review, the original telephone logis attached to the data assessment narrative.

YES NO N/A

3.0 Data Completeness and Deliverables

3.1 Have any missing deliverables been received and added to the data package? [ ] ___ ✓

ACTION: Call lab for explanation/resubmittal of any missing deliverables. If lab cannot provide them, note the effect on review of the package under the "Contract Problems/Non-Compliance" section of reviewer narrative.

3.2 Was SAS-request included with package? [ ] ✓ ___

If no, a SAS-request can be retrieved from RSCC.

4.0 Cover Letter SDG Narrative

4.1 Is the Narrative or Cover Letter Present? ✓ ___ ___

4.2 Are Case Number and/or SAS number contained in the Narrative or Cover letter? ✓ ___ ___

SDG number

5.0 Traffic Reports and Laboratory Narrative

5.1 Are Traffic Report Forms present for all samples? ✓ ___ ___

ACTION: If no, contact lab for replacement of missing or illegible copies.

5.2 Do Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data? ___ ✓ ___

NOTE: Samples are not preserved.

ACTION: If samples were not iced upon receipt at the laboratory, flag all positive results "J" and all non-detects "UJ".

YES NO N/A

NOTE: Samples must be kept below 4°C from the time of collection through analysis. Degradation of some compounds occurs with heat. Samples should not be exposed to sunlight or temperatures above room temperature.

6.0 Special QC

6.1 Prior to preparation of stock solutions, acetonitrile, methanol, and water should be analyzed to determine possible interferences with analyte peaks. A different batch of solvent should be used if contamination is present.

6.2 Chromatograms are to be submitted showing that there are no interferences with analyte peaks.

Are these chromatograms present in package? [ ] ___ ✓

Are the chromatograms free of interferences? [ ] ___ ✓

ACTION: Ask lab for resubmittals. If deliverables are unavailable, judge the effect on the validity of the data. If questionable, contact SMO and note in data assessment.

7.0 Holding Times

7.1 Have any technical holding times, determined from date of collection to date of analysis, been exceeded?

A. For aqueous samples 7 days from sample collection to extraction ___ [ ] ✓

B. For soil/sediment samples 14 days from sample collection to extraction ___ ✓ ___
S - 6/21 e - 6/28

C. For all samples extracts 40 days from time of extraction to time of analysis ___ ✓ ___
a - 7/17, 7/18

YES NO N/A

Holding Time Violations
Table 1

(See Traffic Report)

| Sample ID | Date Sampled | Date Received | Date Lab Extracted | Date Analyzed |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

8/31/00

ACTION: If technical holding times are exceeded, flag all positive results as estimated ("J") and sample quantitation limits as estimated ("UJ"), and document in the narrative that holding times were exceeded. The reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results must be qualified "J", but the reviewer may determine that non-detect data are unusable (R).

8.0 Surrogate Recovery

8.1 Are the Organic Analysis Data Sheets (Form I) present and complete with surrogate recoveries for each of the following matrices:

a. Water? [ ] ___ ✓

b. Soil/Solid? [✓] ___ ___

ACTION: Call lab for explanation/resubmittals. If missing deliverables or information are unavailable document the effect in the data assessment.

YES NO N/A

8.2 Was the surrogate % recovery out of specifications for any field sample, method blank or QC sample?
lab used 22-128%. — N/A —

8.3 Were surrogate retention times (RT) within ± 1.0% of the mean surrogate RT calculated from the initial calibration? N/A — —

ACTION: Circle outliers in red.

ACTION: If the retention time shift (RTS) or % recovery of the surrogate in the field or QC samples is out of specification, then all associated sample data should be qualified. Use **Table 2** below as a guide.

**Surrogate Recovery**

**TABLE 2**

**The following table summarizes the surrogate recovery criteria and the data qualification guidelines for all associated field samples.**

| SURROGATE | NOT QUALIFIED | J | R | N |
|---|---|---|---|---|
| % RECOVERY - FIELD SAMPLES | | | | |
| Detects | 50 - 125% | < 50%; > 125% | | |
| Non-detects | ≥ 10% | < 10%* | < 10%* | |
| % RECOVERY - BLANKS AND QC SAMPLES ** | | | | |
| Detects | 50 - 125% | < 50%; > 125% | | |
| Non-detects | ≥ 20% | 10 - 19% | < 10% | |
| RTS - field samples | ± 1.0% | | > 1.5%; < -1.5% * | ± 1.1 - 1.5% * |
| RTS - QC samples | ± 1.0% | | > 1.5%; < -1.5% * | ± 1.1 - 1.5% * |

* Use professional judgement.
** If the surrogate recovery in a QC sample or blank was less than 50 percent or greater than 125 percent, then the field sample data should be qualified if the surrogate in the field sample is outside 50 - 125 percent recovery.

FORM 2
SOIL SV LC SURROGATE RECOVERY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Level: (low/med) LOW

| | CLIENT SAMPLE NO. | S1 (DNT) # | S2 # | S3 # | S4 # | S5 # | S6 # | S7 # | S8 # | TOT OUT |
|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0628YMB | 96 | | | | | | | | 0 |
| 02 | 0628YMBLCS | 112 | | | | | | | | 0 |
| 03 | 04089A-1 | 96 | | | | | | | | 0 |
| 04 | 04089A-2 | 100 | | | | | | | | 0 |
| 05 | 04089A-3 | 96 | | | | | | | | 0 |
| 06 | 04089A-4 | 96 | | | | | | | | 0 |
| 07 | 04089A-5 | 96 | | | | | | | | 0 |
| 08 | 04089A-5MS | 96 | | | | | | | | 0 |
| 09 | 04089A-5MSD | 100 | | | | | | | | 0 |
| 10 | 04089A-6 | 96 | | | | | | | | 0 |
| 11 | 04089A-7 | 100 | | | | | | | | 0 |
| 12 | 04089A-8 | 100 | | | | | | | | 0 |
| 13 | 04089A-9 | 84 | | | | | | | | 0 |
| 14 | 04089A-10 | 96 | | | | | | | | 0 |
| 15 | | | | | | | | | | |
| 16 | | | | | | | | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | | | | |
| 19 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 21 | | | | | | | | | | |
| 22 | | | | | | | | | | |
| 23 | | | | | | | | | | |
| 24 | | | | | | | | | | |
| 25 | | | | | | | | | | |
| 26 | | | | | | | | | | |
| 27 | | | | | | | | | | |
| 28 | | | | | | | | | | |
| 29 | | | | | | | | | | |
| 30 | | | | | | | | | | |

S1 (DNT) = 3,4-Dinitrotoluene QC LIMITS (22-128)

# Column to be used to flag recovery values
* Values outside of laboratory QC limits
D Sample diluted

YES NO N/A

8.4 Are there any transcription/calculation errors between raw data and surrogate recoveries on Forms: __ ✓ __

ACTION: If large errors exist, call lab for explanation/ resubmittal, make necessary corrections and note errors in the data assessment.

9.0 QC Check Reference Sample

9.1 Is the QC Check Reference Sample Recovery Form present? (Created by Lab) [ ] __ ✓

9.2 Was the QC Check Reference Sample analyzed at the required frequency (once per SDG or every 20 samples, for each matrix? [ ] __ ✓

NOTE: The QC Check Form has to be created by the Lab. Concentration of the spiking solution is 5-10 times the estimated quantitation limits for all analytes listed in section 12 of the SAS.

NOTE: QC Check Reference Sample information is important, data is used to judge extraction efficiency.

ACTION: If any QC Check data are missing, call the lab for explanation/resubmittal. If the lab cannot provide missing deliverables, document the effect on the validity of the data in the data assessment. Positive hits should be flagged "J" and non-detects should be flagged "R".

9.3 How many QC check recoveries are outside QC limits of 70-125%?

| Water | Soil |
|---|---|
| NA out of ___ | NA out of ___ |

ACTION: If any recovery is greater than 125%, positive results should be flagged "J" for the affected compound.

YES NO N/A

When two or more analytes have recoveries above 10% but below 70% all associated data should be flagged "J" (positive and non-detects).

When one or more analytes have recoveries below 10% qualify all associated data "R".

Note in data assessment. If further assistance is required, contact SMO for instructions.

It should be noted for TPO action, if a laboratory fails to analyze a QC Check Reference Sample or if a laboratory consistently fails to generate acceptable recoveries.

## 10.0 Calibration Data

### 10.1 Initial Calibration

The initial calibration standards must be analyzed daily prior to any sample analysis. The lab may have to create two sets of initial standard solutions if several analytes coelute.

The initial calibration curve must be injected in triplicate for each of the 5 levels.

triplicate not required

10.2 Are the chromatograms and data system printouts (Quant reports) present for initial and triplicate calibrations? ✓ ___ ___

10.3 Are the modified Initial Calibration Forms (Pest VI-1, VI-2 Forms) present? ✓ ___ ___

10.4 Are modified Forms present and completed for each analytical sequence and each column? ✓ ___ ___

ACTION: If any Calibration Standard chromatograms and forms are missing, contact the lab for resubmittals.

10.5 Are there any transcription/calculation errors between raw data and Forms? ___ ✓ ___

YES NO N/A

ACTION: If large errors exist, call lab for explanation/resubmittal. Make necessary corrections and document effect in data assessment. Check at least 2-3 values from each calibration standard and more if errors are found.

10.6 Do all standard retention times, including each compound in each level, fall within the windows established during the initial calibration analytical sequence? ✓ ___ ___

NOTE: All injections are taken into account: A total of 15 injections (three injections for each of the five levels). If the lab had to run two sets of standards there would be a total of 30 injections.

ACTION: The average retention time (RT) for each analyte is determined from the mean of the triplicate injection for each 5 point level of the initial calibration. The RT window for each analyte is equal to the average RT ± three (3) times the standard deviation. If the standard deviation comes out to equal zero, the window will be ±0.08. The (Pest form VI-1) Form should be modified to include the average of the three injections for each of the 5 levels.

10.7 Are the linearity criteria for the initial analyses within limits for both columns? (%RSD must be ≤20%) $R^2 \neq \geq 0.990$ ✓ ___ ___

ACTION: If no, qualify all associated positive results generated during the sequence "J" and all non-detects "UJ". When %RSD >90%, flag all non-detects results for that analyte as unusable "R". EAC 8/31/00

10.8 Do the standards show degradation products of tetryl? ___ ✓ ___

NOTE: Degradation products of tetryl appear as a shoulder on the TNT peak. Peak heights rather than peak areas should be used when tetryl is present in concentrations that are significant relative to the concentration of TNT.

YES NO N/A

ACTION: If degradation is detected or suspected, qualify positive hits for tetryl and TNT as "J". If degradation is suspected, and tetryl is reported as non-detected, qualify the analyte as "UJ". Note in data assessment.

11.0 Continuing Calibration

11.1 Are Forms (Modified Pest VII-2) present for each continuing calibration? ☑ ___ ___

11.2 Are there any transcription/calculation errors between raw data and forms? ___ ☑ ___

ACTION: If large errors exist, call lab for explanation/resubmittals. Make any necessary corrections, and document effect in data assessment. Check at least 2-3 values from each calibration standard and more if errors are found.

11.3 Were continuing calibrations analyzed at the required frequency? (standard should bracket every 10 samples). ☑ ___ ___

ACTION: Criteria must be met. Determine effect on data. At a minimum, all data should be qualified "J", but the reviewer may determine that data are unusable "R". Document the data qualifications in data assessment.

11.4 Do all standard retention times for each continuing calibration fall within the windows established by the initial calibration? ☑ ___ ___

ACTION: If no, beginning with the samples which followed the last in-control standard, check to see if the chromatograms contain interfering peaks. If peaks are present, qualify positive results and non-detects for analytes outside their respective windows as unusable "R".

11.5 Are the RPD values for all continuing calibration standards ≤15%? [ ] / ___

see Form 7s

YES NO N/A

ACTION: If the %RPD is >15% for the analyte being quantitated, qualify all associated positive results "J" and non-detects "UJ". The "associated samples" are those which followed the last in-control standard up to the next passing standard. If the %RPD is >90%, flag all non-detects for that analyte unusable "R".

11.6 Compare the peak heights of continuing calibration checks obtained during the day with peak heights obtained from first calibration check of the sequence.

Is the percent RPD for peak heights less than 20% for each of the analytes of each of the Continuing Calibration Checks? [ ] ___ ✓

ACTION: Use professional judgement to verify the reliability of the data.

12.0 Analytical Sequence

12.1 Is Form VIII present and completed for each column and each period of analyses? modified Form 8 ✓ ___ ___

ACTION: If no, contact lab for resubmittals.

12.2 Was the proper analytical sequence followed for each initial calibration and subsequent analyses? ✓ ___ ___

NOTE: Sequence is as follows: 5 point Initial Calibration, Method Blank, Laboratory Control Sample (LCS), Continuing Calibration, 10 sample extracts, Continuing Calibration, 10 sample extracts and so on. The sequence must always end with a Continuing Calibration. All sample extracts, Method Blanks, LCS, and continuing calibrations must be analyzed within 24 hours after the analysis of the Initial Calibration Standards and the calculation of the RT windows.

ACTION: Flag "J" all data generated outside an acceptable twenty-four hour sequence starting after the calculation of the RT windows resulting from the initial calibration unless the daily calibration meets the calibration criteria for all target analytes. If the daily calibration standard does not meet the

Tetryl all samples

SAMPLE INFORMATION SUMMARY

Client SDG: VIEQ002 Sample Fraction: SV LC 18330-8

| QCGroup | Batch | DataFile | Sample Type | Client Id | Lab ID | SmplRef | Lab Prep | SDG |
|---|---|---|---|---|---|---|---|---|
| 7429267 | 1L0701.b | 1G01L3.d | CALIB_4 | | L1.4.461511 | 7429469 | | |
| 7429267 | 1L0701.b | 1G01L4.d | CALIB_4 | | L2.4.461517 | 7429470 | | |
| 7429267 | 1L0701.b | 1G01L5.d | CALIB_1 | | L1.1.46158 | 7429471 | | |
| 7429267 | 1L0701.b | 1G01L6.d | CALIB_1 | | L2.1.461514 | 7429472 | | |
| 7429267 | 1L0701.b | 1G01L7.d | CALIB_2 | | L1.2.46159 | 7429473 | | |
| 7429267 | 1L0701.b | 1G01L8.d | CALIB_2 | | L2.2.461515 | 7429474 | | |
| 7429267 | 1L0701.b | 1G01L9.d | CALIB_3 | | L1.3.461510 | 7429475 | | |
| 7429267 | 1L0701.b | 1G01L10.d | CALIB_3 | | L2.3.461516 | 7429464 | | |
| 7429267 | 1L0701.b | 1G01L11.d | CALIB_5 | | L1.5.461512 | 7429465 | | |
| 7429267 | 1L0701.b | 1G01L12.d | CALIB_5 | | L2.5.461518 | 7429466 | | |
| 7429267 | 1L0701.b | 1G01L13.d | CALIB_6 | | L1.6.461513 | 7429467 | | |
| 7429267 | 1L0701.b | 1G01L14.d | CALIB_6 | | L2.6.461519 | 7429468 | | |
| 7429775 | 1L0703.b | 1G03L24.d | CCALIB_3 | | L1.3.461510 | 7429881 | | |
| 7429775 | 1L0703.b | 1G03L25.d | CCALIB_3 | | L2.3.461516 | 7429883 | | |
| 7429775 | 1L0703.b | 1G03L37.d | CCALIB_3 | | L1.3.461510 | 7429885 | | |
| 7429775 | 1L0703.b | 1G03L38.d | CCALIB_3 | | L2.3.461516 | 7429887 | | |
| 7429775 | 1L0703.b | 1G03L26.d | BLANK | 0628YMB | METHOD BLANK | 7430355 | 0628Y | VIEQ002 |
| 7429775 | 1L0703.b | 1G03L27.d | SAMPLE | 04089A-1 | LIA014D | 7430345 | 0628Y | VIEQ002 |
| 7429775 | 1L0703.b | 1G03L28.d | SAMPLE | 04089A-2 | LIA017 | 7430346 | 0628Y | VIEQ002 |
| 7429775 | 1L0703.b | 1G03L29.d | SAMPLE | 04089A-3 | LIA018 | 7430347 | 0628Y | VIEQ002 |
| 7429775 | 1L0703.b | 1G03L30.d | SAMPLE | 04089A-4 | LIA021 | 7430348 | 0628Y | VIEQ002 |
| 7429775 | 1L0703.b | 1G03L31.d | SAMPLE | 04089A-5 | LIA022 | 7430349 | 0628Y | VIEQ002 |
| 7429775 | 1L0703.b | 1G03L32.d | SAMPLE | 04089A-6 | LIA023 | 7433021 | 0628Y | VIEQ002 |
| 7429775 | 1L0703.b | 1G03L33.d | SAMPLE | 04089A-7 | LIA023D | 7430351 | 0628Y | VIEQ002 |
| 7429775 | 1L0703.b | 1G03L34.d | SAMPLE | 04089A-8 | LIA024 | 7430352 | 0628Y | VIEQ002 |
| 7429775 | 1L0703.b | 1G03L35.d | SAMPLE | 04089A-9 | LIA025 | 7430353 | 0628Y | VIEQ002 |
| 7429775 | 1L0703.b | 1G03L36.d | SAMPLE | 04089A-10 | LIA026 | 7430354 | 0628Y | VIEQ002 |
| 7431519 | 1K0715.b | 1G15K2.d | CALIB_4 | | CAL4.46184 | 7431576 | | |
| 7431519 | 1K0715.b | 1G15K4.d | CALIB_1 | | CAL1.46181 | 7431681 | | |
| 7431519 | 1K0715.b | 1G15K6.d | CALIB_2 | | CAL2.46182 | 7431683 | | |
| 7431519 | 1K0715.b | 1G15K8.d | CALIB_3 | | CAL3.46183 | 7431685 | | |
| 7431519 | 1K0715.b | 1G15K10.d | CALIB_5 | | CAL5.46185 | 7431677 | | |
| 7431519 | 1K0715.b | 1G15K12.d | CALIB_6 | | CAL6.46186 | 7431679 | | |
| 7431877 | 1K0717.b | 1G17K12.d | CCALIB_4 | | MED.46184 | 7432150 | | |
| 7431877 | 1K0717.b | 1G17K30.d | CCALIB_4 | | MED.46184 | 7432296 | | |
| 7431877 | 1K0717.b | 1G17K14.d | BLANK | 0628YMB | METHOD BLANK | 7433030 | 0628Y | VIEQ002 |
| 7431877 | 1K0717.b | 1G17K15.d | LCS | 0628YMBLCS | 8330 LAB SPIKE | 7433035 | 0628Y | VIEQ002 |
| 7431877 | 1K0717.b | 1G17K22.d | MS | 04089A-5MS | 04089A-5MS | 7433037 | 0628Y | VIEQ002 |
| 7431877 | 1K0717.b | 1G17K23.d | MSD | 04089A-5MSD | 04089A-5MSD | 7433038 | 0628Y | VIEQ002 |
| 7431877 | 1K0717.b | 1G17K17.d | SAMPLE | 04089A-1 | LIA014D | 7433029 | 0628Y | VIEQ002 |
| 7431877 | 1K0717.b | 1G17K18.d | SAMPLE | 04089A-2 | LIA017 | 7433028 | 0628Y | VIEQ002 |
| 7431877 | 1K0717.b | 1G17K19.d | SAMPLE | 04089A-3 | LIA018 | 7433027 | 0628Y | VIEQ002 |
| 7431877 | 1K0717.b | 1G17K20.d | SAMPLE | 04089A-4 | LIA021 | 7433026 | 0628Y | VIEQ002 |
| 7431877 | 1K0717.b | 1G17K21.d | SAMPLE | 04089A-5 | LIA022 | 7433025 | 0628Y | VIEQ002 |
| 7431877 | 1K0717.b | 1G17K24.d | SAMPLE | 04089A-6 | LIA023 | 7433024 | 0628Y | VIEQ002 |
| 7431877 | 1K0717.b | 1G17K25.d | SAMPLE | 04089A-7 | LIA023D | 7433023 | 0628Y | VIEQ002 |
| 7431877 | 1K0717.b | 1G17K26.d | SAMPLE | 04089A-8 | LIA024 | 7433011 | 0628Y | VIEQ002 |
| 7431877 | 1K0717.b | 1G17K27.d | SAMPLE | 04089A-9 | LIA025 | 7433012 | 0628Y | VIEQ002 |
| 7431877 | 1K0717.b | 1G17K28.d | SAMPLE | 04089A-10 | LIA026 | 7433022 | 0628Y | VIEQ002 |

FORM 6
SV LC INITIAL CALIBRATION DATA

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIE(

Instrument ID: TLCLUV1 Calibration Date(s): 07/01/00 07/01/00

Column: CN ID: 4.60 (mm) Calibration Time(s): 1542 2255

LAB FILE ID: RF0.02: 1G01L5 RF0.1: 1G01L7 RF0.25: 1G01L9
RF0.5: 1G01L3 RF1: 1G01L11

| COMPOUND | RF0.02 | RF0.1 | RF0.25 | RF0.5 | RF1 |
|---|---|---|---|---|---|
| HMX | 3650 | 2070 | 1948 | 2174 | 1841 |
| RDX | 3700 | 2960 | 3016 | 3184 | 2870 |
| 1,3,5-TNB | 8600 | 8860 | 8904 | 9786 | 8801 |
| 1,3-DNB | 12250 | 11320 | 11204 | 12172 | 11005 |
| 2-AM-DNT | 4750 | 3530 | 3536 | 3688 | 3406 |
| 4-AM-DNT | 3750 | 2790 | 2796 | 2866 | 2721 |
| 2,4,6-TNT | 6550 | 5440 | 5392 | 5792 | 5259 |
| 2,4-DNT | 7350 | 6540 | 6388 | 6814 | 6201 |
| 2,6-DNT | 4650 | 3390 | 3136 | 3328 | 3051 |
| 2-NT | 4200 | 3140 | 2988 | 3082 | 2889 |
| 3,4-Dinitrotoluene | 3150 | 2140 | 2064 | 2048 | 1937 |

FORM 6
SV LC INITIAL CALIBRATION DATA

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Instrument ID: TLCLUV1 Calibration Date(s): 07/01/00 07/01/00

Column: CN ID: 4.60 (mm) Calibration Time(s): 1542 2255

RF2: 1G01L13

| COMPOUND | RF2 | CURVE | COEFFICIENTS A0 | A1 | %RSD or R^2 |
|---|---|---|---|---|---|
| HMX | 1908 | LINR | -1.94e-002 | 5.308e-004 | 0.998 |
| RDX | 2952 | LINR | -8.07e-003 | 3.41e-004 | 0.999 |
| 1,3,5-TNB | 9050 | LINR | -3.26e-003 | 1.109e-004 | 0.999 |
| 1,3-DNB | 11362 | LINR | -3.41e-003 | 8.843e-005 | 0.999 |
| 2-AM-DNT | 3500 | LINR | -5.87e-003 | 2.875e-004 | 1.000 |
| 4-AM-DNT | 2806 | LINR | -1.01e-003 | 3.583e-004 | 1.000 |
| 2,4,6-TNT | 5424 | LINR | -4.73e-003 | 1.854e-004 | 0.999 |
| 2,4-DNT | 6408 | LINR | -4.43e-003 | 1.57e-004 | 0.999 |
| 2,6-DNT | 3149 | LINR | -7.6e-003 | 3.202e-004 | 0.999 |
| 2-NT | 2992 | LINR | -3.58e-003 | 3.366e-004 | 1.000 |
| 3,4-Dinitrotoluene | 1996 | LINR | -7.77e-003 | 5.056e-004 | 1.000 |

FORM 6
SV LC INITIAL CALIBRATION DATA

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Instrument ID: TLCLUV1 Calibration Date(s): 07/01/00 07/01/00

Column: CN ID: 4.60 (mm) Calibration Time(s): 1626 2338

LAB FILE ID: RF0.02: 1G01L6 RF0.1: 1G01L8 RF0.25: 1G01L10
RF0.5: 1G01L4 RF1: 1G01L12

| COMPOUND | RF0.02 | RF0.1 | RF0.25 | RF0.5 | RF1 |
|---|---|---|---|---|---|
| Tetryl | 3100 | 2120 | 2112 | 2184 | 2011 |
| Nitrobenzene | 8200 | 7340 | 6848 | 6912 | 6711 |
| 3-NT | 3300 | 3030 | 2832 | 2830 | 2733 |
| 4-NT | 3150 | 2760 | 2576 | 2550 | 2469 |
| TATB | 2350 | 1710 | 1364 | 1302 | 1252 |
| 3,4-Dinitrotoluene | 3150 | 2140 | 2064 | 2048 | 1937 |

FORM 6
SV LC INITIAL CALIBRATION DATA

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Instrument ID: TLCLUV1 Calibration Date(s): 07/01/00 07/01/00

Column: CN ID: 4.60 (mm) Calibration Time(s): 1626 2338

RF2: 1G01L14

| COMPOUND | RF2 | CURVE | COEFFICIENTS A0 | A1 | %RSD or R^2 |
|---|---|---|---|---|---|
| Tetryl | 2078 | LINR | -6.7e-003 | 4.851e-004 | 0.999 |
| Nitrobenzene | 6875 | LINR | -1.28e-003 | 1.462e-004 | 1.000 |
| 3-NT | 2806 | LINR | -2.55e-003 | 3.586e-004 | 1.000 |
| 4-NT | 2535 | LINR | -3.35e-003 | 3.971e-004 | 1.000 |
| TATB | 1278 | LINR | -1.94e-002 | 7.943e-004 | 1.000 |
| 3,4-Dinitrotoluene | 1996 | LINR | -7.77e-003 | 5.056e-004 | 1.000 |

FORM 6
SV LC INITIAL CALIBRATION DATA

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Instrument ID: TLCKUV1 Calibration Date(s): 07/15/00 07/15/00

Column: C-18 ID: 4.60 (mm) Calibration Time(s): 1541 2110

LAB FILE ID: RF0.02: 1G15K4 RF0.1: 1G15K6 RF0.25: 1G15K8
RF0.5: 1G15K2 RF1: 1G15K10

| COMPOUND | RF0.02 | RF0.1 | RF0.25 | RF0.5 | RF1 |
|---|---|---|---|---|---|
| HMX | 3900 | 3640 | 3412 | 3596 | 3367 |
| 1,3,5-TNB | 7900 | 7430 | 7444 | 7852 | 7326 |
| RDX | 4600 | 3580 | 3640 | 3904 | 3657 |
| 1,3-DNB | 11350 | 9930 | 10184 | 10672 | 10004 |
| Tetryl | 5000 | 4250 | 4360 | 4702 | 4347 |
| 2-AM-DNT | 6200 | 5760 | 5860 | 6200 | 5761 |
| 4-AM-DNT | 5250 | 4820 | 5060 | 5348 | 4898 |
| Nitrobenzene | 8050 | 7400 | 7552 | 8058 | 7521 |
| 2,4,6-TNT | 5750 | 5620 | 5756 | 6072 | 5620 |
| 2,4-DNT | 8150 | 7580 | 7852 | 8228 | 7697 |
| 2,6-DNT | 3950 | 3790 | 3836 | 4042 | 3807 |
| 2-NT | 3750 | 3450 | 3312 | 3524 | 3310 |
| 3-NT | 3700 | 3410 | 3408 | 3652 | 3413 |
| 4-NT | 3700 | 3200 | 3024 | 3274 | 3015 |
| 3,4-Dinitrotoluene | 4300 | 3740 | 3816 | 4050 | 3783 |

FORM VI SV LC

FORM 6
SV LC INITIAL CALIBRATION DATA

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Instrument ID: TLCKUV1 Calibration Date(s): 07/15/00 07/15/00

Column: C-18 ID: 4.60 (mm) Calibration Time(s): 1541 2110

RF2: 1G15K12

| COMPOUND | RF2 | CURVE | AVE RRF A1 | %RSD or R^2 |
|---|---|---|---|---|
| HMX | 3492 | AVRG | 3568 | 5.4 |
| 1,3,5-TNB | 7455 | AVRG | 7568 | 3.2 |
| RDX | 3706 | AVRG | 3848 | 10.0 |
| 1,3-DNB | 10218 | AVRG | 10393 | 5.2 |
| Tetryl | 4401 | AVRG | 4513 | 6.3 |
| 2-AM-DNT | 5859 | AVRG | 5940 | 3.5 |
| 4-AM-DNT | 4897 | AVRG | 5046 | 4.2 |
| Nitrobenzene | 7660 | AVRG | 7707 | 3.6 |
| 2,4,6-TNT | 5740 | AVRG | 5760 | 2.9 |
| 2,4-DNT | 7841 | AVRG | 7891 | 3.2 |
| 2,6-DNT | 3867 | AVRG | 3882 | 2.5 |
| 2-NT | 3368 | AVRG | 3452 | 4.9 |
| 3-NT | 3477 | AVRG | 3510 | 3.8 |
| 4-NT | 3070 | AVRG | 3214 | 8.1 |
| 3,4-Dinitrotoluene | 3830 | AVRG | 3920 | 5.5 |

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ00

Instrument ID: TLCLUV1 Calibration Date: 07/04/00 Time: 1413

Lab File ID: 1G03L24 Init. Calib. Date(s): 07/01/00 07/01/00

Init. Calib. Times: 1542 2255

GC Column: CN ID: 4.60 (mm)

| COMPOUND | AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| HMX | 0.25 | 0.22 | 1788.0 | 0.01 | 12.0 | 15.0 | LINR |
| RDX | 0.25 | 0.22 | 2644.0 | 0.01 | 12.0 | 15.0 | LINR |
| 1,3,5-TNB | 0.25 | 0.23 | 8516.0 | 0.01 | 8.0 | 15.0 | LINR |
| 1,3-DNB | 0.25 | 0.23 | 10740 | 0.01 | 8.0 | 15.0 | LINR |
| 2-AM-DNT | 0.25 | 0.23 | 3284.0 | 0.01 | 8.0 | 15.0 | LINR |
| 4-AM-DNT | 0.25 | 0.25 | 2784.0 | 0.01 | 0.0 | 15.0 | LINR |
| 2,4,6-TNT | 0.25 | 0.23 | 5024.0 | 0.01 | 8.0 | 15.0 | LINR |
| 2,4-DNT | 0.25 | 0.23 | 5980.0 | 0.01 | 8.0 | 15.0 | LINR |
| 2,6-DNT | 0.25 | 0.23 | 2976.0 | 0.01 | 8.0 | 15.0 | LINR |
| 2-NT | 0.25 | 0.26 | 3108.0 | 0.01 | 4.0 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.25 | 0.27 | 2188.0 | 0.01 | 8.0 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Instrument ID: TLCLUV1 Calibration Date: 07/04/00 Time: 1457

Lab File ID: 1G03L25 Init. Calib. Date(s): 07/01/00 07/01/00

Init. Calib. Times: 1626 2338

GC Column: CN ID: 4.60 (mm)

| COMPOUND | AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| Tetryl | 0.25 | 0.21 | 1828.0 | 0.01 | 16.0 | 15.0 | LINR |
| Nitrobenzene | 0.25 | 0.24 | 6504.0 | 0.01 | 4.0 | 15.0 | LINR |
| 3-NT | 0.25 | 0.24 | 2704.0 | 0.01 | 4.0 | 15.0 | LINR |
| 4-NT | 0.25 | 0.23 | 2396.0 | 0.01 | 8.0 | 15.0 | LINR |
| TATB | 0.25 | 0.23 | 1244.0 | 0.01 | 8.0 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.25 | 0.25 | 2028.0 | 0.01 | 0.0 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

all samples

FORM VII SV LC

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Instrument ID: TLCLUV1 Calibration Date: 07/05/00 Time: 0206

Lab File ID: 1G03L37 Init. Calib. Date(s): 07/01/00 07/01/00

Init. Calib. Times: 1542 2255

GC Column: CN ID: 4.60 (mm)

| COMPOUND | AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| HMX | 0.25 | 0.22 | 1840.0 | 0.01 | 12.0 | 15.0 | LINR |
| RDX | 0.25 | 0.23 | 2764.0 | 0.01 | 8.0 | 15.0 | LINR |
| 1,3,5-TNB | 0.25 | 0.24 | 8632.0 | 0.01 | 4.0 | 15.0 | LINR |
| 1,3-DNB | 0.25 | 0.24 | 10804 | 0.01 | 4.0 | 15.0 | LINR |
| 2-AM-DNT | 0.25 | 0.23 | 3260.0 | 0.01 | 8.0 | 15.0 | LINR |
| 4-AM-DNT | 0.25 | 0.24 | 2748.0 | 0.01 | 4.0 | 15.0 | LINR |
| 2,4,6-TNT | 0.25 | 0.24 | 5180.0 | 0.01 | 4.0 | 15.0 | LINR |
| 2,4-DNT | 0.25 | 0.23 | 6096.0 | 0.01 | 8.0 | 15.0 | LINR |
| 2,6-DNT | 0.25 | 0.23 | 2968.0 | 0.01 | 8.0 | 15.0 | LINR |
| 2-NT | 0.25 | 0.26 | 3120.0 | 0.01 | 4.0 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.25 | 0.26 | 2140.0 | 0.01 | 4.0 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Instrument ID: TLCLUV1 Calibration Date: 07/05/00 Time: 0250

Lab File ID: 1G03L38 Init. Calib. Date(s): 07/01/00 07/01/00

Init. Calib. Times: 1626 2338

GC Column: CN ID: 4.60 (mm)

| COMPOUND | AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| Tetryl | 0.25 | 0.21 | 1828.0 | 0.01 | 16.0 | 15.0 | LINR <- |
| Nitrobenzene | 0.25 | 0.24 | 6472.0 | 0.01 | 4.0 | 15.0 | LINR |
| 3-NT | 0.25 | 0.24 | 2680.0 | 0.01 | 4.0 | 15.0 | LINR |
| 4-NT | 0.25 | 0.23 | 2376.0 | 0.01 | 8.0 | 15.0 | LINR |
| TATB | 0.25 | 0.23 | 1256.0 | 0.01 | 8.0 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.25 | 0.24 | 1928.0 | 0.01 | 4.0 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Instrument ID: TLCKUV1 Calibration Date: 07/17/00 Time: 1752

Lab File ID: 1G17K12 Init. Calib. Date(s): 07/15/00 07/15/00

Init. Calib. Times: 1541 2110

GC Column: C-18 ID: 4.60 (mm)

| COMPOUND | ICAL0.5 AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| HMX | 3567.75 | | 3792.0 | 0.01 | 6.3 | 15.0 | AVRG |
| 1,3,5-TNB | 7567.83 | | 8142.0 | 0.01 | 7.6 | 15.0 | AVRG |
| RDX | 3847.75 | | 4082.0 | 0.01 | 6.1 | 15.0 | AVRG |
| 1,3-DNB | 10392.9 | | 11130 | 0.01 | 7.1 | 15.0 | AVRG |
| Tetryl | 4513.33 | | 4780.0 | 0.01 | 5.9 | 15.0 | AVRG |
| 2-AM-DNT | 5940.00 | | 6412.0 | 0.01 | 7.9 | 15.0 | AVRG |
| 4-AM-DNT | 5045.50 | | 5370.0 | 0.01 | 6.4 | 15.0 | AVRG |
| Nitrobenzene | 7706.75 | | 8192.0 | 0.01 | 6.3 | 15.0 | AVRG |
| 2,4,6-TNT | 5759.58 | | 6214.0 | 0.01 | 7.9 | 15.0 | AVRG |
| 2,4-DNT | 7891.33 | | 8516.0 | 0.01 | 7.9 | 15.0 | AVRG |
| 2,6-DNT | 3882.00 | | 4188.0 | 0.01 | 7.9 | 15.0 | AVRG |
| 2-NT | 3452.33 | | 3614.0 | 0.01 | 4.7 | 15.0 | AVRG |
| 3-NT | 3510.00 | | 3728.0 | 0.01 | 6.2 | 15.0 | AVRG |
| 4-NT | 3213.92 | | 3334.0 | 0.01 | 3.7 | 15.0 | AVRG |
| 3,4-Dinitrotoluene | 3919.75 | | 4172.0 | 0.01 | 6.4 | 15.0 | AVRG |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Instrument ID: TLCKUV1 Calibration Date: 07/18/00 Time: 0345

Lab File ID: 1G17K30 Init. Calib. Date(s): 07/15/00 07/15/00

Init. Calib. Times: 1541 2110

GC Column: C-18 ID: 4.60 (mm)

| COMPOUND | ICAL0.5 AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| HMX | 3567.75 | | 3824.0 | 0.01 | 7.2 | 15.0 | AVRG |
| 1,3,5-TNB | 7567.83 | | 8150.0 | 0.01 | 7.7 | 15.0 | AVRG |
| RDX | 3847.75 | | 4026.0 | 0.01 | 4.6 | 15.0 | AVRG |
| 1,3-DNB | 10392.9 | | 11024 | 0.01 | 6.1 | 15.0 | AVRG |
| Tetryl | 4513.33 | | 4772.0 | 0.01 | 5.7 | 15.0 | AVRG |
| 2-AM-DNT | 5940.00 | | 6390.0 | 0.01 | 7.6 | 15.0 | AVRG |
| 4-AM-DNT | 5045.50 | | 5268.0 | 0.01 | 4.4 | 15.0 | AVRG |
| Nitrobenzene | 7706.75 | | 8182.0 | 0.01 | 6.2 | 15.0 | AVRG |
| 2,4,6-TNT | 5759.58 | | 6214.0 | 0.01 | 7.9 | 15.0 | AVRG |
| 2,4-DNT | 7891.33 | | 8502.0 | 0.01 | 7.7 | 15.0 | AVRG |
| 2,6-DNT | 3882.00 | | 4236.0 | 0.01 | 9.1 | 15.0 | AVRG |
| 2-NT | 3452.33 | | 3622.0 | 0.01 | 4.9 | 15.0 | AVRG |
| 3-NT | 3510.00 | | 3730.0 | 0.01 | 6.3 | 15.0 | AVRG |
| 4-NT | 3213.92 | | 3316.0 | 0.01 | 3.2 | 15.0 | AVRG |
| 3,4-Dinitrotoluene | 3919.75 | | 4170.0 | 0.01 | 6.4 | 15.0 | AVRG |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

YES NO N/A

criteria for some analytes the reviewer might reject

those values. In any case, if the 24 hour sequence is exceeded it should be noted in the data assessment under contract non-compliance.

13.0 Method Blanks

13.1 Is the Method Blank Summary (Form IV) present for each of the following matrices?
a. water [ ] ___ ✓

b. soil [✓] ___ ___

13.2 Frequency of Analysis:

Has a Method/Prep blank been analyzed at the same time for each batch of samples extracted. [✓] ___ ___

ACTION: If any method blank data are missing, call lab for explanation/resubmittal. If method blank data are not available, reject "R" all associated positive data.

13.3 Are the positive hits present in the blank less than detection limit? not [✓] ___ ___

ACTION: If hits are ≥ detection limits, analysis should be discontinued. All associated samples must be re-prepared and re-analyzed with a new blank.
If lab did not follow this action, note in data assessment. Follow guidelines under contamination section.

13.4 Chromatography: review the method blank raw data chromatograms, quant reports or data system printouts.

Is the chromatographic performance (baseline stability) for each instrument acceptable? [✓] ___ ___

ACTION: Use professional judgement to determine the effect on the data.

YES NO N/A

14.0 Contamination

NOTE: "Water blanks", "drill blanks", and distilled water blanks" are validated like any other sample, and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

14.1 Did the lab run an instrument blank following a sample analysis which contained an analyte(s) at high concentration(s) to evaluate possible sample cross-contamination? [ ] ___ ✓

ACTION: Sample analysis results after the high concentration sample must be evaluated for carryover. Sample cross-contamination should be noted for TPO action if an effect on the data is suspected. An Instrument Blank is not required in the methodology.

14.2 Do any Method Blanks have positive results (TCL)? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample dilution factor. ___ ✓ ___

14.3 Are there field/rinse/equipment blanks associated with every sample? [ ] ✓ ___

ACTION: Note in data assessment that there is no associated field/rinse/equipment blank.

14.4 Do any field/rinse blanks have positive results (TCL)? ___ [ ] ✓

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: All field blank results associated with a particular group of samples (may exceed one per case) must be used to qualify data. Blanks may not be qualified because of contamination in another blank. Field blanks must be qualified for surrogate recovery, instrument performance criteria, or calibration QC problems.

FORM 4
SV LC METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

0628YMB

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Lab File ID: 1G17K14 Lab Sample ID: METHOD BLANK

Instrument ID: TLCKUV1 Date Extracted: 06/28/00

Matrix: (soil/water) SOIL Date Analyzed: 07/17/00

Level:(low/med) LOW Time Analyzed: 1859

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

| | CLIENT SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED |
|---|---|---|---|---|
| 01 | 0628YMBLCS | 8330 LAB SPIKE | 1G17K15 | 07/17/00 |
| 02 | 04089A-1 | LIA014D | 1G17K17 | 07/17/00 |
| 03 | 04089A-2 | LIA017 | 1G17K18 | 07/17/00 |
| 04 | 04089A-3 | LIA018 | 1G17K19 | 07/17/00 |
| 05 | 04089A-4 | LIA021 | 1G17K20 | 07/17/00 |
| 06 | 04089A-5 | LIA022 | 1G17K21 | 07/17/00 |
| 07 | 04089A-5MS | 04089A-5MS | 1G17K22 | 07/17/00 |
| 08 | 04089A-5MSD | 04089A-5MSD | 1G17K23 | 07/17/00 |
| 09 | 04089A-6 | LIA023 | 1G17K24 | 07/18/00 |
| 10 | 04089A-7 | LIA023D | 1G17K25 | 07/18/00 |
| 11 | 04089A-8 | LIA024 | 1G17K26 | 07/18/00 |
| 12 | 04089A-9 | LIA025 | 1G17K27 | 07/18/00 |
| 13 | 04089A-10 | LIA026 | 1G17K28 | 07/18/00 |
| 14 | | | | |
| 15 | | | | |
| 16 | | | | |
| 17 | | | | |
| 18 | | | | |
| 19 | | | | |
| 20 | | | | |
| 21 | | | | |
| 22 | | | | |
| 23 | | | | |
| 24 | | | | |
| 25 | | | | |
| 26 | | | | |
| 27 | | | | |
| 28 | | | | |
| 29 | | | | |
| 30 | | | | |

COMMENTS: No Contamination



FORM IV SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

0628YMB

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Matrix: (soil/water) SOIL Lab Sample ID: METHOD BLANK

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G17K14

Level: (low/med) LOW Date Received: _____

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/28/00

Concentrated Extract Volume: 20.0 (mL) Date Analyzed: 07/17/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 98-95-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

YES NO N/A

ACTION: Follow the directions in **Table 3** below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If any blanks are grossly contaminated, all associated data should be qualified as unusable (R) (see item # 12.3).

| Sample conc > CRQL but < 5x blank | Sample conc < CRQL & is < 5x blank value | Sample conc > CRQL & > 5x blank value |
|---|---|---|
| Flag sample result with a "U" | Report CRQL & qualify "U" | No qualification is needed |

NOTE: Analytes qualified "U" for blank contamination are still considered as "hits" when qualifying for calibration or other QC criteria.

15.0 Target Compound List (TCL) Analytes (Form I)

15.1 Are the Organic Analysis Data Sheets (Form I) present with required header information on each page, for each of the following:

a. Samples ? [X] ___ ___

b. Laboratory Control Samples? [X] ___ ___

c. Blanks? [X] ___ ___

d. Matrix spikes and matrix spike duplicates? [X] ___ ___

e. Lab duplicate? [ ] ___ [X]

| | YES | NO | N/A |
|---|---|---|---|
| 15.2 Are the Chromatograms, and the data system printouts (Quant Reports) included in the sample package for each of the following: | | | |
| a. Samples? | [✓] | ___ | ___ |
| b. Laboratory Control Samples? | [✓] | ___ | ___ |
| c. Blanks? | [✓] | ___ | ___ |
| d. Matrix spikes and Matrix spike duplicates? | [✓] | ___ | ___ |
| e. Lab duplicate? | [ ] | ___ | ✓ |

ACTION: If any data are missing, Contact Lab for resubmittals.

| | | | |
|---|---|---|---|
| 15.3 Are the response factors shown in the Quant Report? | [ ] | ✓ | ___ |
| 15.4 Is chromatographic performance acceptable with respect to: | | | |
| Baseline stability? | [✓] | ___ | ___ |
| Resolution? | [✓] | ___ | ___ |
| Peak shape? | [✓] | ___ | ___ |
| Full-scale graph (attenuation)? | [✓] | ___ | ___ |
| Other: _____ | [ ] | ___ | ✓ |

ACTION: Use professional judgement to determine the acceptability of the data.

## 16.0 Compound Identification

| | | | |
|---|---|---|---|
| 16.1 Is Form X completed for every sample in which an analyte was detected? | [ ] | ✓ | ___ |

ACTION: If no, contact lab for resubmittals.

YES NO N/A

16.2 Are there any transcription/calculation errors between raw data and Forms? ___ [ ] ✓

ACTION: If large errors exist, call lab for explanation/resubmittals. Make any necessary corrections and note effect in data assessment. Check at least 2-3 values from each calibration standard and more if errors are found.

16.3 Are retention times (RT) of sample analytes within the established RT windows for both analyses? ✓ ___ ___

ACTION: Qualify as unusable "R" all positive results which were not confirmed by second HPLC column analysis. Also qualify as unusable "R" all positive results not meeting RT window unless associated standard compounds are similarly biased. The reviewer should use professional judgement to assign an appropriate quantitation limit.

16.4 Is the percent difference (%D) calculated for the positive sample results on the two HPLC columns <25%? [ ] ✓ ___

ACTION: If the reviewer finds neither column shows interference for the positive hits, the data should be flagged as follows:

| % Difference | Qualifier |
|---|---|
| 25-90% | J |
| >90% | R |

LIA022

| | | |
|---|---|---|
| RDX | 117% | R |
| 2-AM-DNT | 35% | J |
| 4-AM-DNT | 200% | R |
| 2,4,6-TNT | 8% | |

NOTE: The lower of the two values is reported on Form I. If using professional judgement, the reviewer determines that the higher result was more acceptable, the reviewer should replace the value and indicate the reason for the change in the data assessment.

YES NO N/A

16.5 Check chromatograms for false negatives, interferences and degradation. Tetryl decomposes rapidly in methanol/water solutions as well as with heat. All samples expected to contain tetryl should not be exposed to temperatures above room temperature. Degradation products of tetryl appear as a shoulder on the TNT peak. Peak heights rather than peak areas should be used when tetryl is present in concentrations that are significant relative to the concentration of TNT.

ACTION: Use professional judgement to determine qualification of analytes.

17.0 Compound Quantitation and Reported Detection Limits

17.1 Are there any transcription/calculation errors in Form I results? Check at least two positive values. Verify that the calculations were adjusted for percent moisture. Were any errors found? — ✓ —

NOTE: Single peak analyte results can be checked for rough agreement between quantitative results obtained on the two HPLC columns. The reviewer should use professional judgement to decide whether a much larger concentration obtained on one column versus the other indicates the presence of an interfering compound. If an interfering compound is indicated, the lower of the two values should be reported and qualified as presumptively present at an approximated quantity "JN". This necessitates a determination of an estimated concentration on the confirmation column. The narrative should indicate that the presence of interferences has interfered with the evaluation of the second column confirmation.

17.2 Are the CRQLs adjusted to reflect sample dilutions for each Form I? no DLs ✓ — —

YES NO N/A

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note in data assessment.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" and its associated value on the original Form I and substituting the data from the analysis of the diluted sample. Specify which Form I is to be used, then draw a red "X" with a red pencil across the entire page of all Form I's that should not be used, including any in the summary package.

18.0 Lab Duplicates

18.1 Were any lab duplicates submitted for for each extraction batch?
a. waters [ ] ✓ ___
b. soils [ ] ✓ ___

18.2 Are the Relative Percent Difference (RPD) values for the analytes reported in the duplicate samples <20%? (depending on the SAS-request; the criteria might be <40%). [ ] ___ ✓

ACTION: Compare the reported results for lab duplicates and calculate the relative percent difference.

ACTION: Any gross variation between duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of lab duplicates should be confirmed by contacting the lab.

ACTION: Flag all associated data with an * for "out of control" duplicate.

19.0 Matrix Spikes

19.1 Is the Matrix Spike/Matrix Spike Duplicate recovery Form present? ✓ ___ ___

YES NO N/A

19.2 Were the matrix spikes analyzed at the required frequency? (one per matrix and per SDG). ✓ ___ ___

ACTION: If any matrix spike data are missing, contact the lab for resubmittals.

19.3 The matrix spike consists of all target analytes at concentrations 5-10 times the estimated quantitation limits listed in Table 1/Method 8330.
Were the correct analytes and were the concentrations within range? ✓ ___ ___

NOTE: Field blanks cannot be used for Matrix spike analysis. If field/rinse blanks were MS/MSD, then make note under Contract non-compliance.

19.4 How many spike recoveries are outside the QC limits of 50-140%?

| Water | Soil |
|---|---|
| ____ out of ___ | 4 out of ~~14~~ 28 |

EKK 8/31/00

19.5 How many RPD's for Matrix Spike and Matrix Spike duplicate recoveries are outside QC limits of 20% (depending what is stated in the SAS-request)?

| Water | Soil |
|---|---|
| ____ out of ___ | 0 out of 14 |

ACTION: Flag all associated data "N" for "out of control" matrix spike for the field sample used for the MS/MSD.

ACTION: No additional action is taken on MS/MSD data alone. However using informed professional judgement, the data reviewer may use the matrix spike data results in conjunction with other QC criteria and determine the need for some qualification of the data.

Field Dups
LIA014 / LIA014D
no + no +

LIA023 / LIA023D
no + no +



LIA014 in SDG VIEQ001

083

FORM 3
SOIL SV LC MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Matrix Spike - Sample No.: 04089A-5 Level:(low/med) LOW

| COMPOUND | SPIKE ADDED (ug/Kg) | SAMPLE CONC (ug/Kg) | MS CONC (ug/Kg) | MS % REC# | QC. LIMITS REC. | |
|---|---|---|---|---|---|---|
| 2-NT | 2500 | 0.00 | 2700 | 108 | 52-138 | |
| 3-NT | 2500 | 0.00 | 2800 | 112 | 69-137 | |
| 4-NT | 2500 | 0.00 | 2800 | 112 | 54-166 | |
| 1,3-DNB | 2500 | 0.00 | 2900 | 116 | 50-132 | |
| 2,4-DNT | 2500 | 0.00 | 2900 | 116 | 54-120 | |
| 2,6-DNT | 2500 | 0.00 | 3000 | 120 | 59-122 | |
| 2-AM-DNT | 2500 | 620 | 3500 | 115 | 50-150 | |
| 4-AM-DNT | 2500 | 0.00 | 0.00 | 0* | 58-126 | J/R |
| HMX | 2500 | 0.00 | 3000 | 120 | 29-156 | |
| Nitrobenzene | 2500 | 0.00 | 2800 | 112 | 52-152 | |
| RDX | 2500 | 260 | 3600 | 134 | 54-166 | |
| Tetryl | 2500 | 0.00 | 2800 | 112 | 41-165 | |
| 1,3,5-TNB | 2500 | 0.00 | 3000 | 120 | 47-123 | |
| 2,4,6-TNT | 2500 | 13000 | 11000 | 0* | 74-119 | J/R |

# Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS:

FORM 3
SOIL SV LC MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Matrix Spike - Sample No.: 04089A-5 Level:(low/med) LOW

| COMPOUND | SPIKE ADDED (ug/Kg) | MSD CONC (ug/Kg) | MSD % REC# | AVG % REC | % RPD$# | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| 2-NT | 2500 | 2700 | 108 | 108 | 0.00 | 40 | 52-138 |
| 3-NT | 2500 | 2900 | 116 | 114 | 3.5 | 30 | 69-137 |
| 4-NT | 2500 | 2700 | 108 | 110 | 3.6 | 30 | 54-166 |
| 1,3-DNB | 2500 | 2900 | 116 | 116 | 0.00 | 30 | 50-132 |
| 2,4-DNT | 2500 | 2900 | 116 | 116 | 0.00 | 30 | 54-120 |
| 2,6-DNT | 2500 | 3000 | 120 | 120 | 0.00 | 30 | 59-122 |
| 2-AM-DNT | 2500 | 3400 | 111 | 113 | 2.9 | 30 | 50-150 |
| 4-AM-DNT | 2500 | 0.00 | 0* | 0 | | 30 | 58-126 |
| HMX | 2500 | 3000 | 120 | 120 | 0.00 | 60 | 29-156 |
| Nitrobenzene | 2500 | 2900 | 116 | 114 | 3.5 | 30 | 52-152 |
| RDX | 2500 | 2800 | 102 | 118 | 25 | 30 | 54-166 |
| Tetryl | 2500 | 2800 | 112 | 112 | 0.00 | 30 | 41-165 |
| 1,3,5-TNB | 2500 | 3000 | 120 | 120 | 0.00 | 30 | 47-123 |
| 2,4,6-TNT | 2500 | 8100 | 0* | 0 | 30 | 30 | 74-119 |

$ %RPD calculated using the spike and spike duplicate concentrations as per SW846 8000B

# Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 14 outside limits
Spike Recovery: 4 out of 28 outside limits

COMMENTS:

FORM 3
SOIL SV LC LAB CONTROL SAMPLE

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Matrix Spike - Sample No.: 0628YMB Level:(low/med) LOW

| COMPOUND | SPIKE ADDED (ug/Kg) | SAMPLE CONC (ug/Kg) | LCS CONC (ug/Kg) | LCS % REC# | QC. LIMITS REC. | |
|---|---|---|---|---|---|---|
| 2-NT | 2500 | 0.00 | 2900 | 116 | 52-138 | |
| 3-NT | 2500 | 0.00 | 3000 | 120 | 69-137 | |
| 4-NT | 2500 | 0.00 | 2900 | 116 | 54-166 | |
| 1,3-DNB | 2500 | 0.00 | 3000 | 120 | 50-132 | |
| 2,4-DNT | 2500 | 0.00 | 3000 | 120 | 54-120 | |
| 2,6-DNT | 2500 | 0.00 | 3200 | 128* | 59-122 | NA |
| 2-AM-DNT | 2500 | 0.00 | 3100 | 124 | 50-150 | |
| 4-AM-DNT | 2500 | 0.00 | 3000 | 120 | 58-126 | |
| HMX | 2500 | 0.00 | 3000 | 120 | 29-156 | |
| Nitrobenzene | 2500 | 0.00 | 2900 | 116 | 52-152 | |
| RDX | 2500 | 0.00 | 2900 | 116 | 54-166 | |
| Tetryl | 2500 | 0.00 | 3000 | 120 | 41-165 | |
| 1,3,5-TNB | 2500 | 0.00 | 3000 | 120 | 47-123 | |
| 2,4,6-TNT | 2500 | 0.00 | 3300 | 132* | 74-119 | NA |

# Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 2 out of 14 outside limits

COMMENTS:

HEARTLAND
ENVIRONMENTAL SERVICES, INC.

# MULTI-MEDIA GC ANALYSIS

| | |
|---|---|
| CASE/SDG NUMBER: | VIEQ002 |
| LABORATORY: | STL Tallahassee |
| CLIENT: | CH2M HILL |
| PROJECT: | Vieques (Camp Garcia Live Impact Area) |
| REVIEWER: | Erica K. Ketcham |
| DATE: | September 1, 2000 |
| QA/QC LEVEL: | DQO Level IV |
| STATEMENT OF WORK: | SW-846 Method 8332 |
| ANALYSIS MODIFICATIONS: | Region II |
| NUMBER OF SAMPLES: | 10 |
| SAMPLE MATRIX: | soil |
| NUMBER OF MS/MSDs: | 1 |

## MULTI-MEDIA GC ANALYSIS
## HOLDING TIMES

| | Water | Soil | Analysis |
|---|---|---|---|
| CLP: | 7 days from sampling | 14 days from sampling | 40 days from VTSR |
| SW846: | 7 days from sampling | 14 days from sampling | 40 days from VTSR |
| Region I: | 7 days from sampling | 7 days from sampling | 40 days from VTSR |
| Region II: | 7 days from sampling | 7 days from sampling | 40 days from VTSR |
| Region III: | 7 days from sampling | 7 days from sampling | 40 days from VTSR |
| NYSDEC: | 5 days from VTSR | 5 days from VTSR | 40 days from VTSR |

DA - The number of days that the holding time was exceeded.

| | |
|---|---|
| DA ≤ 5: | Qualify all positive results as estimated (J). |
| DA > 5 ≤ 15: | Qualify all positive results as estimated (J) and all non detects as estimated (UJ). |
| DA > 15: | Qualify all positive results as estimated (J) and reject (R) all non detects. |

**s - 06/21/00** **e - 06/30/00** **a - 07/17/00**

**All associated samples met holding time requirements for extraction and/or analysis. No qualifications are required.**

SAMPLE INFORMATION SUMMARY

Client SDG: VIEQ002 Sample Fraction: SV LC /N6

| roup | Batch | DataFile | Sample Type | Client Id | Lab ID | SmplRef | Lab Prep | SDG |
|---|---|---|---|---|---|---|---|---|
| 9702513 | 1J0714.b | 1G14J4.d | CALIB_2 | | CAL2.46179 | 7431286 | | |
| 9702513 | 1J0714.b | 1H14J1.d | CALIB_3 | | CAL3.461710 | 7431288 | | |
| 9702513 | 1J0714.b | 1G14J6.d | CALIB_4 | | CAL4.461711 | 7431287 | | |
| 9702513 | 1J0714.b | 1G14J7.d | CALIB_5 | | CAL5.461712 | 7431273 | | |
| 9702513 | 1J0714.b | 1G14J8.d | CALIB_1 | | CAL1.46178 | 7431281 | | |
| 7431891 | 1J0717.b | 1G17J7.d | CCALIB_3 | | MED.461710 | 9807919 | | |
| 7431891 | 1J0717.b | 1G17J25.d | CCALIB_3 | | MED.461710 | 9807944 | | |
| 7431891 | 1J0717.b | 1G17J8.d | BLANK | 0630CMB | METHOD BLANK | 9807994 | 0630C | VIEQ002 |
| 7431891 | 1J0717.b | 1G17J9.d | LCS | 0630CMBLCS | LAB SPIKE | 9807995 | 0630C | VIEQ002 |
| 7431891 | 1J0717.b | 1G17J16.d | MS | 04089A-SMS | 04089A-SMS | 9807997 | 0630C | VIEQ002 |
| 7431891 | 1J0717.b | 1G17J17.d | MSD | 04089A-SMSD | 04089A-SMSD | 9807998 | 0630C | VIEQ002 |
| 7431891 | 1J0717.b | 1G17J11.d | SAMPLE | 04089A-1 | LIA014D | 9807983 | 0630C | VIEQ002 |
| 7431891 | 1J0717.b | 1G17J12.d | SAMPLE | 04089A-2 | LIA017 | 9807984 | 0630C | VIEQ002 |
| 7431891 | 1J0717.b | 1G17J13.d | SAMPLE | 04089A-3 | LIA018 | 9807985 | 0630C | VIEQ002 |
| 7431891 | 1J0717.b | 1G17J14.d | SAMPLE | 04089A-4 | LIA021 | 9807986 | 0630C | VIEQ002 |
| 7431891 | 1J0717.b | 1G17J15.d | SAMPLE | 04089A-5 | LIA022 | 9807987 | 0630C | VIEQ002 |
| 7431891 | 1J0717.b | 1G17J18.d | SAMPLE | 04089A-6 | LIA023 | 9807988 | 0630C | VIEQ002 |
| 7431891 | 1J0717.b | 1G17J19.d | SAMPLE | 04089A-7 | LIA023D | 9807989 | 0630C | VIEQ002 |
| 7431891 | 1J0717.b | 1G17J20.d | SAMPLE | 04089A-8 | LIA024 | 9807990 | 0630C | VIEQ002 |
| 7431891 | 1J0717.b | 1G17J21.d | SAMPLE | 04089A-9 | LIA025 | 9807991 | 0630C | VIEQ002 |
| 7431891 | 1J0717.b | 1G17J22.d | SAMPLE | 04089A-10 | LIA026 | 9807992 | 0630C | VIEQ002 |
| 9808070 | 1J0718.b | 1G18J3.d | CALIB_1 | | CAL1.46178 | 9808136 | | |
| 9808070 | 1J0718.b | 1G18J4.d | CALIB_2 | | CAL2.46179 | 9808137 | | |
| 9808070 | 1J0718.b | 1G18J5.d | CALIB_3 | | CAL3.46203 | 9808138 | | |
| 9808070 | 1J0718.b | 1G18J6.d | CALIB_4 | | CAL4.461711 | 9808146 | | |
| 9808070 | 1J0718.b | 1G18J7.d | CALIB_5 | | CAL5.461712 | 9808149 | | |
| 9808070 | 1J0718.b | 1G18J24.d | CCALIB_3 | | MED.46203 | 9808153 | | |
| 9808070 | 1J0718.b | 1G18J22.d | BLANK | 0630CMB | METHOD BLANK | 9808280 | 0630C | VIEQ002 |
| 9808070 | 1J0718.b | 1G18J23.d | SAMPLE | 04089A-5 | LIA022 | 9808288 | 0630C | VIEQ002 |

FORM 6
SV LC INITIAL CALIBRATION DATA

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Instrument ID: TLCJUV1 Calibration Date(s): 07/14/00 07/14/00

Column: C-18 ID: 4.60 (mm) Calibration Time(s): 1105 1324

LAB FILE ID: RF0.2: 1G14J8 RF0.5: 1G14J4 RF0.75: 1H14J1
RF1: 1G14J6 RF2: 1G14J7

| COMPOUND | RF0.2 | RF0.5 | RF0.75 | RF1 | RF2 |
|---|---|---|---|---|---|
| Nitroglycerin | 6720 | 7072 | 6652 | 7426 | 6876 |
| Pentaerythritol tetranitrate | 4240 | 3550 | 3429 | 3606 | 3297 |
| 3,4-Dinitrotoluene | 13255 | 13636 | 13873 | 14684 | 13649 |

FORM VI SV LC

FORM 6
SV LC INITIAL CALIBRATION DATA

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Instrument ID: TLCJUV1 Calibration Date(s): 07/14/00 07/14/00

Column: C-18 ID: 4.60 (mm) Calibration Time(s): 1105 1324

| COMPOUND | CURVE | COEFFICIENTS A0 | A1 | %RSD or R^2 |
|---|---|---|---|---|
| Nitroglycerin | LINR | -5.45e-003 | 1.442e-004 | 0.997 |
| Pentaerythritol tetranitrate | LINR | -6.65e-002 | 3.106e-004 | 0.998 |
| 3,4-Dinitrotoluene | LINR | -9.11e-003 | 7.268e-005 | 0.998 |

FORM 6
SV LC INITIAL CALIBRATION DATA

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Instrument ID: TLCJUV1 Calibration Date(s): 07/18/00 07/18/00

Column: CN ID: 4.60 (mm) Calibration Time(s): 1446 1659

LAB FILE ID: RF0.2: 1G18J3 RF0.5: 1G18J4 RF0.75: 1G18J5
RF1: 1G18J6 RF2: 1G18J7

| COMPOUND | RF0.2 | RF0.5 | RF0.75 | RF1 | RF2 |
|---|---|---|---|---|---|
| Nitroglycerin | 13135 | 14838 | 13749 | 14583 | 14795 |
| Pentaerythritol tetranitrate | 10515 | 9832 | 9261 | 9763 | 9629 |
| 3,4-Dinitrotoluene | 27845 | 29590 | 27832 | 30122 | 30705 |

FORM VI SV LC

FORM 6
SV LC INITIAL CALIBRATION DATA

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Instrument ID: TLCJUV1 Calibration Date(s): 07/18/00 07/18/00

Column: CN ID: 4.60 (mm) Calibration Time(s): 1446 1659

| COMPOUND | CURVE | COEFFICIENTS A0 | A1 | %RSD or R^2 |
|---|---|---|---|---|
| Nitroglycerin | LINR | 2.791e-002 | 6.68e-005 | 0.999 |
| Pentaerythritol tetranitrate | LINR | -7.54e-003 | 1.044e-004 | 0.999 |
| 3,4-Dinitrotoluene | LINR | 3.87e-002 | 3.206e-005 | 0.999 |

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Instrument ID: TLCJUV1 Calibration Date: 07/17/00 Time: 1528

Lab File ID: 1G17J7 Init. Calib. Date(s): 07/14/00 07/14/00

Init. Calib. Times: 1105 1324

GC Column: C-18 ID: 4.60 (mm)

| COMPOUND | AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| Nitroglycerin | 0.75 | 0.73 | 6773.3 | 0.01 | 2.7 | 15.0 | LINR |
| Pentaerythritol tetranitrate | 0.75 | 0.78 | 3625.3 | 0.01 | 4.0 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.75 | 0.76 | 14187 | 0.01 | 1.3 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Instrument ID: TLCJUV1 Calibration Date: 07/18/00 Time: 0130

Lab File ID: 1G17J25 Init. Calib. Date(s): 07/14/00 07/14/00

Init. Calib. Times: 1105 1324

GC Column: C-18 ID: 4.60 (mm)

| COMPOUND | AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| Nitroglycerin | 0.75 | 0.80 | 7450.7 | 0.01 | 6.7 | 15.0 | LINR |
| Pentaerythritol tetranitrate | 0.75 | 0.88 | 4065.3 | 0.01 | 17.3 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.75 | 0.84 | 15492 | 0.01 | 12.0 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Instrument ID: TLCJUV1 Calibration Date: 07/19/00 Time: 0228

Lab File ID: 1G18J24 Init. Calib. Date(s): 07/18/00 07/18/00

Init. Calib. Times: 1446 1659

GC Column: CN ID: 4.60 (mm)

| COMPOUND | AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| Nitroglycerin | 0.75 | 0.70 | 13513 | 0.01 | 6.7 | 15.0 | LINR |
| Pentaerythritol tetranitrate | 0.75 | 0.67 | 8662.7 | 0.01 | 10.7 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.75 | 0.72 | 28169 | 0.01 | 4.0 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

# MULTI-MEDIA GC ANALYSIS
## BLANK SUMMARY

1. Blank qualification guidelines:

   a) If a compound is found in the blank but not in the sample, no action is taken.

   b) Any compound detected in the sample, which was also detected in the associated blank, must be qualified by elevating the limit of detection or adjusting the limit of detection to the sample result, when the sample concentration is less than five (5) times the blank concentration.

   c) The reviewer should take note that the blank analysis may not involve the same weights, volumes or dilution factors as associated samples. These factors must be taken into consideration when applying the 5X and 10X criteria.

   d) In addition, the reviewer must review the trip blanks, rinseate blanks and field blanks (if they were submitted with the data package) and all associated samples. Apply the same data validation guidelines used in assessing the method blanks.

   e) Qualification/Action codes:

      U - The sample result is greater than the CRQL and less than five times (5X) the blank value. Cross out the "B" flag and qualify the sample result with a "U".

      CRQL - The sample result is less than the CRQL and less than five times (5X) the blank value. Reject the sample result, cross out the "B" flag, and report the CRQL.

      No Action - The sample result is greater than the CRQL and greater than five times (5X) the blank value.

FORM 4
SV LC METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

0630CMB

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Lab File ID: 1G17J8 Lab Sample ID: METHOD BLANK

Instrument ID: TLCJUV1 Date Extracted: 06/30/00

Matrix: (soil/water) SOIL Date Analyzed: 07/17/00

Level: (low/med) LOW Time Analyzed: 1601

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

| | CLIENT SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED |
|---|---|---|---|---|
| 01 | 0630CMBLCS | LAB SPIKE | 1G17J9 | 07/17/00 |
| 02 | 04089A-1 | LIA014D | 1G17J11 | 07/17/00 |
| 03 | 04089A-2 | LIA017 | 1G17J12 | 07/17/00 |
| 04 | 04089A-3 | LIA018 | 1G17J13 | 07/17/00 |
| 05 | 04089A-4 | LIA021 | 1G17J14 | 07/17/00 |
| 06 | 04089A-5 | LIA022 | 1G17J15 | 07/17/00 |
| 07 | 04089A-5MS | 04089A-5MS | 1G17J16 | 07/17/00 |
| 08 | 04089A-5MSD | 04089A-5MSD | 1G17J17 | 07/17/00 |
| 09 | 04089A-6 | LIA023 | 1G17J18 | 07/17/00 |
| 10 | 04089A-7 | LIA023D | 1G17J19 | 07/17/00 |
| 11 | 04089A-8 | LIA024 | 1G17J20 | 07/17/00 |
| 12 | 04089A-9 | LIA025 | 1G17J21 | 07/17/00 |
| 13 | 04089A-10 | LIA026 | 1G17J22 | 07/17/00 |
| 14 | | | | |
| 15 | | | | |
| 16 | | | | |
| 17 | | | | |
| 18 | | | | |
| 19 | | | | |
| 20 | | | | |
| 21 | | | | |
| 22 | | | | |
| 23 | | | | |
| 24 | | | | |
| 25 | | | | |
| 26 | | | | |
| 27 | | | | |
| 28 | | | | |
| 29 | | | | |
| 30 | | | | |

COMMENTS: No Contamination

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

0630CMB

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Matrix: (soil/water) SOIL Lab Sample ID: METHOD BLANK

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G17J8

Level: (low/med) LOW Date Received: _____

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0(mL) Date Analyzed: 07/17/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1000 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1000 | U |

FORM 2
SOIL SV LC SURROGATE RECOVERY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Level: (low/med) LOW

| | CLIENT SAMPLE NO. | S1 (DNT) # | S2 # | S3 # | S4 # | S5 # | S6 # | S7 # | S8 # | TOT OUT |
|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0630CMB | 104 | | | | | | | | 0 |
| 02 | 0630CMBLCS | 100 | | | | | | | | 0 |
| 03 | 04089A-1 | 100 | | | | | | | | 0 |
| 04 | 04089A-2 | 91 | | | | | | | | 0 |
| 05 | 04089A-3 | 91 | | | | | | | | 0 |
| 06 | 04089A-4 | 100 | | | | | | | | 0 |
| 07 | 04089A-5 | 100 | | | | | | | | 0 |
| 08 | 04089A-5MS | 96 | | | | | | | | 0 |
| 09 | 04089A-5MSD | 100 | | | | | | | | 0 |
| 10 | 04089A-6 | 96 | | | | | | | | 0 |
| 11 | 04089A-7 | 93 | | | | | | | | 0 |
| 12 | 04089A-8 | 83 | | | | | | | | 0 |
| 13 | 04089A-9 | 96 | | | | | | | | 0 |
| 14 | 04089A-10 | 86 | | | | | | | | 0 |
| 15 | | | | | | | | | | |
| 16 | | | | | | | | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | | | | |
| 19 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 21 | | | | | | | | | | |
| 22 | | | | | | | | | | |
| 23 | | | | | | | | | | |
| 24 | | | | | | | | | | |
| 25 | | | | | | | | | | |
| 26 | | | | | | | | | | |
| 27 | | | | | | | | | | |
| 28 | | | | | | | | | | |
| 29 | | | | | | | | | | |
| 30 | | | | | | | | | | |

S1 (DNT) = 3,4-Dinitrotoluene QC LIMITS (22-128)

# Column to be used to flag recovery values
* Values outside of laboratory QC limits
D Sample diluted

FORM 3
SOIL SV LC MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Matrix Spike - Sample No.: 04089A-5 Level:(low/med) LOW

| COMPOUND | SPIKE ADDED (ug/Kg) | SAMPLE CONC (ug/Kg) | MS CONC (ug/Kg) | MS % REC# | QC. LIMITS REC. | |
|---|---|---|---|---|---|---|
| Nitroglycerin | 2800 | 0.00 | 5600 | 200* | 48-152 | NA |

| COMPOUND | SPIKE ADDED (ug/Kg) | MSD CONC (ug/Kg) | MSD % REC# | AVG % REC | % RPD$# | QC LIMITS RPD | QC LIMITS REC. | |
|---|---|---|---|---|---|---|---|---|
| Nitroglycerin | 2800 | 4700 | 168* | 184 | 17 | 50 | 48-152 | N/ |

$ %RPD calculated using the spike and spike duplicate concentrations as per SW846 8000B

# Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 1 outside limits
Spike Recovery: 2 out of 2 outside limits

COMMENTS: _____

FORM 3
SOIL SV LC LAB CONTROL SAMPLE

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ002

Matrix Spike - Sample No.: 0630CMB Level: (low/med) LOW

| COMPOUND | SPIKE ADDED (ug/Kg) | SAMPLE CONC (ug/Kg) | LCS CONC (ug/Kg) | LCS % REC# | QC. LIMITS REC. |
|---|---|---|---|---|---|
| Nitroglycerin | 2500 | 0.00 | 2500 | 100 | 48-152 |

# Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____

# MULTI-MEDIA GC ANALYSIS
# FIELD DUPLICATE SAMPLE SUMMARY

**Sample ID:** LIA014 **Duplicate Sample ID:** LIA014D

**Water:** **RPD > 30%** **Soil:** **RPD > 50%**

| Compound | Sample Conc. | Dup. Sample Conc. | RPD |
|---|---|---|---|
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
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| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |

**Comments:** No positive results. No qualifications were required.
LIA014 is in SDG VIEQ001

# MULTI-MEDIA GC ANALYSIS
# FIELD DUPLICATE SAMPLE SUMMARY

**Sample ID:** LIA023 **Duplicate Sample ID:** LIA023D

**Water:** **RPD > 30%** **Soil:** **RPD > 50%**

| Compound | Sample Conc. | Dup. Sample Conc. | RPD |
|---|---|---|---|
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |

**Comments:** No positive results. No qualifications were required.

## MULTI-MEDIA GC ANALYSIS
## SAMPLE RESULT VERIFICATION

1. Were the sample results reported within the calibration range (YES/NO)? YES

2. Was the percent moisture reported for all soil samples (YES/NO/NA)? YES

3. Was the data reported on a dry weight basis (YES/NO/NA)? YES

4. Did the GC chromatograms exhibit interferences, off scale peaks or elevated baseline (YES/NO)? NO

5. Did the data contain elevated detection limits that could not be verified (YES/NO)? NO

6. Were any computational or transcription errors found (YES/NO)? NO

**Specific Comments:**

quantitation by linear regression

no QC blanks

**Reviewer** Erica K Ketchum **Date:** 9/1/00

## Two Digit Code Definitions for Comment Field

During DV, the validator will apply a two-letter code to the right of each project qualifier applied. This code represents why the compound/element was flagged. The data entry personnel will enter this code into the comment field of the database.

| Code | Definition |
|---|---|
| TN | Tune |
| BS | Blank Spike/LCS |
| IS | Internal Standard |
| MS | Matrix Spike and/or Matrix Spike Duplicate Recovery |
| MD | Matrix Spike/Matrix Spike Duplicate Precision |
| 2S | Second Source |
| SD | Serial Dilution |
| SS | Spiked Surrogate |
| LR | Analyte present above linear (or calibration) range |
| IC | Initial Calibration |
| CC | Continuing Calibration Verification |
| PD | Pesticide Degradation |
| LD | Lab Duplicate |
| 2C | Second Column (Confirmation) |
| HT | Holding Time |
| PS | Post Spike |
| BL | Blank |
| RE | Re-extraction |
| DL | Dilution |
| IB | In Between |
| FD | Field Duplicate |
| OT | Other |

INORGANIC REGIONAL DATA ASSESSMENT

Region II

CASE NO. _____

SITE Vieques Island

LABORATORY SLSAU

NO. OF SAMPLES/ MATRIX 10 Soils

SDG# VIEQ002

REVIEWER (IF NOT ESD) Heartland EST

SOW# SW846

REVIEWER'S NAME P. Humburg

DPO: ACTION _____ FYI _____

COMPLETION DATE 9/5/00

DATA ASSESSMENT SUMMARY

| | | ICP | AA | Hg | CYANIDE |
|---|---|---|---|---|---|
| 1. | HOLDING TIMES | O | NA | O | NA |
| 2. | CALIBRATIONS | | | | |
| 3. | BLANKS | | | | |
| 4. | ICS | | | | |
| 5. | LCS | | | | |
| 6. | DUPLICATE ANALYSIS | | | | |
| 7. | MATRIX SPIKE | | | | |
| 8. | MSA | | | | |
| 9. | SERIAL DILUTION | | | | |
| 10. | SAMPLE VERIFICATION | | | | |
| 11. | OTHER QC | | | | |
| 12 | OVERALL ASSESSMENT | | | | |

O = Data has no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.

X = Problems, but do not affect data.

ACTION ITEMS: _____

_____

_____

AREAS OF CONCERN: _____

_____

_____

NOTABLE PERFORMANCE: _____

_____

_____

| .6 Form I to IX | Yes | No | N/A |
|---|---|---|---|
| .6.1 Are all the Form I through Form IX labeled with: | | | |
| Laboratory name? | [✓] | | |
| Case/SAS number? | [ ] | | ✓ |
| EPA sample No.? | [✓] | | |
| SDG No.? | [✓] | | |
| Contract No.? | [✓] | | |
| Correct units? | [✓] | | |
| Matrix? | [✓] | | |

ACTION: If no for any of the above, note under Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

| .6.2 Do any computation/transcription errors exceed 10% of reported values on Forms I-IX for: | | | |
|---|---|---|---|
| (NOTE: Check all forms against raw data.) | | | |
| (a) all analytes analyzed by ICP? | [✓] | | |
| (b) all analytes analyzed by GFAA? | [ ] | | ✓ |
| (c) all analytes analyzed by AA Flame? | [ ] | | ✓ |
| (d) Mercury? | [✓] | | |
| (e) Cyanide? | [ ] | | ✓ |

ACTION: If yes, prepare Telephone Log, contact laboratory for corrected data and correct errors with red pencil and initial.

e: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

| | | YES | NO | N/A |
|---|---|---|---|---|
| 7 | Raw Data | | | |
| 7.1 | Digestion Log* for flame AA/ICP (Form XIII) present? | ✓ | | |
| | Digestion Log for furnace AA Form XIII present? | | | ✓ |
| | Distillation Log for mercury Form XIII present? | ✓ | | |
| | Distillation Log for cyanides Form XIII present? | | | ✓ |
| | Are pH values (pH<2 for all metals, pH>12 for cyanide) present? | ✓ | | |
| | *Weights, dilutions and volumes used to obtain values. | | | |
| | Percent solids calculation present for soils/sediments? | ✓ | | |
| | Are preparation dates present on sample preparation logs/bench sheets? | ✓ | | |
| 7.2 | Measurement read out record present? ICP | ✓ | | |
| | Flame AA | | | ✓ |
| | Furnace AA | | | ✓ |
| | Mercury | ✓ | | |
| | Cyanides | | | ✓ |
| 7.3 | Are all raw data to support all sample analyses and QC operations present? | ✓ | | |
| | Legible? | ✓ | | |
| | Properly Labeled? | ✓ | | |

ACTION: If no for any of the above questions in sections A.1.7.1 through A.1.7.3, write Telephone Record Log and contact laboratory for resubmittals.

Compliance (Total Review)

| | YES | NO | N/A |
|---|---|---|---|
| **Holding Times** - (aqueous and soil samples ) | | | |
| (Examine sample traffic reports and digestion/distillation logs.) | | | |
| Mercury analysis (28 days). . . . . exceeded? | ___ | [✓] | ___ |
| Cyanide distillation (14 days). . . . . exceeded? | ___ | [___] | ✓ |
| Other Metals analysis (6 months). . . . exceeded? | ___ | [✓] | ___ |

NOTE: Prepare a list of all samples and analytes for which holding times have been exceeded. Specify the number of days from date of collection to the date of preparation (from raw data). Attach to checklist.

ACTION: If yes, reject (red-line) values less than Instrument Detection Limit (IDL) and flag as estimated (J) the values above IDL even though sample(s) was preserved properly.

| | YES | NO | N/A |
|---|---|---|---|
| .2 Is pH of aqueous samples for: Metals Analysis >2? | ___ | [___] | ✓ |
| Cyanides Analysis <12? | ___ | [___] | ✓ |

Action: If yes, flag the associated metals and cyanides data as estimated.

**Form I (Final Data)**

| | YES | NO | N/A |
|---|---|---|---|
| .1 Are all Form I's present and complete? | [✓] | ___ | ___ |

ACTION: If no, prepare telephone record log and contact laboratory for submittal.

| | YES | NO | N/A |
|---|---|---|---|
| .1 Are correct units (ug/l for waters and mg/kg for soils) indicated on Form I's? | [✓] | ___ | ___ |
| Are soil sample results for each parameter corrected for percent solids? | [✓] | ___ | ___ |
| Are all "less than IDL" values properly coded with "U"? | [✓] | ___ | ___ |

| | | YES | NO | N/A |
|---|---|---|---|---|
| | Are the correct concentration qualifiers used with final data? | [✓] | | |
| | ACTION: If no for any of the above, prepare Telephone Record Log, and contact laboratory for corrected data. | | | |
| 9.3 | Are EPA sample # s and corresponding laboratory sample ID # s the same as on the Cover Page, Form I's and in the raw data? | [✓] | | |
| | Was a brief physical description of samples given on Form I's? | [✓] | | |
| | Was the dilution of any sample diluted beyond the requirements of the contract noted on Form I or Form XIV? | | [✓] | |
| | ACTION: If no for any of the above, note under Contract-Problem/Non-Compliance of the "Data Assessment Narrative". | | | |
| 10 | Calibration | | | |
| 10.1 | Is record of at least 2 point calibration present for ICP analysis? | [✓] | | |
| | Is record of 5 point calibration present for Hg analysis? | [✓] | | |
| | Is record of 4 point calibration present for: | | | |
| | Flame AA? | [ ] | | ✓ |
| | Furnace AA? | [ ] | | ✓ |
| | Cyanides? | [ ] | | ✓ |
| | Is one calibration standard at the CRDL level for all AA (except Hg) and cyanides analyses? | [ ] | | ✓ |

ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

| | YES | NO | N/A |
|---|---|---|---|
| .10.2 Is correlation coefficient less than 0.995 for: | | | |
| Mercury Analysis? | | ✓ | |
| Cyanide Analysis? | | | ✓ |
| Atomic Absorption Analysis? | | | ✓ |

ACTION: If yes, flag the associated data as estimated.

NOTE: The data validator shall calculate the correlation coefficient using concentrations of the standards and the corresponding instrument response ( e.g. absorbance, peak area, peak height, etc.).

| | | | |
|---|---|---|---|
| .10 In the instance where less than 4 standards are measured in absorbance (or peak area, peak height, etc.) mode, are the remaining standards analyzed in concentration mode immediately after calibration within ±10% of the true values? | ✓ | | |

ACTION: If no, flag the associated data as estimated if standards are not within ±10% of true values. Do not flag the data as estimated in linear range indicated by good recovery of standard(s).

11 Form II A (Initial and Continuing Calibration Verification)-

| | | | |
|---|---|---|---|
| 11.1 Present and complete for every metal and cyanide? | ✓ | | |
| Present and complete for AA and ICP when both are used for the same analyte? | ✓ | | |

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

11 Circle on each Form IIA all percent recoveries that are outside the contract windows.
e all calibration standards (initial and continuing) within control limits:

| | | | |
|---|---|---|---|
| Metals- 90-110%R? | ✓ | | |
| Hg - 80-120%R? | ✓ | | |
| Cyanides- 85-115%R? | | | ✓ |

| | YES | NO | N/A |
|---|---|---|---|
| ACTION: Flag as estimated (J) all positive data (not flagged with a "U") analyzed between a calibration standard with %R between 75-89% (65-79% for Hg; 70-84% for CN) or 111-125% (121-135% for Hg; 116-130% for CN) recovery and nearest good calibration standard. Qualify results <IDL as estimated (UJ) if the ICV or CCV %R is 75-89% (CN, 70-84% ; HG, 65-79%). Reject (red-line) as unacceptable data if recovery of the ICV or CCV is outside the range 75-125% (CN, 70-130%; Hg, 65-135%). Qualify five samples on either side of verification standard out of control limits. | | | |
| 11.3 Was continuing calibration performed every 10 samples or every 2 hours? | [✓] | ___ | ___ |
| Was ICV for cyanides distilled? | [___] | ___ | ✓ |
| ACTION: If no for any of the above, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative". | | | |
| 12 Form II B (CRDL Standards for AA and ICP) - | | | |
| 12.1 Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)? | [✓] | ___ | ___ |
| Was a mid-range calib. verification standard distilled and analyzed for cyanide analysis? | [___] | ___ | ✓ |
| Was a 2xCRDL ( or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? (Note: CRI for AL,Ba,Ca,Fe,Mg,Na,or K is not required.) | [✓] | ___ | ___ |
| ACTION: If no for any of the above, flag as estimated all data falling within the affected ranges. The affected ranges are: AA Analysis - **True Value ± CRDL; ICP Analysis - **True Value ± 2CRDL; CN Analysis - **True Value ± 0.5 x True Value. | | | |

ue value of CRA, CRI or mid-range standard. Substitute IDL for CRDL when IDL > CRDL. use the concentration of the missing mid-range standard from the calibration range.

| | | YES | NO | N/A |
|---|---|---|---|---|
| 1.12.2 | Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run? | [✓] | ___ | ___ |

ACTION: If no, write in Contract Problem/Non-Compliance Section of the "Data Assessment Narrative".

1.12.3 Circle on each Form IIB all the percent recoveries that are outside the acceptance windows.

Are CRA and CRI standards within control limits:

| | | | | |
|---|---|---|---|---|
| Metals | 80 - 120%R? | [___] | ✓ | ___ |

Is mid-range standard within control limits:

| | | | | |
|---|---|---|---|---|
| Cyanide | 80 - 120%R? | [___] | ___ | ✓ |

ACTION: Flag as estimated all sample results within the affected range if the recovery of the standard is between 50-79%; flag only positive data within the affected range if the recovery is between 121-150%; reject all data within the affected range if the recovery is less than 50%; reject only positive data within the affected range if the recovery is greater than 150%. Qualify 50% of the samples on either side of CRI standard outside the control limits.

Note: Flag or reject the final results only when sample raw data are within the affected ranges and the CRDL standards are outside the acceptance windows.

.13 Form III (Initial and Continuing Calibration Blanks)

| | | | | |
|---|---|---|---|---|
| .13.1 | Present and complete? | [✓] | ___ | ___ |
| | For both AA and ICP when both are used for the same analyte? | [___] | ___ | ✓ |
| | Was an initial calibration blank analyzed? | [✓] | ___ | ___ |
| | Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)? | [✓] | ___ | ___ |

| | | YES | NO | N/A |
|---|---|---|---|---|
| | ACTION: If no, prepare Telephone Record Log, contact laboratory and write in the Contract-Problems/ Non-Compliance section of the "Data Assessment Narrative". | | | |
| 13.2 | Circle on each Form III all calibration blank values that are above CRDL (or 2 x IDL when IDL > CRDL). | | | |
| | Are all calibration blanks (when IDL<CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)? | [✓] | ___ | ___ |
| | Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)? | [✓] | ___ | ___ |
| | ACTION: If no for any of the above, flag as estimated (J) positive sample results when raw sample value is less than or equal to calibration blank value analyzed between calibration blank with value over CRDL (or 2xIDL) and nearest good calibration blank. Flag five samples on either side of the calibration blank outside the control limits. | | | |
| 14 | FORM III (Preparation Blank) - (Note: The preparation blank for mercury is the same as the calibration blank.) | | | |
| 4.1 | Was one prep. blank analyzed for: | | | |
| | each Sample Delivery Group (SDG)? | [✓] | ___ | ___ |
| | each batch of digested samples? | [✓] | ___ | ___ |
| | each matrix type? | [✓] | ___ | ___ |
| | both AA and ICP when both are used for the same analyte? | [___] | ___ | ✓ |
| | ACTION: If no for any of the above, flag as estimated (J) all the associated positive data <10 x IDLs for which prep. blank was not analyzed. | | | |
| | NOTE: If only one blank was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J). | | | |

| | | YES | NO | N/A |
|---|---|---|---|---|
| 1.14.2 | Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL? | | ✓ | |
| | If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep.blank? | | ✓ | |
| | ACTION: If yes, reject (red-line) all associated data greater than CRDL concentration but less than ten times the prep. blank value. | | | |
| 1.14.3 | Is concentration of prep. blank value (Form III) less than two times IDL, when IDL is greater than CRDL? | ✓ | | |
| | ACTION: If no, reject (red-line) all positive sample results when sample raw data are less than 10 times the prep. blank value. | | | |
| 1. | Is concentration of prep. blank below the negative CRDL? | | ✓ | |
| | ACTION: If yes, reject (red-line) all associated sample results less than 10xCRDL. | | | |
| .15 | Form IV (ICP Interference Check Sample) | | | |
| .15.1 | Present and complete? | ✓ | | |
| | (NOTE: Not required for furnace AA, flame AA, mercury, cyanide and Ca, Mg, K and Na.) | | | |
| | Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)? | ✓ | | |
| | ACTION: If no, flag as estimated (J) all the samples for which AL, Ca, Fe, or Mg is higher than in ICS. | | | |
| 1.15.2 | Circle all values on each Form IV that are more than ± 20% of true or established mean value. | | | |
| | Are all Interference Check Sample results inside the control limits (± 20%)? | ✓ | | |
| | If no, is concentration of AL, Ca, Fe, or Mg lower than the respective concentration in ICS? | ✓ | | |

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# TOTAL METALS

- 4 -

## ICP INTERFERENCE CHECK SAMPLE

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ002

ICP ID Number: ICPD ICS Source: CPI

Concentration Units): ug/L

| Analyte | True | | Initial Found | | | Final Found | | |
|---|---|---|---|---|---|---|---|---|
| | Sol.A | Sol.AB | Sol.A | Sol.AB | %R | Sol.A | Sol.AB | %R |
| Aluminum | 500035 | 500035 | 512700 | 509500 | 102 | 519800 | 521500 | 104 |
| Antimony | | 607 | 10.17 | 622.7 | 103 | 9.836 | 633.7 | 104 |
| Arsenic | | 100 | -2.15 | 102.8 | 103 | -2.71 | 101.9 | 102 |
| Barium | | 501 | 0.6219 | 539.0 | 108 | 0.6697 | 549.2 | 110 |
| Beryllium | | 501 | 0.03029 | 498.8 | 100 | 0.04138 | 504.7 | 101 |
| Cadmium | | 1003 | 2.733 | 949.4 | 95 | 2.941 | 965.8 | 96 |
| Chromium | | 505 | 2.751 | 481.6 | 95 | 2.787 | 484.3 | 96 |
| Cobalt | | 500 | -1.50 | 461.4 | 92 | -1.57 | 468.2 | 94 |
| Copper | | 500 | 1.597 | 548.6 | 110 | 1.114 | 562.0 | 112 |
| Iron | 200251 | 200251 | 183500 | 182900 | 91 | 183900 | 185200 | 92 |
| Lead | | 51 | -0.46 | 48.01 | 95 | -0.62 | 49.37 | 97 |
| Manganese | | 499 | 1.458 | 497.8 | 100 | 1.534 | 503.9 | 101 |
| Nickel | | 1004 | 1.100 | 926.8 | 92 | 0.7549 | 946.1 | 94 |
| Selenium | | 50 | -2.54 | 50.20 | 100 | -0.31 | 49.26 | 99 |
| Silver | | 200 | -0.19 | 214.9 | 107 | -0.04 | 218.6 | 109 |
| Thallium | | 100 | -0.88 | 98.46 | 98 | 1.457 | 100.9 | 101 |
| Tin | | 1000 | 1.277 | 1021 | 102 | 0.5618 | 1028 | 103 |
| Vanadium | | 500 | 2.338 | 484.6 | 97 | 2.704 | 491.2 | 98 |
| Zinc | | 1012 | 13.40 | 938.2 | 93 | 13.12 | 941.2 | 93 |

| | | YES | NO | N/A |
|---|---|---|---|---|
| | ACTION: If no, flag as estimated (J) those positive results for which ICS recovery is between 121-150%; flag all sample results as estimated if ICS recovery falls within 50-79%; reject (red-line) those sample results for which ICS recovery is less than 50%; if ICS recovery is above 150%, reject positive results only (not flagged with a "U"). | | | |
| .16 | Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distillation)- ( Note: Not required for Ca, Mg, K, and Na (both matrices), Al, and Fe (soil only.) | | | |
| .16.1 | Present and complete for: each SDG? | [✓] | ___ | ___ |
| | each matrix type? | [✓] | ___ | ___ |
| | each conc. range (i.e. low, med., high)? | [✓] | ___ | ___ |
| | For both AA and ICP when both are used for the same analyte? | [___] | ___ | ✓ |
| | ACTION: If no for any of the above, flag as estimated (J) all the positive data less than four times the spiking levels specified in SOW for which spiked sample was not analyzed. | | | |
| | NOTE: If one spiked sample was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J). | | | |
| 16.2 | Was field blank used for spiked sample? | ___ | [✓] | ___ |
| | ACTION: If yes, flag all positive data less than 4 x spike added as estimated (J) for which field blank was used as spiked sample. | | | |
| 16.3 | Circle on each Form VA all spike recoveries that are outside control limits (75% to 125%). | | | |
| | re all recoveries within control limits? | [✓] | ___ | ___ |
| | If no, is sample concentration greater than or equal to four times spike concentration? | [✓] | ___ | ___ |

| | YES | NO | N/A |
|---|---|---|---|
| ACTION: If yes, disregard spike recoveries for analytes whose concentrations are greater than or equal to four times spike added. If no, circle those analytes on Form V for which sample concentration is less than four times the spike concentration. | | | |
| Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA? | [✓] | ___ | ___ |
| ACTION: If no, write in the Contract - Problem/Non - Compliance section of "Data Assessment Narrative". | | | |

.16.4 Aqueous

Are any spike recoveries:

| | | | |
|---|---|---|---|
| (a) less than 30%? | ___ | [___] | ✓ |
| (b) between 30-74%? | ___ | [___] | ✓ |
| (c) between 126-150%? | ___ | [___] | ✓ |
| (d) greater than 150%? | ___ | [___] | ✓ |

ACTION: If less than 30%, reject all associated aqueous data; if between 30-74%, flag all associated aqueous data as estimated (J); if between 126-150%, flag as estimated (J) all associated aqueous data not flagged with a "U"; if greater than 150%, reject (red-line) all associated aqueous data not flagged with a "U".

.16.5 Soil/Sediment

Are any spike recoveries:

| | | | |
|---|---|---|---|
| (a) less than 10%? | ___ | [✓] | ___ |
| (b) between 10-74%? | ___ | [✓] | ___ |
| (c) between 126-200%? | ___ | [✓] | ___ |
| (d) greater than 200%? | ___ | [✓] | ___ |

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# TOTAL METALS
## - 5b -
## POST DIGEST SPIKE SAMPLE RECOVERY

SAMPLE NO.

LIA014DA

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ002

Matrix (soil/water): SOIL Level (low/med): LOW

Concentration Units: ug/L

| Analyte | Control Limit %R | Spiked Sample Result (SSR) | C | Sample Result (SR) | C | Spike Added (SA) | %R | Q | M |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | 143200 | | 143100 | | 2000 | 5 | | P |
| Antimony | | 493.2 | | 20.00 | U | 500.0 | 99 | | P |
| Arsenic | | 1948 | | 32.66 | | 2000 | 96 | | P |
| Barium | | 2842 | | 793.7 | | 2000 | 102 | | P |
| Beryllium | | 49.93 | | 2.080 | B | 50.00 | 96 | | P |
| Cadmium | | 57.76 | | 11.82 | | 50.00 | 92 | | P |
| Chromium | | 1073 | | 888.2 | | 200.0 | 92 | | P |
| Cobalt | | 662.8 | | 193.2 | | 500.0 | 94 | | P |
| Copper | | 597.4 | | 337.4 | | 250.0 | 104 | | P |
| Iron | | 266300 | | 269500 | | 1000 | -320 | | P |
| Lead | | 501.6 | | 31.31 | | 500.0 | 94 | | P |
| Manganese | | 7985 | | 7616 | | 500.0 | 74 | | P |
| Mercury | | 1.28 | | 0.284 | B | 1.00 | 100 | | CV |
| Nickel | | 999.8 | | 548.5 | | 500.0 | 90 | | P |
| Selenium | | 1962 | | 10.00 | U | 2000 | 98 | | P |
| Silver | | 53.68 | | 10.00 | U | 50.00 | 107 | | P |
| Thallium | | 1941 | | 10.00 | U | 2000 | 97 | | P |
| Tin | | 1006 | | 50.00 | U | 1000 | 101 | | P |
| Vanadium | | 995.5 | | 525.4 | | 500.0 | 94 | | P |
| Zinc | | 876.0 | | 414.1 | | 500.0 | 92 | | P |

Comments:

| | | YES | NO | N/A |
|---|---|---|---|---|
| | ACTION: If less than 10%, reject all associated data; if between 10-74%, flag all associated data as estimated; if between 126-200%, flag as estimated all associated data was not flagged with a "U"; if greater than 200%, reject all associated data not flagged with a "U". | | | |
| .17 | Form VI (Lab Duplicates) | | | |
| .17.1 | Present and complete for: each SDG? | [___] | ___ | ✓ |
| | each matrix type? | [___] | ___ | ✓ |
| | each concentration range (i.e. low, med., high)? | [___] | ___ | ✓ |
| | both AA and ICP when both are used for the same analyte? | [___] | ___ | ✓ |
| | ACTION: If no for any the above, flag as estimated (J) all the data ≥CRDL* for which duplicate sample was not analyzed. | | | |
| | Note: 1. If one duplicate sample was analyzed for more than 20 samples, then first 20 samples do not have to be flagged as estimated. | | | |
| | 2. If percent solids for soil sample and its duplicate differ by more than 1%, prepare a Form VI for each duplicate pair, report concentrations in ug/L on wet weight basis and calculate RPD or Difference for each analyte. | | | |
| .17.2 | Was field blank used for duplicate analysis? | ___ | [___] | ✓ |
| | ACTION: If yes, flag all data ≥CRDL* as estimated (J) for which field blank was used as duplicate. | | | |
| .17.3 | Are all values within control limits (RPD 20% or difference ≤ ±CRDL)? | [___] | ___ | ✓ |
| | If no, are all results outside the control limits flagged with an * on Form I's and VI? | [___] | ___ | ✓ |
| | ACTION: If no, write in the Contract - Problems/Non-Compliance section of "Data Assessment Narrative". | | | |

* Substitute IDL for CRDL when IDL > CRDL.

| | YES | NO | N/A |
|---|---|---|---|

NOTE: 1. RPD is not calculable for an analyte of the sample - duplicate pair when both values are less than IDL.
2. If the result of lab duplicate analyzed by GFAA is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, do not apply precision criteria to metals analyzed by GFAA.

17.4 Aqueous

Circle on each Form VI all values that are:

RPD > 50%, or
Difference > CRDL*

| | | | |
|---|---|---|---|
| Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL? | ___ | [___] | ✓ |
| Is any difference** between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL? | ___ | [___] | ✓ |

ACTION: If yes, flag the associated data as estimated.

17.5 Soil/Sediment

Circle on each Form VI all values that are:

RPD > 100%, or

Difference > 2 x CRDL*

Is any RPD (where sample and duplicate are both greater than or equal to 5 times *CRDL) :

| | | | |
|---|---|---|---|
| > 100%? | ___ | [___] | ✓ |

Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x*CRDL) :

| | | | |
|---|---|---|---|
| > 2x*CRDL? | ___ | [___] | ✓ |

*Substitute IDL for CRDL when IDL > CRDL.
**Use absolute values of sample and duplicate to calculate the difference.

| | | YES | NO | N/A |
|---|---|---|---|---|
| | ACTION: If yes, flag the associated data as estimated. | | | |
| 16 | Field Duplicates | | | |
| 16.1 | Were field duplicates analyzed? | [ ] | ___ | ✓ |

ACTION: If yes, prepare a Form VI for each aqueous field duplicate pair. Prepare a Form VI for each soil duplicate pair, if percent solids for sample and its duplicate differ by more than 1%; report concentrations of soils in ug/l on wet weight basis and calculate RPDs or Difference for each analyte.

NOTE: 1. Do not calculate RPD when both values are less than IDL.
2. Flag all associated data only for field duplicate pair.

16.2 Aqueous

Circle all values on self prepared Form VI for field duplicates that are:

RPD > 50%, or
Difference > CRDL*

| | | | |
|---|---|---|---|
| Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL? | ___ | [ ] | ✓ |
| Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL? | ___ | [ ] | ✓ |

ACTION: If yes, flag the associated data as estimated.

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

| | | YES | NO | N/A |
|---|---|---|---|---|
| .18.3 | Soil/Sediment | | | |
| | Circle all values on self prepared Form VI for field duplicates that are: | | | |
| | RPD >100%, or | | | |
| | Difference > 2 x CRDL* | | | |
| | Is any RPD (where sample and duplicate are both greater than 5 times *CRDL) : >100%? | ___ | [___] | ✓ |
| | Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x *CRDL ): >2x *CRDL? | ___ | [___] | ✓ |
| | ACTION: If yes, flag the associated data as estimated. | | | |
| 19 | Form VII (Laboratory Control Sample) (Note: LCS - not required for aqueous Hg and cyanide analyses.) | | | |
| 19.1 | Was one LCS prepared and analyzed for: | | | |
| | — each SDG? | [✓] | ___ | ___ |
| | each batch samples digested/distilled? | [✓] | ___ | ___ |
| | both AA and ICP when both are used for the same analyte? | [___] | ___ | ✓ |

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory for submittal of results of LCS. Flag as estimated (J) all the data for which LCS was not analyzed.

NOTE: If only one LCS was analyzed for more than 20 samples, then first 20 samples close to LCS do not have to be flagged as estimated.

Substitute IDL for CRDL when IDL > CRDL.
Use absolute values of sample and duplicate to calculate the difference.

| | YES | NO | N/A |
|---|---|---|---|
| **19.2 Aqueous LCS** | | | |
| Circle on each Form VII the LCS percent recoveries outside control limits (80 - 120%) except for aqueous Ag and Sb. | | | |
| Is any LCS recovery: less than 50%? | ___ | [___] | ✓ |
| between 50% and 79%? | ___ | [___] | ✓ |
| between 121% and 150%? | ___ | [___] | ✓ |
| greater than 150%? | ___ | [___] | ✓ |

ACTION: Less than 50%, reject (red-line) all data; between 50% and 79%, flag all associated data as estimated (J); between 121% and 150%, flag all positive (not flagged with a "U") results as estimated; greater than 150%, reject all positive results.

| | YES | NO | N/A |
|---|---|---|---|
| **19.3 Solid LCS** | | | |
| NOTE: 1. If "Found" value of LCS is rejectable due to duplicate injections or analytical spike recovery criteria, regardless of LCS recovery, flag the associated data as estimated (J). 2. If IDL of an analyte is equal to or greater than true value of LCS, disregard the "Action" below even though LCS is out of control limits. | | | |
| Is LCS "Found" value higher than the control limits on Form VII? | ___ | [___] | ✓ |
| ACTION: If yes, qualify all associated positive data as estimated. | | | |
| Is LCS "Found" value lower than the Control limits on Form VII? | ___ | [___] | ✓ |
| ACTION: If yes, qualify all associated data as estimated. | | | |

# TOTAL METALS
- 7 -
## LABORATORY CONTROL SAMPLE

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ002

Solid LCS Source: CPI

Aqueous LCS Source: CPI

| Analyte | Aqueous (ug/L) True | Found | %R | Solid (mg/kg) True | Found | C | Limits | | %R |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | 213.6 | 228.0 | | 159.2 | 268.0 | 107 |
| Antimony | | | | 50.00 | 48.87 | | 37.30 | 62.70 | 98 |
| Arsenic | | | | 200.0 | 192.5 | | 149.1 | 250.9 | 96 |
| Barium | | | | 200.0 | 213.6 | | 149.1 | 250.9 | 107 |
| Beryllium | | | | 5.000 | 5.069 | | 3.800 | 6.200 | 101 |
| Cadmium | | | | 5.000 | 5.053 | | 3.800 | 6.200 | 101 |
| Chromium | | | | 20.00 | 21.44 | | 15.00 | 25.00 | 107 |
| Cobalt | | | | 50.00 | 51.89 | | 37.30 | 62.70 | 104 |
| Copper | | | | 25.00 | 26.43 | | 18.70 | 31.30 | 106 |
| Iron | | | | 109.1 | 110.7 | | 81.30 | 136.9 | 101 |
| Lead | | | | 50.00 | 50.90 | | 37.30 | 62.70 | 102 |
| Manganese | | | | 50.00 | 52.62 | | 37.30 | 62.70 | 105 |
| Mercury | | | | 1.40 | 1.54 | | 1.10 | 1.70 | 110 |
| Nickel | | | | 50.00 | 51.46 | | 37.30 | 62.70 | 103 |
| Selenium | | | | 200.0 | 193.3 | | 149.1 | 250.9 | 97 |
| Silver | | | | 5.000 | 5.146 | | 3.800 | 6.200 | 103 |
| Thallium | | | | 200.0 | 203.5 | | 149.1 | 250.9 | 102 |
| Tin | | | | 100.0 | 98.47 | | 74.60 | 125.4 | 98 |
| Vanadium | | | | 50.00 | 49.98 | | 37.30 | 62.70 | 100 |
| Zinc | | | | 50.00 | 52.49 | | 37.30 | 62.70 | 105 |

000033

| | | YES | NO | N/A |
|---|---|---|---|---|
| 20 | Form IX (ICP Serial Dilution) - | | | |
| | NOTE: Serial dilution analysis is required only for initial concentrations equal to or greater than 10 x IDL. | | | |
| 20.1 | Was Serial Dilution analysis performed for: each SDG? | ✓ | | |
| | each matrix type? | ✓ | | |
| | each concentration range (i.e. low, med.)? | ✓ | | |
| | ACTION: If no for any of the above, flag as estimated all the positive data ≥ 10xIDLs or ≥ CRDL when 10xIDL ≤ CRDL for which Serial Dilution Analysis was not performed. | | | |
| 20.2 | Was field blank(s) used for Serial Dilution Analysis? | | ✓ | |
| | ACTION: If yes, flag all associated data ≥ 10 x IDL as estimated (J). If 10xIDL ≤ CRDL, flag all data ≥ CRDL. | | | |
| 20.3 | Are results outside control limit flagged with an "E" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater. | ✓ | | |
| | ACTION: If no, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative". | | | |
| 20.4 | Circle on each Form IX all percent difference that are outside the control limits for initial concentrations equal to or greater than 10 x IDLs only. | | | |
| | Are any % difference values: | | | |
| | > 10%? | | ✓ | |
| | ≥ 100%? | | ✓ | |

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# TOTAL METALS
## - 9 -
## ICP SERIAL DILUTIONS

SAMPLE NO.

LIA014DL

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ002

Matrix (soil/water): SOIL Level (low/med): LOW

Concentration Units: ug/L

| Analyte | Initial Sample Result (I) | C | Serial Dilution Result (S) | C | % Difference | Q | M |
|---|---|---|---|---|---|---|---|
| Aluminum | 143100 | | 143600 | | 0.3 | | P |
| Antimony | 20.00 | U | 100.0 | U | | | P |
| Arsenic | 32.66 | | 28.00 | B | 14.3 | | P |
| Barium | 793.7 | | 816.1 | | 2.8 | | P |
| Beryllium | 2.080 | B | 20.00 | U | | | P |
| Cadmium | 11.82 | | 9.386 | B | 20.6 | | P |
| Chromium | 888.2 | | 948.0 | | 6.7 | | P |
| Cobalt | 193.2 | | 209.8 | | 8.6 | | P |
| Copper | 337.4 | | 342.3 | | 1.4 | | P |
| Iron | 269500 | | 291000 | | 8.0 | | P |
| Lead | 31.31 | | 35.79 | | 14.3 | | P |
| Manganese | 7616 | | 8203 | | 7.7 | | P |
| Mercury | 0.284 | B | 0.295 | B | 3.9 | | CV |
| Nickel | 548.5 | | 605.9 | | 10.5 | | P |
| Selenium | 10.00 | U | 50.00 | U | | | P |
| Silver | 10.00 | U | 50.00 | U | | | P |
| Thallium | 10.00 | U | 50.00 | U | | | P |
| Tin | 50.00 | U | 250.0 | U | | | P |
| Vanadium | 525.4 | | 550.6 | | 4.8 | | P |
| Zinc | 414.1 | | 472.5 | | 14.1 | | P |

| | | YES | NO | N/A |
|---|---|---|---|---|
| | ACTION: Flag as estimated (J) all the associated sample data ≥ 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which percent difference is greater than 10% but less than 100%. Reject (red-line) all the associated sample results equal to or greater than 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which PD is greater than or equal to 100%. | | | |
| | Note: Flag or reject on Form I's only the sample results whose associated raw data are ≥ 10xIDL (or ≥ CRDL when 10xIDL≤ CRDL) | | | |
| 1.21 | Furnace Atomic Absorption (AA) QC Analysis | | | |
| 1 .1 | Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed by GFAA? | [ ] | | ✓ |
| | ACTION: If no, reject the data on Form I's for which duplicate injections were not performed. | | | |
| 1.21.2 | Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or Coefficient of Variation (CV) for concentration greater than CRDL? | [ ] | | ✓ |
| | Was a dilution analyzed for sample with analytical spike recovery less than 40%? | [ ] | | ✓ |
| | ACTION: If no for any of the above, flag all the associated data as estimated. | | | |
| 1.21.3 | Is *analytical spike recovery outside the control limits (85-115%) for any sample? | | [ ] | ✓ |
| | ACTION: If yes, flag the affected sample results if the recovery is between 10-84%; if the recovery is between 115-200%, flag the associated positive sample results as estimated; reject the associated sample results if the recovery is less than 10%; reject positive sample results if the recovery is greater than 200%. | | | |

*Analytical spike is not required on the pre-digestion spiked sample.

| | | YES | NO | N/A |
|---|---|---|---|---|
| | NOTE: Reject or flag the data only when the affected sample(s) was not subsequently analyzed by Method of Standard Addition. | | | |
| 1.22 | Form VIII (Method of Standard Addition Results) | | | |
| 1.22.1 | Present? | [ ] | | ✓ |
| | If no, is any Form I result coded with "S" or a "+"? | | [ ] | ✓ |
| | ACTION: If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII. | | | |
| 1.2 | Is coefficient of correlation for MSA less than 0.990 for any sample? | | [ ] | ✓ |
| | ACTION: If yes, reject (red-line) the affected data. | | | |
| 1.22.3 | Was *MSA required for any sample but not performed? | | [ ] | ✓ |
| | Is coefficient of correlation for MSA less than 0.995? | | [ ] | ✓ |
| | Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run? | | [ ] | ✓ |
| | ACTION: If yes for any of the above, flag all the associated data as estimated (J). | | | |
| 1.22.4 | Was proper quantitation procedure followed correctly as outlined in the SOW on page E-23? | [ ] | | ✓ |
| | ACTION: If no, note exception under Contract Problem/ Non-Compliance section of the "Data Assessment Narrative", and prepare a separate list. | | | |

* MSA is not required on LCS and prep. blank.

| | | YES | NO | N/A |
|---|---|---|---|---|
| 23 | Dissolved/Total or Inorganic/Total Analytes - | | | |
| 23.1 | Were any analyses performed for dissolved as well as total analytes on the same sample(s). | ___ | [___] | ✓ |
| | Were any analyses performed for inorganic as well as total (organic + inorganic) analytes on the same sample(s)? | ___ | [___] | ✓ |
| | NOTE: 1. If yes, prepare a list comparing differences between all dissolved (or inorganic) and total analytes. Compute the differences as a percent of the total analyte only when dissolved concentration is greater than CRDL as well as total concentration. 2. Apply the following questions only if inorganic (or dissolved ) results are (i) above CRDL, and (ii) greater than total constituents. 3. At least one preparation blank, ICS, and LCS should be analyzed in each analytical run. | | | |
| 23.2 | Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%? | ___ | [___] | ✓ |
| 23.3 | Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 50%? | ___ | [___] | ✓ |
| | ACTION: If more than 10%, flag both dissolved (or inorganic) and total values as estimated (J); if more than 50%, reject (red-line) the data for both values. | | | |
| .24 | Form I (Field Blank) - | | | |
| | (Note: Designate 'Field Blank' as such on Form I.) | | | |
| .24.1 | Circle all field blank values on Form I that are greater than CRDL, (or 2 x IDL when IDL > CRDL). | | | |
| | Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples? | [___] | ___ | ✓ |

| | YES | NO | N/A |
|---|---|---|---|
| If no, was field blank value already rejected due to other QC criteria? | [ ] | | ✓ |

ACTION: If no, reject (except field blank results) all associated positive sample data less than or equal to five times the field blank value. Reject on Form I's the soil sample results that when converted to ug/L on wet basis are less than or equal to five times the field blank value in ug/L.

.25 Form X, XI, XII (Verification of Instrumental Parameters).

.1 Is verification report present for:

| | | | |
|---|---|---|---|
| Instrument Detection Limits (quarterly)? | [✓] | | |
| ICP Interelement Correction Factors (annually)? | [✓] | | |
| ICP Linear Ranges (quarterly)? | [✓] | | |

ACTION: If no, contact TPO of the lab.

.25.2 Form X (Instrument Detection Limits) - (Note: IDL is not required for Cyanide.)

| | | | |
|---|---|---|---|
| .25.2.1 Are IDLs present for: all the analytes? | [✓] | | |
| all the instruments used? | [✓] | | |
| For both AA and ICP when both are used for the same analyte? | [ ] | | ✓ |

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

| | | | |
|---|---|---|---|
| .25.2.2 Is IDL greater than CRDL for any analyte? | | [✓] | |
| If yes, is the concentration on Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL. | [✓] | | |

| | YES | NO | N/A |
|---|---|---|---|
| **Action** : If no, flag as estimated all values less than five times IDL of the instrument whose IDL exceeds CRDL. | | | |
| ..25.3 Form XI (Linear Ranges) | | | |
| ..25.3.1 Was any sample result higher than high linear range of ICP. | | ✓ | |
| Was any sample result higher than the highest calibration standard for non-ICP parameters? | | ✓ | |
| If yes for any of the above, was the sample diluted to obtain the result on Form I? | ✓ | | |
| **ACTION**: If no, flag the result reported on Form I as estimated(J). | | | |
| .26 Percent Solids of Sediments | | | |
| 26.1 Are percent solids in sediment(s): < 50%? | | ✓ | |
| < 10%? | | ✓ | |

**ACTION**: If yes, qualify as estimated all the results of a sample that has per cent solids between 10%-50% (i.e. moisture content between 50%-90%). Reject all the results of a sample that has per cent solids less than 10% (i.e. moisture content greater than 90%).

**NOTE**: Reject or flag(J) only the sample results that were not previously rejected or flaged due to other QC criteria.

**HEARTLAND**
ENVIRONMENTAL SERVICES, INC.

# Data Validation Report

| | |
|---|---|
| SDG#: | VIEQ003 |
| Date: | September 6, 2000 |
| Client Name: | CH2M Hill |
| Project/Site Name: | Vieques |
| Date Sampled: | June 21 - 22, 2000 |
| Number of Samples: | 15 Non-Aqueous Sample(s) with 0 MS/MSD(s) |
| Laboratory: | STL |
| Validation Guidance: | National Functional Guidelines for Organic and Inorganic Data. February, 1994, Region II Modifications |
| QA/QC Level: | DQO Level IV |
| Method(s) Utilized: | SW846 Third Edition |
| Analytical Fractions: | Explosives, Nitroglycerin, PETN and Metals |

Analytical data in this report were screened to determine usability of results and also to determine contractual compliance relative to these requirements and deliverables. This screening assumes analytical results are correct as reported and merely provides an interpretation of the reported quality control results. A minimum of 10% of all laboratory calculations have been verified as part of this validation. All instrument output, i.e. spectra, chromatograms, etc., for each sample have been carefully reviewed. The end-user is urged to review the Specific Findings and associated Data Qualifications presented in this report. Annotated Form 1s or spreadsheets for all samples reviewed are included after the Data Assessment Narratives. Form 1s for MS/MSD samples or spreadsheets are not annotated.

The release of this Data Validation Report is authorized by the following signature:

Lori R. Jurneau — 9-6-00

for Eugene M. Watson, Vice President — Date

4127 Plaza 94 South • St. Charles, MO 63304
(636) 936-1332 • Fax (636) 936-1335

**SDG# VIEQ003**

**Samples and Fractions Reviewed**

Sample Identifications Analytical Fractions

| CH2M HILL ID | MATRIX | EXP | | NITR | | PETN | | MET | |
|---|---|---|---|---|---|---|---|---|---|
| LIA001 | SOIL | | X | | X | | X | | X |
| LIA002 | SOIL | | X | | X | | X | | X |
| LIA003 | SOIL | | X | | X | | X | | X |
| LIA004 | SOIL | | X | | X | | X | | X |
| LIA005 | SOIL | | X | | X | | X | | X |
| LIA006 | SOIL | | X | | X | | X | | X |
| LIA015 | SOIL | | X | | X | | X | | X |
| LIA019 | SOIL | | X | | X | | X | | X |
| LIA020 | SOIL | | X | | X | | X | | X |
| OWN-WEST-SS-01 | SOIL | | X | | X | | X | | X |
| OWN-WEST-SS-02 | SOIL | | X | | X | | X | | X |
| OWN-WEST-SS-03 | SOIL | | X | | X | | X | | X |
| OWN-WEST-SS-03D | SOIL | | X | | X | | X | | X |
| LIA001D | SOIL | | X | | X | | X | | X |
| OWN-WEST-SS-01D | SOIL | | X | | X | | X | | X |
| Total Billable Samples (Water/Soil) | | 0 | 15 | 0 | 15 | 0 | 15 | 0 | 15 |

EXP= Explosives
NITR= Nitroglycerin
PETN= Pentaerythritol Tetranitrate
MET= Metals

# DATA ASSESSMENT NARRATIVES

# DATA ASSESSMENT NARRATIVE

# EXPLOSIVES

## General

The organic findings offered in this screening report assumes that all analytical results are correct as reported and is based upon the examination of the reported holding times, blank analysis results, surrogate and matrix spike recoveries, HPLC performance, and calibration results. This report was prepared in compliance relative to the analytical and deliverable requirements specified in the SW-846 Method 8330; Region II Data Validation Guidelines, Revision 1.3, September, 1994; and DQO Level IV requirements. All comments made within this report should be considered when examining the analytical results. Please refer the specific findings found in each category to the Summary of Data Qualifications table.

## SDG# VIEQ003

A validation was performed on the Explosives data from SDG VIEQ003. The data was evaluated based on the following parameters.

| | | |
|---|---|---|
| * | • | Data Completeness |
| * | • | Holding Times |
| * | • | HPLC Performance |
| * | • | Calibrations |
| * | • | Blanks |
| * | • | Surrogate Recoveries |
| * | • | Matrix Spike/Matrix Spike Duplicates |
| * | • | Field Duplicates |
| * | • | Compound Identification |
| * | • | Compound Quantitation |

* - All criteria were met for this parameter.

## System Performance and Overall Assessment

The data did not require qualifications.

# GLOSSARY OF DATA QUALIFIERS

## QUALIFICATION CODES

**U** = Not detected

**J** = Estimated value

**UJ** = Reported quantitation limit is qualified as estimated

**NJ** = Result is considered presumptively present at an estimated concentration

**R** = Result is rejected and unusable

**D** = Result value is based on dilution analysis

## METHOD BLANK QUALIFICATION CODES

**CRQL =** The sample result for the blank contaminant is less than the sample CRQL and is less than 5X the method blank value. The sample result for the blank contaminant is rejected and the CRQL for that compound is reported.

**U =** The sample result for the blank contaminant is greater than the sample CRQL and is less than 5X the method blank value. The sample result for the blank contaminant is qualified as non detected at the compound value reported.

**No Action =** The sample result for the blank contaminant is greater than the sample CRQL and is greater than 5X the method blank value. The sample result for the blank contaminant is not qualified with any blank qualifiers.

## Two Digit Code Definitions for Comment Field

| Code | Definition |
|---|---|
| TN | Tune |
| BS | Blank Spike/LCS |
| IS | Internal Standard |
| MS | Matrix Spike and/or Matrix Spike Duplicate Recovery |
| MD | Matrix Spike/Matrix Spike Duplicate Precision |
| 2S | Second Source |
| SD | Serial Dilution |
| SS | Spiked Surrogate |
| LR | Analyte present above linear (or calibration) range |
| IC | Initial Calibration |
| CC | Continuing Calibration Verification |
| PD | Pesticide Degradation |
| LD | Lab Duplicate |
| 2C | Second Column (Confirmation) |
| HT | Holding Time |
| PS | Post Spike |
| BL | Blank |
| RE | Re-extraction |
| DL | Dilution |
| IB | In Between |
| FD | Field Duplicate |
| OT | Other |

# SUMMARY OF DATA QUALIFICATIONS

| SAMPLE ID | COMPOUND ID | DL | QL | CODE |
|---|---|---|---|---|

NO QUALIFICATIONS WERE REQUIRED.

* DL denotes the Form I qualifier supplied by the laboratory
QL denotes the qualifier used by the data validation firm
+ in the DL column denotes a positive result
- in the DL column denotes a non detect result

# DATA ASSESSMENT NARRATIVE

# NITROGLYCERIN AND PENTAERYTHRITOL TETRANITRATE

## General

The organic findings offered in this screening report assumes that all analytical results are correct as reported and is based upon the examination of the reported holding times, blank analysis results, surrogate and matrix spike recoveries, GC performance, and calibration results. This report was prepared in compliance relative to the analytical and deliverable requirements specified in the SW-846 Method 8332; Region II Data Validation Guidelines, where applicable; and DQO Level IV requirements. All comments made within this report should be considered when examining the analytical results. Please refer the specific findings found in each category to the Summary of Data Qualifications table.

## SDG# VIEQ003

A validation was performed on the Nitroglycerin and Pentaerythritol Tetranitrate data from SDG VIEQ003. The data was evaluated based on the following parameters.

| | | |
|---|---|---|
| * | • | Data Completeness |
| * | • | Holding Times |
| * | • | GC Performance |
| | • | Calibrations |
| * | • | Blanks |
| * | • | Surrogate Recoveries |
| * | • | Matrix Spike/Matrix Spike Duplicates |
| | • | Field Duplicates |
| * | • | Compound Identification |
| * | • | Compound Quantitation |

* - All criteria were met for this parameter.

**Continuing Calibration**

The continuing calibration analyzed on 07/18/00 at 09:53 exhibited one (1) compound on column C-18 with a %D greater than 15%. For the following sample and non-compliant compound, the positive results are qualified as estimated, J CC, and the non-detect results are qualified as estimated, UJ CC.

| | |
|---|---|
| OWN-WEST-SS-03D | PETN |

**Field Duplicates**

The field duplicate pair of samples OWN-WEST-SS-03 and OWN-WEST-SS-03D exhibited a high RPD for one (1) compound and required qualifications. For the following samples and non-compliant compound, the positive results are qualified as estimated, J FD.

| | |
|---|---|
| OWN-WEST-SS-03 | Nitroglycerin |
| OWN-WEST-SS-03D | |

**System Performance and Overall Assessment**

The data required qualifications.

# GLOSSARY OF DATA QUALIFIERS

## QUALIFICATION CODES

**U** = Not detected

**J** = Estimated value

**UJ** = Reported quantitation limit is qualified as estimated

**NJ** = Result is considered presumptively present at an estimated concentration

**R** = Result is rejected and unusable

**D** = Result value is based on dilution analysis

## METHOD BLANK QUALIFICATION CODES

**CRQL =** The sample result for the blank contaminant is less than the sample CRQL and is less than 5X the method blank value. The sample result for the blank contaminant is rejected and the CRQL for that compound is reported.

**U =** The sample result for the blank contaminant is greater than the sample CRQL and is less than 5X the method blank value. The sample result for the blank contaminant is qualified as non detected at the compound value reported.

**No Action =** The sample result for the blank contaminant is greater than the sample CRQL and is greater than 5X the method blank value. The sample result for the blank contaminant is not qualified with any blank qualifiers.

## Two Digit Code Definitions for Comment Field

| Code | Definition |
|---|---|
| TN | Tune |
| BS | Blank Spike/LCS |
| IS | Internal Standard |
| MS | Matrix Spike and/or Matrix Spike Duplicate Recovery |
| MD | Matrix Spike/Matrix Spike Duplicate Precision |
| 2S | Second Source |
| SD | Serial Dilution |
| SS | Spiked Surrogate |
| LR | Analyte present above linear (or calibration) range |
| IC | Initial Calibration |
| CC | Continuing Calibration Verification |
| PD | Pesticide Degradation |
| LD | Lab Duplicate |
| 2C | Second Column (Confirmation) |
| HT | Holding Time |
| PS | Post Spike |
| BL | Blank |
| RE | Re-extraction |
| DL | Dilution |
| IB | In Between |
| FD | Field Duplicate |
| OT | Other |

# SUMMARY OF DATA QUALIFICATIONS

| SAMPLE ID | COMPOUND ID | DL | QL | CODE |
|---|---|---|---|---|
| OWN-WEST-SS-03D | PETN | +/- | J/UJ | CC |
| OWN-WEST-SS-03<br>OWN-WEST-SS-03D | Nitroglycerin | + | J | FD |

* DL denotes the Form I qualifier supplied by the laboratory
QL denotes the qualifier used by the data validation firm
+ in the DL column denotes a positive result
- in the DL column denotes a non detect result

# DATA ASSESSMENT NARRATIVE
# METALS

General

The inorganic findings offered in this screening report assumes that all analytical results are correct as reported and is based upon the examination of the reported holding times, blank analysis results, matrix spike and LCS recoveries, matrix duplicates and calibration results. This report was prepared in compliance relative to the analytical and deliverable requirements specified in the SW846 methods: the Evaluation of Metals Data for the Contract Laboratory Program Jan. 1992 and DQO Level IV requirements. All comments made within this report should be considered when examining the analytical results. Please refer the specific findings found in each category to the Summary of Data Qualification table.

## SDGs # VIEQ003

A validation was performed on the Metals Data from SDG VIEQ003. The data was evaluated based on the following parameters.

| | | |
|---|---|---|
| * | ● | Data Completeness |
| * | ● | Holding Times |
| | ● | Calibrations |
| * | ● | Blanks |
| * | ● | Interferences |
| | ● | Matrix Spike Recovery |
| * | ● | Matrix Duplicates |
| * | ● | Field Duplicates |
| * | ● | Laboratory Control Samples |
| * | ● | Serial Dilutions |

* - All criteria were met for this parameter.

## Calibration Verification Standard results

1. The second CRI standards for Selenium (63%) and Thallium (62%) was below the lower control limits (<80%). All positive and non-detect results below the CRI standard plus two times the CRDL are qualified as estimated, "J" or "UJ". The second CRI standard for Iron was below the lower control limits but the data was not affected due to high concentrations of Iron in samples(OT).

   The CRI standards for Manganese and Zinc were also greater than the control limits but the data was not affected due to high concentrations of Manganese and Zinc in the samples(OT).

Matrix Spike Recovery results

2. The matrix spike recovery for soils for Aluminum (130%) was above the upper control limits (>125% but <200%). All positive results are qualified as estimated, "J" (MS).

3. All sample results left with a "B" qualifier after all other qualifications, will be qualified with a "J" (IB) qualifier in place of the "B". Value is below the CRDL but greater than the IDL.

# SUMMARY OF DATA QUALIFICATIONS

| Sample ID | Analyte | DL | QL |
|---|---|---|---|
| 1. all soil samples | Se and Tl. | +/U | J/UJ |
| 2. all soil samples | Al. | + | J |
| 3. all "B" results | all analytes | B | J |

# ANNOTATED FORM 1s

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-1

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: LIA001

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K36

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/28/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 06/30/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 98-95-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

Ex
8/31/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-2

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: LIA002

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K37

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/28/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 06/30/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 98-95-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EXK
9/31/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-3

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: LIA003

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K38

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/28/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 06/30/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 98-95-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-4

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: LIA004

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K39

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/28/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 06/30/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 98-95-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

FOM

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-5

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: LIA005

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K40

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/28/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 06/30/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 98-95-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EXR
8/31/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-6

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: LIA006

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K45

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/28/00

Concentrated Extract Volume: 20.0 (mL) Date Analyzed: 06/30/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 98-95-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EAL
8/31/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-7

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: LIA015

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K46

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/28/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 06/30/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 98-95-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EM
8/31/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-8

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: LIA019

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K47

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/28/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 06/30/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 560 | |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 98-95-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EKL
8/31/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-9

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: LIA020

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K48

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/28/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 06/30/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 98-95-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EM
8/31/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-10

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: OWN-WEST-SS-01

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K49

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/28/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 06/30/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 98-95-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EMC
9/31/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-11

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: OWN-WEST-SS-02

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K50

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/28/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 06/30/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 98-95-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EVK
8/31/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-12

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: OWN-WEST-SS-03

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K51

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/28/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 06/30/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 98-95-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EXL
9/31/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-13

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: OWN-WEST-SS-03D

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K52

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/28/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 06/30/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 98-95-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EKK
3/31/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-14

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: LIA001D

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K53

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/28/00

Concentrated Extract Volume: 20.0 (mL) Date Analyzed: 06/30/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 98-95-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EKK
8/31/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-15

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: OWN-WEST-SS-01D

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K55

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/28/00

Concentrated Extract Volume: 20.0 (mL) Date Analyzed: 06/30/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 98-95-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

EKK
8/31/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-5MS

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: 04125-5MS LIA005MS

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K41

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/28/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 06/30/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 3100 | |
| 99-35-4 | 1,3,5-TNB | 3000 | |
| 121-82-4 | RDX | 2800 | |
| 99-65-0 | 1,3-DNB | 2900 | |
| 479-45-8 | Tetryl | 2100 | |
| 355-72-78-2 | 2-AM-DNT | 2800 | |
| 19406-51-0 | 4-AM-DNT | 2900 | |
| 98-95-3 | Nitrobenzene | 2700 | |
| 118-96-7 | 2,4,6-TNT | 2800 | |
| 121-14-2 | 2,4-DNT | 2800 | |
| 606-20-2 | 2,6-DNT | 2800 | |
| 88-72-2 | 2-NT | 2500 | |
| 99-08-1 | 3-NT | 2600 | |
| 99-99-0 | 4-NT | 2500 | |

EKK
9/5/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-5MSD

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: 04125-5MSD LIA005M4

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K42

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/28/00

Concentrated Extract Volume: 20.0(mL) Date Analyzed: 06/30/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 3000 | |
| 99-35-4 | 1,3,5-TNB | 2900 | |
| 121-82-4 | RDX | 2800 | |
| 99-65-0 | 1,3-DNB | 2900 | |
| 479-45-8 | Tetryl | 2100 | |
| 355-72-78-2 | 2-AM-DNT | 2700 | |
| 19406-51-0 | 4-AM-DNT | 2800 | |
| 98-95-3 | Nitrobenzene | 2700 | |
| 118-96-7 | 2,4,6-TNT | 2800 | |
| 121-14-2 | 2,4-DNT | 2700 | |
| 606-20-2 | 2,6-DNT | 2800 | |
| 88-72-2 | 2-NT | 2400 | |
| 99-08-1 | 3-NT | 2600 | |
| 99-99-0 | 4-NT | 2400 | |

EKK
9/5/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-1

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: LIA001

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J57

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 10 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0(mL) Date Analyzed: 07/15/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1100 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1100 | U |

EK
9/1/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-2

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: LIA002

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J58

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 5 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0 (mL) Date Analyzed: 07/15/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1000 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1000 | U |

ECK
9/1/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-3

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: LIA003

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J59

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 21 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0 (mL) Date Analyzed: 07/15/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1300 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1300 | U |

EAK
9/1/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-4

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: LIA004

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J60

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 18 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0 (mL) Date Analyzed: 07/15/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1200 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1200 | U |

EXK
9/1/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-5

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: LIA005

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J61

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 15 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0 (mL) Date Analyzed: 07/15/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1200 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1200 | U |

EKK
9/1/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-6

Lab Name: STL TALLAHASSEE Lab Code: TL

SDG No.: VIEQ003

Client: Project:

Lab Sample ID: LIA006

Matrix: (soil/water) SOIL

Lab File ID: 1G14J64

Sample wt/vol: 2.0 (g/mL) G

Date Received: 06/23/00

Level: (low/med) LOW

Date Extracted: 06/30/00

% Moisture: 13 decanted: (Y/N) N

Date Analyzed: 07/15/00

Concentrated Extract Volume: 10.0 (mL)

Dilution Factor: 1.0

Injection Volume: 40.0 (uL)

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1100 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1100 | U |

EAK
9/14/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-7

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: LIA015

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J65

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 20 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0(mL) Date Analyzed: 07/15/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1200 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1200 | U |

EKL
9/1/00

FORM I SV LC

FORM I

SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-8

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: LIA019

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J66

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 11 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0 (mL) Date Analyzed: 07/15/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1600 | |
| 78-11-5 | Pentaerythritol tetranitrate | 1100 | U |

EVK
9/1/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-9

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ00I

Matrix: (soil/water) SOIL Lab Sample ID: LIA020

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J67

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 16 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0 (mL) Date Analyzed: 07/15/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1200 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1200 | U |

EKK
9/1/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-10

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: OWN-WEST-SS-01

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J68

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 7 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0(mL) Date Analyzed: 07/15/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1100 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1100 | U |

EXL
9/1/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-11

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: OWN-WEST-SS-02

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J69

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 16 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0(mL) Date Analyzed: 07/15/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1200 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1200 | U |

EW
9/1/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-12

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: OWN-WEST-SS-03

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J70

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 29 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0 (mL) Date Analyzed: 07/16/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 3600 | J FD |
| 78-11-5 | Pentaerythritol tetranitrate | 1400 | U |

EXC
7/11/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-13

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: OWN-WEST-SS-03D

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G17J28

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 25 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0(mL) Date Analyzed: 07/18/00

Injection Volume: 40.0(uL) Dilution Factor: 2.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q | |
|---|---|---|---|---|
| 55-63-0 | Nitroglycerin | 19000 | J | FD |
| 78-11-5 | Pentaerythritol tetranitrate | 2700 | ~~U~~ UJ | CC |

GKC
9/1/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-14

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: LIA001D

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G17J4

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 11 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0(mL) Date Analyzed: 07/17/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1100 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1100 | U |

EKK
9/1/00

FORM I SV LC

FORM I

# SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-15

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: OWN-WEST-SS-01D

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G17J5

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 6 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0(mL) Date Analyzed: 07/17/00

Injection Volume: 40.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 1100 | U |
| 78-11-5 | Pentaerythritol tetranitrate | 1100 | U |

EKK
9/1/00

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-5MS

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: 04125-5MS L1A005M

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J62

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 15 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0 (mL) Date Analyzed: 07/15/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 2900 | |
| 78-11-5 | Pentaerythritol tetranitrate | 1200 | U |

EJC 9/5/00

FORM I SV LC

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

04125-5MSD

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: 04125-5MSD LIA005MS

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1G14J63

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 15 decanted: (Y/N) N Date Extracted: 06/30/00

Concentrated Extract Volume: 10.0 (mL) Date Analyzed: 07/15/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 55-63-0 | Nitroglycerin | 2900 | |
| 78-11-5 | Pentaerythritol tetranitrate | 1200 | U |

EMC
9/5/00

FORM I SV LC

*Savannah Laboratories*

# TOTAL METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

LIA001

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ003

Matrix (soil/water): SOIL Lab Sample ID: S004125-1

Level (low/med): LOW Date Received: 23-JUN-2000

% Solids: 90.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 11000 | | N | P | J MS |
| 7440-36-0 | Antimony | 2.2 | U | | P | |
| 7440-38-2 | Arsenic | 3.1 | | | P | |
| 7440-39-3 | Barium | 38 | | | P | |
| 7440-41-7 | Beryllium | 0.23 | ~~B~~ | | P | JIB |
| 7440-43-9 | Cadmium | 0.56 | U | | P | |
| 7440-47-3 | Chromium | 13 | | | P | |
| 7440-48-4 | Cobalt | 10 | | | P | |
| 7440-50-8 | Copper | 24 | | | P | |
| 7439-89-6 | Iron | 26000 | | | P | |
| 7439-92-1 | Lead | 9.2 | | | P | |
| 7439-96-5 | Manganese | 670 | | | P | |
| 7439-97-6 | Mercury | 0.0093 | ~~B~~ | | CV | JIB |
| 7440-02-0 | Nickel | 6.7 | | | P | |
| 7782-49-2 | Selenium | 1.1 | U | | P | UJ OT |
| 7440-22-4 | Silver | 1.1 | U | | P | |
| 7440-28-0 | Thallium | 1.1 | U | | P | UJ OT |
| 7440-31-5 | Tin | 5.6 | U | | P | |
| 7440-62-2 | Vanadium | 66 | | | P | |
| 7440-66-6 | Zinc | 42 | | | P | |

JBW 9/5/00

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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# TOTAL METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

LIA002

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ003

Matrix (soil/water): SOIL Lab Sample ID: S004125-2

Level (low/med): LOW Date Received: 23-JUN-2000

% Solids: 95.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 24000 | | ~~N~~ | P | J M S. |
| 7440-36-0 | Antimony | 2.1 | U | | P | |
| 7440-38-2 | Arsenic | 2.6 | | | P | |
| 7440-39-3 | Barium | 48 | | | P | |
| 7440-41-7 | Beryllium | 0.30 | ~~B~~ | | P | J I B |
| 7440-43-9 | Cadmium | 0.53 | U | | P | |
| 7440-47-3 | Chromium | 29 | | | P | |
| 7440-48-4 | Cobalt | 23 | | | P | |
| 7440-50-8 | Copper | 57 | | | P | |
| 7439-89-6 | Iron | 52000 | | | P | |
| 7439-92-1 | Lead | 2.9 | | | P | |
| 7439-96-5 | Manganese | 1200 | | | P | |
| 7439-97-6 | Mercury | 0.0079 | ~~B~~ | | CV | J I B |
| 7440-02-0 | Nickel | 16 | | | P | |
| 7782-49-2 | Selenium | 1.1 | U | | P | UJ ~~EE~~ OT |
| 7440-22-4 | Silver | 1.1 | U | | P | |
| 7440-28-0 | Thallium | 1.1 | U | | P | UJ ~~EE~~ OT |
| 7440-31-5 | Tin | 5.3 | U | | P | |
| 7440-62-2 | Vanadium | 150 | | | P | |
| 7440-66-6 | Zinc | 68 | | | P | |

9/15/0

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

Form I - IN

SW-846

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# TOTAL METALS

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## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

LIA003

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ003

Matrix (soil/water): SOIL Lab Sample ID: S004125-3

Level (low/med): LOW Date Received: 23-JUN-2000

% Solids: 79.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 28000 | | ~~K~~ | P | JMS |
| 7440-36-0 | Antimony | 2.5 | U | | P | |
| 7440-38-2 | Arsenic | 7.5 | | | P | |
| 7440-39-3 | Barium | 120 | | | P | |
| 7440-41-7 | Beryllium | 0.48 | ~~B~~ | | P | JIB |
| 7440-43-9 | Cadmium | 1.0 | | | P | |
| 7440-47-3 | Chromium | 100 | | | P | |
| 7440-48-4 | Cobalt | 26 | | | P | |
| 7440-50-8 | Copper | 57 | | | P | |
| 7439-89-6 | Iron | 55000 | | | P | |
| 7439-92-1 | Lead | 11 | | | P | |
| 7439-96-5 | Manganese | 1100 | | | P | |
| 7439-97-6 | Mercury | 0.0096 | ~~B~~ | | CV | JIB |
| 7440-02-0 | Nickel | 59 | | | P | |
| 7782-49-2 | Selenium | 1.3 | U | | P | UJ ~~EE~~ OT |
| 7440-22-4 | Silver | 1.3 | U | | P | |
| 7440-28-0 | Thallium | 1.3 | U | | P | UJ ~~EE~~ OT |
| 7440-31-5 | Tin | 6.3 | U | | P | |
| 7440-62-2 | Vanadium | 140 | | | P | |
| 7440-66-6 | Zinc | 180 | | | P | |

PB 9/5/0

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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# TOTAL METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

LIA004

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ003

Matrix (soil/water): SOIL Lab Sample ID: S004125-4

Level (low/med): LOW Date Received: 23-JUN-2000

% Solids: 82.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 26000 | | ~~N~~ | P | J MS |
| 7440-36-0 | Antimony | 2.4 | U | | P | |
| 7440-38-2 | Arsenic | 4.5 | | | P | |
| 7440-39-3 | Barium | 110 | | | P | |
| 7440-41-7 | Beryllium | 0.47 | ~~B~~ | | P | J IB |
| 7440-43-9 | Cadmium | 0.61 | U | | P | |
| 7440-47-3 | Chromium | 83 | | | P | |
| 7440-48-4 | Cobalt | 32 | | | P | |
| 7440-50-8 | Copper | 48 | | | P | |
| 7439-89-6 | Iron | 59000 | | | P | |
| 7439-92-1 | Lead | 4.6 | | | P | |
| 7439-96-5 | Manganese | 1500 | | | P | |
| 7439-97-6 | Mercury | 0.011 | ~~B~~ | | CV | J IB |
| 7440-02-0 | Nickel | 45 | | | P | |
| 7782-49-2 | Selenium | 1.2 | U | | P | UJ ~~EE~~ OT |
| 7440-22-4 | Silver | 1.2 | U | | P | |
| 7440-28-0 | Thallium | 1.2 | U | | P | UJ ~~EE~~ OT |
| 7440-31-5 | Tin | 6.1 | U | | P | |
| 7440-62-2 | Vanadium | 150 | | | P | |
| 7440-66-6 | Zinc | 70 | | | P | |

PBW 9/5/03

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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# TOTAL METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

LIA005

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ003

Matrix (soil/water): SOIL Lab Sample ID: S004125-5

Level (low/med): LOW Date Received: 23-JUN-2000

% Solids: 85.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 660 | | ~~N~~ | P | J M S |
| 7440-36-0 | Antimony | 2.4 | U | | P | |
| 7440-38-2 | Arsenic | 1.0 | ~~B~~ | | P | J I B |
| 7440-39-3 | Barium | 10 | | | P | |
| 7440-41-7 | Beryllium | 0.087 | ~~B~~ | | P | J I B |
| 7440-43-9 | Cadmium | 0.59 | U | | P | |
| 7440-47-3 | Chromium | 8.8 | | | P | |
| 7440-48-4 | Cobalt | 0.35 | ~~B~~ | | P | J I B |
| 7440-50-8 | Copper | 2.1 | ~~B~~ | | P | J I B |
| 7439-89-6 | Iron | 1000 | | | P | |
| 7439-92-1 | Lead | 0.52 | ~~B~~ | | P | J I B |
| 7439-96-5 | Manganese | 36 | | | P | |
| 7439-97-6 | Mercury | 0.024 | U | | CV | |
| 7440-02-0 | Nickel | 0.82 | ~~B~~ | | P | J I B |
| 7782-49-2 | Selenium | 1.2 | U | | P | UJ ~~←~~ OT |
| 7440-22-4 | Silver | 1.2 | U | | P | |
| 7440-28-0 | Thallium | 1.2 | U | | P | UJ ~~←~~ OT |
| 7440-31-5 | Tin | 5.9 | U | | P | |
| 7440-62-2 | Vanadium | 3.6 | | | P | |
| 7440-66-6 | Zinc | 2.4 | ~~B~~ | | P | J I B |

PB 9/5/0

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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# TOTAL METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

LIA006

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ003

Matrix (soil/water): SOIL Lab Sample ID: S004125-6

Level (low/med): LOW Date Received: 23-JUN-2000

% Solids: 87.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 770 | | ~~N~~ | P | J MJ |
| 7440-36-0 | Antimony | 2.1 | U | | P | |
| 7440-38-2 | Arsenic | 2.1 | | | P | |
| 7440-39-3 | Barium | 11 | | | P | |
| 7440-41-7 | Beryllium | 0.087 | ~~B~~ | | P | JIB |
| 7440-43-9 | Cadmium | 0.52 | U | | P | |
| 7440-47-3 | Chromium | 9.1 | | | P | |
| 7440-48-4 | Cobalt | 0.37 | ~~B~~ | | P | JIB |
| 7440-50-8 | Copper | 6.4 | | | P | |
| 7439-89-6 | Iron | 1100 | | | P | |
| 7439-92-1 | Lead | 1.8 | | | P | |
| 7439-96-5 | Manganese | 40 | | | P | |
| 7439-97-6 | Mercury | 0.0041 | ~~B~~ | | CV | JIB |
| 7440-02-0 | Nickel | 0.75 | ~~B~~ | | P | JIB |
| 7782-49-2 | Selenium | 1.0 | U | | P | UJ~~EE~~ OT |
| 7440-22-4 | Silver | 1.0 | U | | P | |
| 7440-28-0 | Thallium | 1.0 | U | | P | UJ~~EE~~ OT |
| 7440-31-5 | Tin | 5.2 | U | | P | |
| 7440-62-2 | Vanadium | 3.8 | | | P | |
| 7440-66-6 | Zinc | 4.2 | | | P | |

9/5/0

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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# TOTAL METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

LIA015

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ003

Matrix (soil/water): SOIL Lab Sample ID: S004125-7

Level (low/med): LOW Date Received: 23-JUN-2000

% Solids: 80.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 820 | | ~~N~~ | P | JMS |
| 7440-36-0 | Antimony | 2.5 | U | | P | |
| 7440-38-2 | Arsenic | 2.5 | | | P | |
| 7440-39-3 | Barium | 19 | | | P | |
| 7440-41-7 | Beryllium | 0.10 | ~~B~~ | | P | JIB |
| 7440-43-9 | Cadmium | 0.63 | U | | P | |
| 7440-47-3 | Chromium | 7.2 | | | P | |
| 7440-48-4 | Cobalt | 0.38 | ~~B~~ | | P | JIB |
| 7440-50-8 | Copper | 6.5 | | | P | |
| 7439-89-6 | Iron | 1400 | | | P | |
| 7439-92-1 | Lead | 1.8 | | | P | |
| 7439-96-5 | Manganese | 58 | | | P | |
| 7439-97-6 | Mercury | 0.0099 | ~~B~~ | | CV | JIB |
| 7440-02-0 | Nickel | 0.92 | ~~B~~ | | P | JIB |
| 7782-49-2 | Selenium | 1.3 | U | | P | UJ~~EE~~ OT |
| 7440-22-4 | Silver | 1.3 | U | | P | |
| 7440-28-0 | Thallium | 1.3 | U | | P | UJ~~EE~~ OT |
| 7440-31-5 | Tin | 6.3 | U | | P | |
| 7440-62-2 | Vanadium | 5.3 | | | P | |
| 7440-66-6 | Zinc | 5.6 | | | P | |

DBW 9/5/02

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

Form I - IN

SW-846

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# TOTAL METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

LIA019

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ003

Matrix (soil/water): SOIL Lab Sample ID: S004125-8

Level (low/med): LOW Date Received: 23-JUN-2000

% Solids: 89.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 5300 | | ~~N~~ | P | J MS |
| 7440-36-0 | Antimony | 2.2 | U | | P | |
| 7440-38-2 | Arsenic | 11 | | | P | |
| 7440-39-3 | Barium | 39 | | | P | |
| 7440-41-7 | Beryllium | 0.19 | ~~B~~ | | P | J IB |
| 7440-43-9 | Cadmium | 1.6 | | | P | |
| 7440-47-3 | Chromium | 16 | | | P | |
| 7440-48-4 | Cobalt | 5.2 | | | P | |
| 7440-50-8 | Copper | 38 | | | P | |
| 7439-89-6 | Iron | 14000 | | | P | |
| 7439-92-1 | Lead | 8.6 | | | P | |
| 7439-96-5 | Manganese | 360 | | | P | |
| 7439-97-6 | Mercury | 0.012 | ~~B~~ | | CV | J IB |
| 7440-02-0 | Nickel | 7.0 | | | P | |
| 7782-49-2 | Selenium | 1.1 | U | | P | UJ ~~CC~~ OT |
| 7440-22-4 | Silver | 1.1 | U | | P | |
| 7440-28-0 | Thallium | 1.1 | U | | P | UJ ~~CC~~ OT |
| 7440-31-5 | Tin | 5.6 | U | | P | |
| 7440-62-2 | Vanadium | 41 | | | P | |
| 7440-66-6 | Zinc | 54 | | | P | |

9/5/03

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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# TOTAL METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

LIA020

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ003

Matrix (soil/water): SOIL Lab Sample ID: S004125-9

Level (low/med): LOW Date Received: 23-JUN-2000

% Solids: 84.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 10000 | | ~~N~~ | P | JMS |
| 7440-36-0 | Antimony | 2.4 | U | | P | |
| 7440-38-2 | Arsenic | 6.7 | | | P | |
| 7440-39-3 | Barium | 50 | | | P | |
| 7440-41-7 | Beryllium | 0.21 | ~~B~~ | | P | JIB |
| 7440-43-9 | Cadmium | 0.60 | U | | P | |
| 7440-47-3 | Chromium | 27 | | | P | |
| 7440-48-4 | Cobalt | 9.2 | | | P | |
| 7440-50-8 | Copper | 27 | | | P | |
| 7439-89-6 | Iron | 23000 | | | P | |
| 7439-92-1 | Lead | 31 | | | P | |
| 7439-96-5 | Manganese | 530 | | | P | |
| 7439-97-6 | Mercury | 0.017 | ~~B~~ | | CV | JIB |
| 7440-02-0 | Nickel | 13 | | | P | |
| 7782-49-2 | Selenium | 1.2 | U | | P | UJ ~~EE~~ OT |
| 7440-22-4 | Silver | 1.2 | U | | P | |
| 7440-28-0 | Thallium | 1.2 | U | | P | UJ ~~EE~~ OT |
| 7440-31-5 | Tin | 6.0 | U | | P | |
| 7440-62-2 | Vanadium | 66 | | | P | |
| 7440-66-6 | Zinc | 52 | | | P | |

9/5/0

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

*Savannah Laboratories*

# TOTAL METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

OWN-WEST-SS-01

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ003

Matrix (soil/water): SOIL Lab Sample ID: S004125-10

Level (low/med): LOW Date Received: 23-JUN-2000

% Solids: 93.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 2000 | | ~~N~~ | P | JMS |
| 7440-36-0 | Antimony | 2.0 | U | | P | |
| 7440-38-2 | Arsenic | 2.4 | | | P | |
| 7440-39-3 | Barium | 26 | | | P | |
| 7440-41-7 | Beryllium | 0.11 | ~~B~~ | | P | JIB |
| 7440-43-9 | Cadmium | 0.49 | U | | P | |
| 7440-47-3 | Chromium | 10 | | | P | |
| 7440-48-4 | Cobalt | 1.4 | | | P | |
| 7440-50-8 | Copper | 7.0 | | | P | |
| 7439-89-6 | Iron | 3700 | | | P | |
| 7439-92-1 | Lead | 2.4 | | | P | |
| 7439-96-5 | Manganese | 150 | | | P | |
| 7439-97-6 | Mercury | 0.015 | ~~B~~ | | CV | JIB |
| 7440-02-0 | Nickel | 2.2 | ~~B~~ | | P | JIB |
| 7782-49-2 | Selenium | 0.98 | U | | P | UJ~~EC~~ OT |
| 7440-22-4 | Silver | 0.98 | U | | P | |
| 7440-28-0 | Thallium | 0.98 | U | | P | UJ~~EC~~ OT |
| 7440-31-5 | Tin | 4.9 | U | | P | |
| 7440-62-2 | Vanadium | 7.2 | | | P | |
| 7440-66-6 | Zinc | 36 | | | P | |

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Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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# TOTAL METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

OWN-WEST-SS-02

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ003

Matrix (soil/water): SOIL Lab Sample ID: S004125-11

Level (low/med): LOW Date Received: 23-JUN-2000

% Solids: 84.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 19000 | | ~~N~~ | P | J MS |
| 7440-36-0 | Antimony | 2.4 | U | | P | |
| 7440-38-2 | Arsenic | 6.0 | | | P | |
| 7440-39-3 | Barium | 270 | | | P | |
| 7440-41-7 | Beryllium | 0.48 | | | P | |
| 7440-43-9 | Cadmium | 0.60 | U | | P | |
| 7440-47-3 | Chromium | 55 | | | P | |
| 7440-48-4 | Cobalt | 21 | | | P | |
| 7440-50-8 | Copper | 71 | | | P | |
| 7439-89-6 | Iron | 51000 | | | P | |
| 7439-92-1 | Lead | 4.6 | | | P | |
| 7439-96-5 | Manganese | 1400 | | | P | |
| 7439-97-6 | Mercury | 0.021 | ~~B~~ | | CV | J IB |
| 7440-02-0 | Nickel | 25 | | | P | |
| 7782-49-2 | Selenium | 1.2 | U | | P | UJ ~~EE~~ OT |
| 7440-22-4 | Silver | 1.2 | U | | P | |
| 7440-28-0 | Thallium | 1.2 | U | | P | UJ ~~EE~~ OT |
| 7440-31-5 | Tin | 6.0 | U | | P | |
| 7440-62-2 | Vanadium | 110 | | | P | |
| 7440-66-6 | Zinc | 120 | | | P | |

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Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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# TOTAL METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

OWN-WEST-SS-03

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ003

Matrix (soil/water): SOIL Lab Sample ID: S004125-12

Level (low/med): LOW Date Received: 23-JUN-2000

% Solids: 71.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 15000 | | ~~N~~ | P | JMS |
| 7440-36-0 | Antimony | 2.8 | U | | P | |
| 7440-38-2 | Arsenic | 3.5 | | | P | |
| 7440-39-3 | Barium | 220 | | | P | |
| 7440-41-7 | Beryllium | 0.44 | ~~B~~ | | P | JIB |
| 7440-43-9 | Cadmium | 0.70 | U | | P | |
| 7440-47-3 | Chromium | 40 | | | P | |
| 7440-48-4 | Cobalt | 21 | | | P | |
| 7440-50-8 | Copper | 52 | | | P | |
| 7439-89-6 | Iron | 41000 | | | P | |
| 7439-92-1 | Lead | 15 | | | P | |
| 7439-96-5 | Manganese | 1700 | | | P | |
| 7439-97-6 | Mercury | 0.069 | | | CV | |
| 7440-02-0 | Nickel | 14 | | | P | |
| 7782-49-2 | Selenium | 1.4 | U | | P | UJ~~EE~~ OT |
| 7440-22-4 | Silver | 1.4 | U | | P | |
| 7440-28-0 | Thallium | 1.4 | U | | P | UJ~~EE~~ OT |
| 7440-31-5 | Tin | 7.0 | U | | P | |
| 7440-62-2 | Vanadium | 77 | | | P | |
| 7440-66-6 | Zinc | 170 | | | P | |

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Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

Form I - IN

SW-846

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# TOTAL METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

OWN-WEST-SS-03D

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ003

Matrix (soil/water): SOIL Lab Sample ID: S004125-13

Level (low/med): LOW Date Received: 23-JUN-2000

% Solids: 75.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 16000 | | ~~N~~ | P | J M J |
| 7440-36-0 | Antimony | 2.7 | U | | P | |
| 7440-38-2 | Arsenic | 3.2 | | | P | |
| 7440-39-3 | Barium | 210 | | | P | |
| 7440-41-7 | Beryllium | 0.42 | ~~B~~ | | P | J I B |
| 7440-43-9 | Cadmium | 0.67 | U | | P | |
| 7440-47-3 | Chromium | 34 | | | P | |
| 7440-48-4 | Cobalt | 19 | | | P | |
| 7440-50-8 | Copper | 50 | | | P | |
| 7439-89-6 | Iron | 41000 | | | P | |
| 7439-92-1 | Lead | 13 | | | P | |
| 7439-96-5 | Manganese | 1600 | | | P | |
| 7439-97-6 | Mercury | 0.048 | | | CV | |
| 7440-02-0 | Nickel | 15 | | | P | |
| 7782-49-2 | Selenium | 1.3 | U | | P | UJ ~~EE~~ OT |
| 7440-22-4 | Silver | 1.3 | U | | P | |
| 7440-28-0 | Thallium | 1.3 | U | | P | UJ ~~EE~~ OT |
| 7440-31-5 | Tin | 6.7 | U | | P | |
| 7440-62-2 | Vanadium | 74 | | | P | |
| 7440-66-6 | Zinc | 160 | | | P | |

PBA 9/5/0

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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# TOTAL METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

LIA001D

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ003

Matrix (soil/water): SOIL Lab Sample ID: S004125-14

Level (low/med): LOW Date Received: 23-JUN-2000

% Solids: 89.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 11000 | | ~~N~~ | P | J MS |
| 7440-36-0 | Antimony | 2.2 | U | | P | |
| 7440-38-2 | Arsenic | 3.5 | | | P | |
| 7440-39-3 | Barium | 38 | | | P | |
| 7440-41-7 | Beryllium | 0.28 | ~~B~~ | | P | J IB |
| 7440-43-9 | Cadmium | 0.56 | U | | P | |
| 7440-47-3 | Chromium | 14 | | | P | |
| 7440-48-4 | Cobalt | 11 | | | P | |
| 7440-50-8 | Copper | 25 | | | P | |
| 7439-89-6 | Iron | 29000 | | | P | |
| 7439-92-1 | Lead | 9.2 | | | P | |
| 7439-96-5 | Manganese | 700 | | | P | |
| 7439-97-6 | Mercury | 0.0089 | ~~B~~ | | CV | J IB |
| 7440-02-0 | Nickel | 7.4 | | | P | |
| 7782-49-2 | Selenium | 1.1 | U | | P | UJ~~EE~~ OT |
| 7440-22-4 | Silver | 1.1 | U | | P | |
| 7440-28-0 | Thallium | 1.1 | U | | P | UJ~~EE~~ OT |
| 7440-31-5 | Tin | 5.6 | U | | P | |
| 7440-62-2 | Vanadium | 65 | | | P | |
| 7440-66-6 | Zinc | 44 | | | P | |

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Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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# TOTAL METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

OWN-WEST-SS-01D

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ003

Matrix (soil/water): SOIL Lab Sample ID: S004125-15

Level (low/med): LOW Date Received: 23-JUN-2000

% Solids: 94.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 2100 | | ~~N~~ | P | J MJ |
| 7440-36-0 | Antimony | 2.1 | U | | P | |
| 7440-38-2 | Arsenic | 2.2 | | | P | |
| 7440-39-3 | Barium | 26 | | | P | |
| 7440-41-7 | Beryllium | 0.12 | ~~B~~ | | P | J IB |
| 7440-43-9 | Cadmium | 0.53 | U | | P | |
| 7440-47-3 | Chromium | 11 | | | P | |
| 7440-48-4 | Cobalt | 1.2 | | | P | |
| 7440-50-8 | Copper | 7.1 | | | P | |
| 7439-89-6 | Iron | 5000 | | | P | |
| 7439-92-1 | Lead | 2.6 | | | P | |
| 7439-96-5 | Manganese | 140 | | | P | |
| 7439-97-6 | Mercury | 0.018 | ~~B~~ | | CV | J IB |
| 7440-02-0 | Nickel | 2.4 | ~~B~~ | | P | J IB |
| 7782-49-2 | Selenium | 1.1 | U | | P | UJ ~~EE~~ OT |
| 7440-22-4 | Silver | 1.1 | U | | P | |
| 7440-28-0 | Thallium | 1.1 | U | | P | UJ ~~EE~~ OT |
| 7440-31-5 | Tin | 5.3 | U | | P | |
| 7440-62-2 | Vanadium | 7.3 | | | P | |
| 7440-66-6 | Zinc | 39 | | | P | |

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Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

# DATA VALIDATION WORKSHEETS

DPO: [ ]ACTION [ ]FYI REGION II

# ORGANIC REGIONAL DATA ASSESSMENT SUMMARY

CASE/SAS NO.: _____ LABORATORY: STL Tallahassee

SDG NO.: VIEQ003 DATA USER: EPA Region II

SOW: ~~OLM03.2~~ SW846 REVIEW COMPLETION DATE: 8/31/00

NO. OF SAMPLES: ____ WATER 15 SOIL ____ OTHER

REVIEWER: [ ] ESD [ ] ESAT [✓] OTHER, CONTRACTOR HESI

| QC ITEM | VOA | BNA | PES | EXP | 8332 |
|---|---|---|---|---|---|
| HOLDING TIMES | | | | O | O |
| GC-MS PERFORMANCE | | | | O | O |
| INITIAL CALIBRATIONS | | | | O | O |
| CONTINUING CAL | | | | O | X |
| FIELD BLANKS (F = | | | | — | — |
| LABORATORY BLANKS | | | | O | O |
| SURROGATES | | | | O | O |
| MATRIX MS/MSD | | | | O | O |
| QC SAMPLES (LCS, PVS) | | | | O | X * |
| INTERNAL STANDARDS | | | | — | — |
| COMPOUND ID | | | | O | O |
| COMPOUND Quant | | | | O | O |
| SYSTEM PERFORMANCE | | | | O | O |
| OVERALL ASSESSMENT | | | | O | O |

O = No problems or minor problems that do not affect data usability.
X = No more than about 5% of the data points are qualified as either estimated or unusable.
M = More than about 5% of the data points are qualified as either estimated or unusable.
Z = More than about 5% of the data points are qualified as unusable.

* field Dup

DPO ACTION ITEMS: _____

YES NO N/A

CASE NUMBER: VIEQ003 LAB: STL Tallahassee

SITE: CH2M Hill - Vieques PR (Camp Garcia Live Impact Area)

1.0 Introduction

1.1 The attached Standard Operating Procedure (SOP) is applicable to nitro substituted aromatics and nitro substituted amines by High Performance Liquid Chromatography (HPLC) data. Its scope is not only to facilitate the data validation process of the data reported by the contracting laboratory but also to ensure that the data is being reviewed in a uniform manner.

1.2 The SOP is based upon the quality control and quality assurance requirement specified in the analytical **Method 8330, November 1992 (Revision 0).**

2.0 Responsibilities

2.1 The reviewer must be knowledgeable of the analytical method and its QC criteria.

2.2 The reviewer must complete and/or file the following:

**Data Assessment Checklist**- The data reviewer evaluates each criterion carefully and checks if data is in compliance, non-compliance or not applicable.

**Data Assessment Narrative**- The data reviewer must present professional judgement, address areas of concern and comment on the validity of the overall data package. The reviewer must explain the reasons for rejecting and/or qualifying the data.

**Rejection Summary Form**-The reviewer must submit a completed form using a ratio format.

**Organic Regional Data Assessment Summary**- A completed form must be submitted.

**Telephone Record Log**-All phone conversations must be transcribed by the reviewer. Upon completion of the data review, the original telephone logis attached to the data assessment narrative.

| | YES | NO | N/A |
|---|---|---|---|
| **3.0 Data Completeness and Deliverables** | | | |
| 3.1 Have any missing deliverables been received and added to the data package? | [ ] | | ✓ |
| ACTION: Call lab for explanation/resubmittal of any missing deliverables. If lab cannot provide them, note the effect on review of the package under the "Contract Problems/Non-Compliance" section of reviewer narrative. | | | |
| 3.2 Was SAS-request included with package? | [ ] | ✓ | |
| If no, a SAS-request can be retrieved from RSCC. | | | |
| **4.0 Cover Letter SDG Narrative** | | | |
| 4.1 Is the Narrative or Cover Letter Present? | ✓ | | |
| 4.2 Are Case Number and/or SAS number contained in the Narrative or Cover letter? SDG number | ✓ | | |
| **5.0 Traffic Reports and Laboratory Narrative** | | | |
| 5.1 Are Traffic Report Forms present for all samples? | ✓ | | |
| ACTION: If no, contact lab for replacement of missing or illegible copies. | | | |
| 5.2 Do Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data? | | ✓ | |
| NOTE: Samples are not preserved. | | | |
| ACTION: If samples were not iced upon receipt at the laboratory, flag all positive results "J" and all non-detects "UJ". | | | |

YES NO N/A

NOTE: Samples must be kept below 4°C from the time of collection through analysis. Degradation of some compounds occurs with heat. Samples should not be exposed to sunlight or temperatures above room temperature.

6.0 Special QC

6.1 Prior to preparation of stock solutions, acetonitrile, methanol, and water should be analyzed to determine possible interferences with analyte peaks. A different batch of solvent should be used if contamination is present.

6.2 Chromatograms are to be submitted showing that there are no interferences with analyte peaks.

Are these chromatograms present in package? [ ] ___ ✓

Are the chromatograms free of interferences? [ ] ___ ✓

ACTION: Ask lab for resubmittals. If deliverables are unavailable, judge the effect on the validity of the data. If questionable, contact SMO and note in data assessment.

7.0 Holding Times

7.1 Have any technical holding times, determined from date of collection to date of analysis, been exceeded?

A. For aqueous samples 7 days from sample collection to extraction ___ [ ] ✓

B. For soil/sediment samples 14 days from sample collection to extraction ___ [✓] ___
S- 6/21, 6/22 e- 6/28

C. For all samples extracts 40 days from time of extraction to time of analysis ___ [✓] ___
a- 6/30

YES NO N/A

Holding Time Violations
Table 1

(See Traffic Report)

| Sample ID | Date Sampled | Date Received | Date Lab Extracted | Date Analyzed |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

ACTION: If technical holding times are exceeded, flag all positive results as estimated ("J") and sample quantitation limits as estimated ("UJ"), and document in the narrative that holding times were exceeded. The reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results must be qualified "J", but the reviewer may determine that non-detect data are unusable (R).

8.0 Surrogate Recovery

8.1 Are the Organic Analysis Data Sheets (Form I) present and complete with surrogate recoveries for each of the following matrices:

a. Water? [ ] ___ ✓

b. Soil/Solid? [✓] ___ ___

ACTION: Call lab for explanation/resubmittals. If missing deliverables or information are unavailable document the effect in the data assessment.

YES NO N/A

8.2 Was the surrogate % recovery out of specifications for any field sample, method blank or QC sample? lab used 22-128% — [✓] —

8.3 Were surrogate retention times (RT) within ± 1.0% of the mean surrogate RT calculated from the initial calibration? [✓] — —

ACTION: Circle outliers in red.

ACTION: If the retention time shift (RTS) or % recovery of the surrogate in the field or QC samples is out of specification, then all associated sample data should be qualified. Use **Table 2** below as a guide.

**Surrogate Recovery**

**TABLE 2**

**The following table summarizes the surrogate recovery criteria and the data qualifica guidelines for all associated field samples.**

| SURROGATE | NOT QUALIFIED | J | R | N |
|---|---|---|---|---|
| % RECOVERY - FIELD SAMPLES | | | | |
| Detects | 50 - 125% | < 50%; > 125% | | |
| Non-detects | ≥ 10% | < 10%* | < 10%* | |
| % RECOVERY - BLANKS AND QC SAMPLES ** | | | | |
| Detects | 50 - 125% | < 50%; > 125% | | |
| Non-detects | ≥ 20% | 10 - 19% | < 10% | |
| RTS - field samples | ± 1.0% | | > 1.5%; < -1.5% * | ± 1.1 - 1.5% * |
| RTS - QC samples | ± 1.0% | | > 1.5%; < -1.5% * | ± 1.1 - 1.5% * |

* Use professional judgement.

** If the surrogate recovery in a QC sample or blank was less than 50 percent or greater than 125 percent, then the field sample data should be qualified if the surrogate i the field sample is outside 50 - 125 percent recovery.

FORM 2
SOIL SV LC SURROGATE RECOVERY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Level: (low/med) LOW

| | CLIENT SAMPLE NO. | S1 (DNT) # | S2 # | S3 # | S4 # | S5 # | S6 # | S7 # | S8 # | TOT OUT |
|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0628XMB | 104 | | | | | | | | 0 |
| 02 | 0628XMBLCS | 104 | | | | | | | | 0 |
| 03 | 04125-1 | 100 | | | | | | | | 0 |
| 04 | 04125-2 | 104 | | | | | | | | 0 |
| 05 | 04125-3 | 104 | | | | | | | | 0 |
| 06 | 04125-4 | 108 | | | | | | | | 0 |
| 07 | 04125-5 | 104 | | | | | | | | 0 |
| 08 | 04125-5MS | 108 | | | | | | | | 0 |
| 09 | 04125-5MSD | 108 | | | | | | | | 0 |
| 10 | 04125-6 | 108 | | | | | | | | 0 |
| 11 | 04125-7 | 108 | | | | | | | | 0 |
| 12 | 04125-8 | 108 | | | | | | | | 0 |
| 13 | 04125-9 | 104 | | | | | | | | 0 |
| 14 | 04125-10 | 108 | | | | | | | | 0 |
| 15 | 04125-11 | 112 | | | | | | | | 0 |
| 16 | 04125-12 | 104 | | | | | | | | 0 |
| 17 | 04125-13 | 104 | | | | | | | | 0 |
| 18 | 04125-14 | 108 | | | | | | | | 0 |
| 19 | 04125-15 | 100 | | | | | | | | 0 |
| 20 | | | | | | | | | | |
| 21 | | | | | | | | | | |
| 22 | | | | | | | | | | |
| 23 | | | | | | | | | | |
| 24 | | | | | | | | | | |
| 25 | | | | | | | | | | |
| 26 | | | | | | | | | | |
| 27 | | | | | | | | | | |
| 28 | | | | | | | | | | |
| 29 | | | | | | | | | | |
| 30 | | | | | | | | | | |

S1 (DNT) = 3,4-Dinitrotoluene QC LIMITS (22-128)

# Column to be used to flag recovery values
* Values outside of laboratory QC limits
D Sample diluted

YES NO N/A

8.4 Are there any transcription/calculation errors between raw data and surrogate recoveries on Forms: __ [✓] __

ACTION: If large errors exist, call lab for explanation/ resubmittal, make necessary corrections and note errors in the data assessment.

9.0 QC Check Reference Sample

9.1 Is the QC Check Reference Sample Recovery Form present? (Created by Lab) [ ] __ [✓]

9.2 Was the QC Check Reference Sample analyzed at the required frequency (once per SDG or every 20 samples, for each matrix? [ ] __ [✓]

NOTE: The QC Check Form has to be created by the Lab. Concentration of the spiking solution is 5-10 times the estimated quantitation limits for all analytes listed in section 12 of the SAS.

NOTE: QC Check Reference Sample information is important, data is used to judge extraction efficiency.

ACTION: If any QC Check data are missing, call the lab for explanation/resubmittal. If the lab cannot provide missing deliverables, document the effect on the validity of the data in the data assessment. Positive hits should be flagged "J" and non-detects should be flagged "R".

9.3 How many QC check recoveries are outside QC limits of 70-125%?

| Water | Soil |
|---|---|
| NA out of ___ | NA out of ___ |

ACTION: If any recovery is greater than 125%, positive results should be flagged "J" for the affected compound.

YES NO N/A

When two or more analytes have recoveries above 10% but below 70% all associated data should be flagged "J" (positive and non-detects).

When one or more analytes have recoveries below 10% qualify all associated data "R".

Note in data assessment. If further assistance is required, contact SMO for instructions.

It should be noted for TPO action, if a laboratory fails to analyze a QC Check Reference Sample or if a laboratory consistently fails to generate acceptable recoveries.

10.0 Calibration Data

10.1 Initial Calibration

The initial calibration standards must be analyzed daily prior to any sample analysis. The lab may have to create two sets of initial standard solutions if several analytes coelute.

The initial calibration curve must be injected in triplicate for each of the 5 levels.

triplicate not required

10.2 Are the chromatograms and data system printouts (Quant reports) present for initial and triplicate calibrations? ✓ ___ ___

10.3 Are the modified Initial Calibration Forms (Pest VI-1, VI-2 Forms) present? ✓ ___ ___

10.4 Are modified Forms present and completed for each analytical sequence and each column? ✓ ___ ___

ACTION: If any Calibration Standard chromatograms and forms are missing, contact the lab for resubmittals.

10.5 Are there any transcription/calculation errors between raw data and Forms? ___ ✓ ___

YES NO N/A

ACTION: If large errors exist, call lab for explanation/resubmittal. Make necessary corrections and document effect in data assessment. Check at least 2-3 values from each calibration standard and more if errors are found.

10.6 Do all standard retention times, including each compound in each level, fall within the windows established during the initial calibration analytical sequence? ✓ ___ ___

NOTE: All injections are taken into account: A total of 15 injections (three injections for each of the five levels). If the lab had to run two sets of standards there would be a total of 30 injections.

ACTION: The average retention time (RT) for each analyte is determined from the mean of the triplicate injection for each 5 point level of the initial calibration. The RT window for each analyte is equal to the average RT ± three (3) times the standard deviation. If the standard deviation comes out to equal zero, the window will be ±0.08. The (Pest form VI-1) Form should be modified to include the average of the three injections for each of the 5 levels.

10.7 Are the linearity criteria for the initial analyses within limits for both columns? (%RSD must be ≤20%) OR $R^2 \geq 0.990$ ✓ ___ ___

ACTION: If no, qualify all associated positive results generated during the sequence "J" and all non-detects "UJ". When %RSD >90%, flag all non-detects results for that analyte as unusable "R".

10.8 Do the standards show degradation products of tetryl? ___ ✓ ___

NOTE: Degradation products of tetryl appear as a shoulder on the TNT peak. Peak heights rather than peak areas should be used when tetryl is present in concentrations that are significant relative to the concentration of TNT.

YES NO N/A

ACTION: If degradation is detected or suspected, qualify positive hits for tetryl and TNT as "J". If degradation is suspected, and tetryl is reported as non-detected, qualify the analyte as "UJ". Note in data assessment.

11.0 Continuing Calibration

11.1 Are Forms (Modified Pest VII-2) present for each continuing calibration? ✓ ___ ___

11.2 Are there any transcription/calculation errors between raw data and forms? ___ ✓ ___

ACTION: If large errors exist, call lab for explanation/resubmittals. Make any necessary corrections, and document effect in data assessment. Check at least 2-3 values from each calibration standard and more if errors are found.

11.3 Were continuing calibrations analyzed at the required frequency? (standard should bracket every 10 samples). ✓ ___ ___

ACTION: Criteria must be met. Determine effect on data. At a minimum, all data should be qualified "J", but the reviewer may determine that data are unusable "R". Document the data qualifications in data assessment.

11.4 Do all standard retention times for each continuing calibration fall within the windows established by the initial calibration? ✓ ___ ___

ACTION: If no, beginning with the samples which followed the last in-control standard, check to see if the chromatograms contain interfering peaks. If peaks are present, qualify positive results and non-detects for analytes outside their respective windows as unusable "R".

11.5 Are the RPD values for all continuing calibration standards ≤15%? ✓ ___ ___

YES NO N/A

ACTION: If the %RPD is >15% for the analyte being quantitated, qualify all associated positive results "J" and non-detects "UJ". The "associated samples" are those which followed the last in-control standard up to the next passing standard. If the %RPD is >90%, flag all non-detects for that analyte unusable "R".

11.6 Compare the peak heights of continuing calibration checks obtained during the day with peak heights obtained from first calibration check of the sequence.

Is the percent RPD for peak heights less than 20% for each of the analytes of each of the Continuing Calibration Checks? [ ] ___ ✓

ACTION: Use professional judgement to verify the reliability of the data.

12.0 Analytical Sequence

12.1 Is Form VIII present and completed for each column and each period of analyses? ✓ ___ ___
modified Form 8

ACTION: If no, contact lab for resubmittals.

12.2 Was the proper analytical sequence followed for each initial calibration and subsequent analyses? ✓ ___ ___

NOTE: Sequence is as follows: 5 point Initial Calibration, Method Blank, Laboratory Control Sample (LCS), Continuing Calibration, 10 sample extracts, Continuing Calibration, 10 sample extracts and so on. The sequence must always end with a Continuing Calibration. All sample extracts, Method Blanks, LCS, and continuing calibrations must be analyzed within 24 hours after the analysis of the Initial Calibration Standards and the calculation of the RT windows.

ACTION: Flag "J" all data generated outside an acceptable twenty-four hour sequence starting after the calculation of the RT windows resulting from the initial calibration unless the daily calibration meets the calibration criteria for all target analytes. If the daily calibration standard does not meet the

SAMPLE INFORMATION SUMMARY

Client SDG: VIEQ003 Sample Fraction: SV LC 8330

| Group | Batch | DataFile | Sample Type | Client Id | Lab ID | SmplRef | Lab Prep | SDG |
|---|---|---|---|---|---|---|---|---|
| 7428806 | 1K0614.b | 1F14K4.d | CALIB_1 | | CAL1.46123 | 7428875 | | |
| 7428806 | 1K0614.b | 1F14K6.d | CALIB_2 | | CAL2.46124 | 7429667 | | |
| 7428806 | 1K0614.b | 1F14K8.d | CALIB_3 | | CAL3.46125 | 7429669 | | |
| 7428806 | 1K0614.b | 1F14K10.d | CALIB_4 | | CAL4.46126 | 7429660 | | |
| 7428806 | 1K0614.b | 1F14K12.d | CALIB_5 | | CAL5.46127 | 7429662 | | |
| 7428806 | 1K0614.b | 1F14K14.d | CALIB_6 | | CAL6.46128 | 7429664 | | |
| 7428806 | 1K0629.b | 1F29K32.d | CCALIB_4 | | MED.46126 | 7428894 | | |
| 7428806 | 1K0629.b | 1F29K44.d | CCALIB_4 | | MED.46126 | 7428948 | | |
| 7428806 | 1K0629.b | 1F29K57.d | CCALIB_4 | | MED.46126 | 7429923 | | |
| 7428806 | 1K0629.b | 1F29K33.d | BLANK | 0628XMB | METHOD BLANK | 7430310 | 0628X | VIEQ003 |
| 7428806 | 1K0629.b | 1F29K34.d | LCS | 0628XMBLCS | LAB SPIKE | 7430311 | 0628X | VIEQ003 |
| 7428806 | 1K0629.b | 1F29K41.d | MS | 04125-5MS | 04125-5MS | 7430315 | 0628X | VIEQ003 |
| 7428806 | 1K0629.b | 1F29K42.d | MSD | 04125-5MSD | 04125-5MSD | 7430316 | 0628X | VIEQ003 |
| 7428806 | 1K0629.b | 1F29K36.d | SAMPLE | 04125-1 | LIA001 | 7430080 | 0628X | VIEQ003 |
| 7428806 | 1K0629.b | 1F29K37.d | SAMPLE | 04125-2 | LIA002 | 7430152 | 0628X | VIEQ003 |
| 7428806 | 1K0629.b | 1F29K38.d | SAMPLE | 04125-3 | LIA003 | 7430153 | 0628X | VIEQ003 |
| 7428806 | 1K0629.b | 1F29K39.d | SAMPLE | 04125-4 | LIA004 | 7430154 | 0628X | VIEQ003 |
| 7428806 | 1K0629.b | 1F29K40.d | SAMPLE | 04125-5 | LIA005 | 7430155 | 0628X | VIEQ003 |
| 7428806 | 1K0629.b | 1F29K45.d | SAMPLE | 04125-6 | LIA006 | 7430085 | 0628X | VIEQ003 |
| 7428806 | 1K0629.b | 1F29K46.d | SAMPLE | 04125-7 | LIA015 | 7430301 | 0628X | VIEQ003 |
| 7428806 | 1K0629.b | 1F29K47.d | SAMPLE | 04125-8 | LIA019 | 7430300 | 0628X | VIEQ003 |
| 7428806 | 1K0629.b | 1F29K48.d | SAMPLE | 04125-9 | LIA020 | 7430299 | 0628X | VIEQ003 |
| 7428806 | 1K0629.b | 1F29K49.d | SAMPLE | 04125-10 | OWN-WEST-SS-01 | 7430298 | 0628X | VIEQ003 |
| 7428806 | 1K0629.b | 1F29K50.d | SAMPLE | 04125-11 | OWN-WEST-SS-02 | 7430297 | 0628X | VIEQ003 |
| 7428806 | 1K0629.b | 1F29K51.d | SAMPLE | 04125-12 | OWN-WEST-SS-03 | 7430091 | 0628X | VIEQ003 |
| 7428806 | 1K0629.b | 1F29K52.d | SAMPLE | 04125-13 | OWN-WEST-SS-03D | 7430092 | 0628X | VIEQ003 |
| 7428806 | 1K0629.b | 1F29K53.d | SAMPLE | 04125-14 | LIA001D | 7430296 | 0628X | VIEQ003 |
| 7428806 | 1K0629.b | 1F29K55.d | SAMPLE | 04125-15 | OWN-WEST-SS-01D | 7430295 | 0628X | VIEQ003 |
| 7429267 | 1L0701.b | 1G01L3.d | CALIB_4 | | L1.4.461511 | 7429469 | | |
| 7429267 | 1L0701.b | 1G01L4.d | CALIB_4 | | L2.4.461517 | 7429470 | | |
| 7429267 | 1L0701.b | 1G01L5.d | CALIB_1 | | L1.1.46158 | 7429471 | | |
| 7429267 | 1L0701.b | 1G01L6.d | CALIB_1 | | L2.1.461514 | 7429472 | | |
| 7429267 | 1L0701.b | 1G01L7.d | CALIB_2 | | L1.2.46159 | 7429473 | | |
| 7429267 | 1L0701.b | 1G01L8.d | CALIB_2 | | L2.2.461515 | 7429474 | | |
| 7429267 | 1L0701.b | 1G01L9.d | CALIB_3 | | L1.3.461510 | 7429475 | | |
| 7429267 | 1L0701.b | 1G01L10.d | CALIB_3 | | L2.3.461516 | 7429464 | | |
| 7429267 | 1L0701.b | 1G01L11.d | CALIB_5 | | L1.5.461512 | 7429465 | | |
| 7429267 | 1L0701.b | 1G01L12.d | CALIB_5 | | L2.5.461518 | 7429466 | | |
| 7429267 | 1L0701.b | 1G01L13.d | CALIB_6 | | L1.6.461513 | 7429467 | | |
| 7429267 | 1L0701.b | 1G01L14.d | CALIB_6 | | L2.6.461519 | 7429468 | | |
| 7429775 | 1L0703.b | 1G03L1.d | CCALIB_3 | | L1.3.461510 | 7429873 | | |
| 7429775 | 1L0703.b | 1G03L2.d | CCALIB_3 | | L2.3.461516 | 7429879 | | |
| 7429775 | 1L0703.b | 1G03L13.d | CCALIB_3 | | L1.3.461510 | 7429875 | | |
| 7429775 | 1L0703.b | 1G03L14.d | CCALIB_3 | | L2.3.461516 | 7429877 | | |
| 7429775 | 1L0703.b | 1G03L24.d | CCALIB_3 | | L1.3.461510 | 7429881 | | |
| 7429775 | 1L0703.b | 1G03L25.d | CCALIB_3 | | L2.3.461516 | 7429883 | | |
| 7429775 | 1L0703.b | 1G03L6.d | BLANK | 0628XMB | METHOD BLANK | 7430254 | 0628X | VIEQ003 |
| 7429775 | 1L0703.b | 1G03L7.d | SAMPLE | 04125-1 | LIA001 | 7430239 | 0628X | VIEQ003 |
| 7429775 | 1L0703.b | 1G03L8.d | SAMPLE | 04125-2 | LIA002 | 7430240 | 0628X | VIEQ003 |
| 7429775 | 1L0703.b | 1G03L9.d | SAMPLE | 04125-3 | LIA003 | 7430241 | 0628X | VIEQ003 |
| 7429775 | 1L0703.b | 1G03L10.d | SAMPLE | 04125-4 | LIA004 | 7430242 | 0628X | VIEQ003 |
| 7429775 | 1L0703.b | 1G03L11.d | SAMPLE | 04125-5 | LIA005 | 7430243 | 0628X | VIEQ003 |

| QCGroup | Batch | DataFile | Sample Type | Client Id | Lab ID | SmplRef | Lab Prep | SDG |
|---|---|---|---|---|---|---|---|---|
| 7429775 | 1L0703.b | 1G03L12.d | SAMPLE | 04125-6 | LIA006 | 7430244 | 0628X | VIEQ003 |
| 7429775 | 1L0703.b | 1G03L15.d | SAMPLE | 04125-7 | LIA015 | 7430245 | 0628X | VIEQ003 |
| 9775 | 1L0703.b | 1G03L16.d | SAMPLE | 04125-8 | LIA019 | 7430246 | 0628X | VIEQ003 |
| 29775 | 1L0703.b | 1G03L17.d | SAMPLE | 04125-9 | LIA020 | 7430247 | 0628X | VIEQ003 |
| 7429775 | 1L0703.b | 1G03L18.d | SAMPLE | 04125-10 | OWN-WEST-SS-01 | 7430248 | 0628X | VIEQ003 |
| 7429775 | 1L0703.b | 1G03L19.d | SAMPLE | 04125-11 | OWN-WEST-SS-02 | 7430249 | 0628X | VIEQ003 |
| 7429775 | 1L0703.b | 1G03L20.d | SAMPLE | 04125-12 | OWN-WEST-SS-03 | 7430250 | 0628X | VIEQ003 |
| 7429775 | 1L0703.b | 1G03L21.d | SAMPLE | 04125-13 | OWN-WEST-SS-03D | 7430251 | 0628X | VIEQ003 |
| 7429775 | 1L0703.b | 1G03L22.d | SAMPLE | 04125-14 | LIA001D | 7430252 | 0628X | VIEQ003 |
| 7429775 | 1L0703.b | 1G03L23.d | SAMPLE | 04125-15 | OWN-WEST-SS-01D | 7430281 | 0628X | VIEQ003 |

FORM 6
SV LC INITIAL CALIBRATION DATA

Lab Name: STL TALLAHASSEE Lab Code: TL

lient: Project: SDG No.: VIEQ003

Instrument ID: TLCKUV1 Calibration Date(s): 06/14/00 06/14/00

Column: C-18 ID: 4.60 (mm) Calibration Time(s): 1327 2059

LAB FILE ID: RF0.02: 1F14K4 RF0.1: 1F14K6 RF0.25: 1F14K8
RF0.5: 1F14K10 RF1: 1F14K12

| COMPOUND | RF0.02 | RF0.1 | RF0.25 | RF0.5 | RF1 |
|---|---|---|---|---|---|
| HMX | 3900 | | 3268 | 3502 | 3703 |
| 1,3,5-TNB | 8150 | | 7380 | 7720 | 8158 |
| RDX | 4750 | | 3676 | 3838 | 4015 |
| 1,3-DNB | 11450 | | 10376 | 10798 | 11306 |
| Tetryl | 6600 | | 5720 | 5944 | 6191 |
| 2-AM-DNT | 8000 | | 6000 | 6348 | 6671 |
| 4-AM-DNT | 5500 | | 4596 | 4808 | 5040 |
| Nitrobenzene | 8850 | | 7908 | 8304 | 8643 |
| 2,4,6-TNT | 7900 | | 6504 | 6810 | 7140 |
| 2,4-DNT | 9850 | | 7996 | 8430 | 8859 |
| 2,6-DNT | 5100 | | 3772 | 4042 | 4258 |
| 2-NT | 5250 | | 3512 | 3714 | 4102 |
| 3-NT | 5150 | | 3720 | 3858 | 3967 |
| 4-NT | 4550 | | 3284 | 3402 | 3715 |
| 3,4-Dinitrotoluene | 4450 | | 3504 | 3688 | 3917 |

FORM 6
SV LC INITIAL CALIBRATION DATA

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Instrument ID: TLCKUV1 Calibration Date(s): 06/14/00 06/14/00

Column: C-18 ID: 4.60 (mm) Calibration Time(s): 1327 2059

RF2: 1F14K14

| COMPOUND | RF2 | CURVE | AVE RRF A1 | %RSD or R^2 |
|---|---|---|---|---|
| HMX | 3636 | AVRG | 3602 | 6.5 |
| 1,3,5-TNB | 8044 | AVRG | 7891 | 4.3 |
| RDX | 3964 | AVRG | 4049 | 10.2 |
| 1,3-DNB | 11217 | AVRG | 11029 | 4.0 |
| Tetryl | 6182 | AVRG | 6128 | 5.4 |
| 2-AM-DNT | 6579 | AVRG | 6720 | 11.3 |
| 4-AM-DNT | 4968 | AVRG | 4983 | 6.7 |
| Nitrobenzene | 8616 | AVRG | 8464 | 4.3 |
| 2,4,6-TNT | 7070 | AVRG | 7085 | 7.3 |
| 2,4-DNT | 8749 | AVRG | 8777 | 7.8 |
| 2,6-DNT | 4166 | AVRG | 4268 | 11.7 |
| 2-NT | 3879 | AVRG | 4091 | 16.7 |
| 3-NT | 4044 | AVRG | 4148 | 13.8 |
| 4-NT | 3567 | AVRG | 3704 | 13.5 |
| 3,4-Dinitrotoluene | 3850 | AVRG | 3882 | 9.2 |

FORM 6
SV LC INITIAL CALIBRATION DATA

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Instrument ID: TLCLUV1 Calibration Date(s): 07/01/00 07/01/00

Column: CN ID: 4.60 (mm) Calibration Time(s): 1542 2255

LAB FILE ID: RF0.02: 1G01L5 RF0.1: 1G01L7 RF0.25: 1G01L9
RF0.5: 1G01L3 RF1: 1G01L11

| COMPOUND | RF0.02 | RF0.1 | RF0.25 | RF0.5 | RF1 |
|---|---|---|---|---|---|
| HMX | 3650 | 2070 | 1948 | 2174 | 1841 |
| RDX | 3700 | 2960 | 3016 | 3184 | 2870 |
| 1,3,5-TNB | 8600 | 8860 | 8904 | 9786 | 8801 |
| 1,3-DNB | 12250 | 11320 | 11204 | 12172 | 11005 |
| 2-AM-DNT | 4750 | 3530 | 3536 | 3688 | 3406 |
| 4-AM-DNT | 3750 | 2790 | 2796 | 2866 | 2721 |
| 2,4,6-TNT | 6550 | 5440 | 5392 | 5792 | 5259 |
| 2,4-DNT | 7350 | 6540 | 6388 | 6814 | 6201 |
| 2,6-DNT | 4650 | 3390 | 3136 | 3328 | 3051 |
| 2-NT | 4200 | 3140 | 2988 | 3082 | 2889 |
| 3,4-Dinitrotoluene | 3150 | 2140 | 2064 | 2048 | 1937 |

FORM 6
SV LC INITIAL CALIBRATION DATA

Lab Name: STL TALLAHASSEE Lab Code: TL

lient: Project: SDG No.: VIEQ003

Instrument ID: TLCLUV1 Calibration Date(s): 07/01/00 07/01/00

Column: CN ID: 4.60 (mm) Calibration Time(s): 1542 2255

RF2: 1G01L13

| COMPOUND | RF2 | CURVE | COEFFICIENTS A0 | A1 | %RSD or R^2 |
|---|---|---|---|---|---|
| HMX | 1908 | LINR | -1.94e-002 | 5.308e-004 | 0.998 |
| RDX | 2952 | LINR | -8.07e-003 | 3.41e-004 | 0.999 |
| 1,3,5-TNB | 9050 | LINR | -3.26e-003 | 1.109e-004 | 0.999 |
| 1,3-DNB | 11362 | LINR | -3.41e-003 | 8.843e-005 | 0.999 |
| 2-AM-DNT | 3500 | LINR | -5.87e-003 | 2.875e-004 | 1.000 |
| 4-AM-DNT | 2806 | LINR | -1.01e-003 | 3.583e-004 | 1.000 |
| 2,4,6-TNT | 5424 | LINR | -4.73e-003 | 1.854e-004 | 0.999 |
| 2,4-DNT | 6408 | LINR | -4.43e-003 | 1.57e-004 | 0.999 |
| 2,6-DNT | 3149 | LINR | -7.6e-003 | 3.202e-004 | 0.999 |
| 2-NT | 2992 | LINR | -3.58e-003 | 3.366e-004 | 1.000 |
| 3,4-Dinitrotoluene | 1996 | LINR | -7.77e-003 | 5.056e-004 | 1.000 |

FORM 6
SV LC INITIAL CALIBRATION DATA

Lab Name: STL TALLAHASSEE Lab Code: TL

lient: Project: SDG No.: VIEQ003

Instrument ID: TLCLUV1 Calibration Date(s): 07/01/00 07/01/00

Column: CN ID: 4.60 (mm) Calibration Time(s): 1626 2338

LAB FILE ID: RF0.02: 1G01L6 RF0.1: 1G01L8 RF0.25: 1G01L10
RF0.5: 1G01L4 RF1: 1G01L12

| COMPOUND | RF0.02 | RF0.1 | RF0.25 | RF0.5 | RF1 |
|---|---|---|---|---|---|
| Tetryl | 3100 | 2120 | 2112 | 2184 | 2011 |
| Nitrobenzene | 8200 | 7340 | 6848 | 6912 | 6711 |
| 3-NT | 3300 | 3030 | 2832 | 2830 | 2733 |
| 4-NT | 3150 | 2760 | 2576 | 2550 | 2469 |
| TATB | 2350 | 1710 | 1364 | 1302 | 1252 |
| 3,4-Dinitrotoluene | 3150 | 2140 | 2064 | 2048 | 1937 |

FORM 6
SV LC INITIAL CALIBRATION DATA

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Instrument ID: TLCLUV1 Calibration Date(s): 07/01/00 07/01/00

Column: CN ID: 4.60 (mm) Calibration Time(s): 1626 2338

RF2: 1G01L14

| COMPOUND | RF2 | CURVE | COEFFICIENTS A0 | A1 | %RSD or R^2 |
|---|---|---|---|---|---|
| Tetryl | 2078 | LINR | -6.7e-003 | 4.851e-004 | 0.999 |
| Nitrobenzene | 6875 | LINR | -1.28e-003 | 1.462e-004 | 1.000 |
| 3-NT | 2806 | LINR | -2.55e-003 | 3.586e-004 | 1.000 |
| 4-NT | 2535 | LINR | -3.35e-003 | 3.971e-004 | 1.000 |
| TATB | 1278 | LINR | -1.94e-002 | 7.943e-004 | 1.000 |
| 3,4-Dinitrotoluene | 1996 | LINR | -7.77e-003 | 5.056e-004 | 1.000 |

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Instrument ID: TLCKUV1 Calibration Date: 06/30/00 Time: 0346

Lab File ID: 1F29K32 Init. Calib. Date(s): 06/14/00 06/14/00

Init. Calib. Times: 1327 2059

GC Column: C-18 ID: 4.60 (mm)

| COMPOUND | ICAL0.5 AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| HMX | 3601.90 | | 3990.0 | 0.01 | 10.8 | 15.0 | AVRG |
| 1,3,5-TNB | 7890.50 | | 8632.0 | 0.01 | 9.4 | 15.0 | AVRG |
| RDX | 4048.60 | | 4392.0 | 0.01 | 8.5 | 15.0 | AVRG |
| 1,3-DNB | 11029.4 | | 11762 | 0.01 | 6.6 | 15.0 | AVRG |
| Tetryl | 6127.50 | | 5392.0 | 0.01 | 12.0 | 15.0 | AVRG |
| 2-AM-DNT | 6719.60 | | 6910.0 | 0.01 | 2.8 | 15.0 | AVRG |
| 4-AM-DNT | 4982.50 | | 5122.0 | 0.01 | 2.8 | 15.0 | AVRG |
| Nitrobenzene | 8464.10 | | 8322.0 | 0.01 | 1.7 | 15.0 | AVRG |
| 2,4,6-TNT | 7084.90 | | 7268.0 | 0.01 | 2.6 | 15.0 | AVRG |
| 2,4-DNT | 8776.80 | | 9048.0 | 0.01 | 3.1 | 15.0 | AVRG |
| 2,6-DNT | 4267.60 | | 4470.0 | 0.01 | 4.7 | 15.0 | AVRG |
| 2-NT | 4091.40 | | 3786.0 | 0.01 | 7.5 | 15.0 | AVRG |
| 3-NT | 4147.80 | | 3838.0 | 0.01 | 7.5 | 15.0 | AVRG |
| 4-NT | 3703.60 | | 3408.0 | 0.01 | 8.0 | 15.0 | AVRG |
| 3,4-Dinitrotoluene | 3881.90 | | 3964.0 | 0.01 | 2.1 | 15.0 | AVRG |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Instrument ID: TLCKUV1 Calibration Date: 06/30/00 Time: 1022

Lab File ID: 1F29K44 Init. Calib. Date(s): 06/14/00 06/14/00

Init. Calib. Times: 1327 2059

GC Column: C-18 ID: 4.60 (mm)

| COMPOUND | ICAL0.5 AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| HMX | 3601.90 | | 4004.0 | 0.01 | 11.2 | 15.0 | AVRG |
| 1,3,5-TNB | 7890.50 | | 8582.0 | 0.01 | 8.8 | 15.0 | AVRG |
| RDX | 4048.60 | | 4320.0 | 0.01 | 6.7 | 15.0 | AVRG |
| 1,3-DNB | 11029.4 | | 11740 | 0.01 | 6.4 | 15.0 | AVRG |
| Tetryl | 6127.50 | | 5320.0 | 0.01 | 13.2 | 15.0 | AVRG |
| 2-AM-DNT | 6719.60 | | 6876.0 | 0.01 | 2.3 | 15.0 | AVRG |
| 4-AM-DNT | 4982.50 | | 5064.0 | 0.01 | 1.6 | 15.0 | AVRG |
| Nitrobenzene | 8464.10 | | 8250.0 | 0.01 | 2.5 | 15.0 | AVRG |
| 2,4,6-TNT | 7084.90 | | 7264.0 | 0.01 | 2.5 | 15.0 | AVRG |
| 2,4-DNT | 8776.80 | | 9020.0 | 0.01 | 2.8 | 15.0 | AVRG |
| 2,6-DNT | 4267.60 | | 4428.0 | 0.01 | 3.8 | 15.0 | AVRG |
| 2-NT | 4091.40 | | 3740.0 | 0.01 | 8.6 | 15.0 | AVRG |
| 3-NT | 4147.80 | | 3848.0 | 0.01 | 7.2 | 15.0 | AVRG |
| 4-NT | 3703.60 | | 3392.0 | 0.01 | 8.4 | 15.0 | AVRG |
| 3,4-Dinitrotoluene | 3881.90 | | 3936.0 | 0.01 | 1.4 | 15.0 | AVRG |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Instrument ID: TLCKUV1 Calibration Date: 06/30/00 Time: 1741

Lab File ID: 1F29K57 Init. Calib. Date(s): 06/14/00 06/14/00

Init. Calib. Times: 1327 2059

GC Column: C-18 ID: 4.60 (mm)

| COMPOUND | ICAL0.5 AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| HMX | 3601.90 | | 4076.0 | 0.01 | 13.2 | 15.0 | AVRG |
| 1,3,5-TNB | 7890.50 | | 8658.0 | 0.01 | 9.7 | 15.0 | AVRG |
| RDX | 4048.60 | | 4386.0 | 0.01 | 8.3 | 15.0 | AVRG |
| 1,3-DNB | 11029.4 | | 11844 | 0.01 | 7.4 | 15.0 | AVRG |
| Tetryl | 6127.50 | | 5390.0 | 0.01 | 12.0 | 15.0 | AVRG |
| 2-AM-DNT | 6719.60 | | 6994.0 | 0.01 | 4.1 | 15.0 | AVRG |
| 4-AM-DNT | 4982.50 | | 5148.0 | 0.01 | 3.3 | 15.0 | AVRG |
| Nitrobenzene | 8464.10 | | 8338.0 | 0.01 | 1.5 | 15.0 | AVRG |
| 2,4,6-TNT | 7084.90 | | 7330.0 | 0.01 | 3.4 | 15.0 | AVRG |
| 2,4-DNT | 8776.80 | | 9164.0 | 0.01 | 4.4 | 15.0 | AVRG |
| 2,6-DNT | 4267.60 | | 4520.0 | 0.01 | 5.9 | 15.0 | AVRG |
| 2-NT | 4091.40 | | 3830.0 | 0.01 | 6.4 | 15.0 | AVRG |
| 3-NT | 4147.80 | | 3906.0 | 0.01 | 5.8 | 15.0 | AVRG |
| 4-NT | 3703.60 | | 3454.0 | 0.01 | 6.7 | 15.0 | AVRG |
| 3,4-Dinitrotoluene | 3881.90 | | 3986.0 | 0.01 | 2.7 | 15.0 | AVRG |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

lient: Project: SDG No.: VIEQ003

Instrument ID: TLCLUV1 Calibration Date: 07/03/00 Time: 1708

Lab File ID: 1G03L1 Init. Calib. Date(s): 07/01/00 07/01/00

Init. Calib. Times: 1542 2255

GC Column: CN ID: 4.60 (mm)

| COMPOUND | AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| HMX | 0.25 | 0.24 | 1944.0 | 0.01 | 4.0 | 15.0 | LINR |
| RDX | 0.25 | 0.24 | 2920.0 | 0.01 | 4.0 | 15.0 | LINR |
| 1,3,5-TNB | 0.25 | 0.24 | 8604.0 | 0.01 | 4.0 | 15.0 | LINR |
| 1,3-DNB | 0.25 | 0.24 | 10892 | 0.01 | 4.0 | 15.0 | LINR |
| 2-AM-DNT | 0.25 | 0.24 | 3356.0 | 0.01 | 4.0 | 15.0 | LINR |
| 4-AM-DNT | 0.25 | 0.25 | 2852.0 | 0.01 | 0.0 | 15.0 | LINR |
| 2,4,6-TNT | 0.25 | 0.24 | 5232.0 | 0.01 | 4.0 | 15.0 | LINR |
| 2,4-DNT | 0.25 | 0.24 | 6196.0 | 0.01 | 4.0 | 15.0 | LINR |
| 2,6-DNT | 0.25 | 0.23 | 3016.0 | 0.01 | 8.0 | 15.0 | LINR |
| 2-NT | 0.25 | 0.26 | 3080.0 | 0.01 | 4.0 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.25 | 0.27 | 2176.0 | 0.01 | 8.0 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Instrument ID: TLCLUV1 Calibration Date: 07/03/00 Time: 1751

Lab File ID: 1G03L2 Init. Calib. Date(s): 07/01/00 07/01/00

Init. Calib. Times: 1626 2338

GC Column: CN ID: 4.60 (mm)

| COMPOUND | AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| Tetryl | 0.25 | 0.22 | 1912.0 | 0.01 | 12.0 | 15.0 | LINR |
| Nitrobenzene | 0.25 | 0.24 | 6696.0 | 0.01 | 4.0 | 15.0 | LINR |
| 3-NT | 0.25 | 0.24 | 2752.0 | 0.01 | 4.0 | 15.0 | LINR |
| 4-NT | 0.25 | 0.24 | 2412.0 | 0.01 | 4.0 | 15.0 | LINR |
| TATB | 0.25 | 0.25 | 1348.0 | 0.01 | 0.0 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.25 | 0.24 | 2004.0 | 0.01 | 4.0 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

lient: Project: SDG No.: VIEQ003

Instrument ID: TLCLUV1 Calibration Date: 07/04/00 Time: 0402

Lab File ID: 1G03L13 Init. Calib. Date(s): 07/01/00 07/01/00

Init. Calib. Times: 1542 2255

GC Column: CN ID: 4.60 (mm)

| COMPOUND | AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| HMX | 0.25 | 0.23 | 1908.0 | 0.01 | 8.0 | 15.0 | LINR |
| RDX | 0.25 | 0.23 | 2764.0 | 0.01 | 8.0 | 15.0 | LINR |
| 1,3,5-TNB | 0.25 | 0.23 | 8488.0 | 0.01 | 8.0 | 15.0 | LINR |
| 1,3-DNB | 0.25 | 0.23 | 10776 | 0.01 | 8.0 | 15.0 | LINR |
| 2-AM-DNT | 0.25 | 0.23 | 3284.0 | 0.01 | 8.0 | 15.0 | LINR |
| 4-AM-DNT | 0.25 | 0.24 | 2748.0 | 0.01 | 4.0 | 15.0 | LINR |
| 2,4,6-TNT | 0.25 | 0.24 | 5196.0 | 0.01 | 4.0 | 15.0 | LINR |
| 2,4-DNT | 0.25 | 0.23 | 6016.0 | 0.01 | 8.0 | 15.0 | LINR |
| 2,6-DNT | 0.25 | 0.23 | 3020.0 | 0.01 | 8.0 | 15.0 | LINR |
| 2-NT | 0.25 | 0.27 | 3236.0 | 0.01 | 8.0 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.25 | 0.27 | 2200.0 | 0.01 | 8.0 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Instrument ID: TLCLUV1 Calibration Date: 07/04/00 Time: 0446

Lab File ID: 1G03L14 Init. Calib. Date(s): 07/01/00 07/01/00

Init. Calib. Times: 1626 2338

GC Column: CN ID: 4.60 (mm)

| COMPOUND | AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| Tetryl | 0.25 | 0.22 | 1912.0 | 0.01 | 12.0 | 15.0 | LINR |
| Nitrobenzene | 0.25 | 0.24 | 6552.0 | 0.01 | 4.0 | 15.0 | LINR |
| 3-NT | 0.25 | 0.24 | 2708.0 | 0.01 | 4.0 | 15.0 | LINR |
| 4-NT | 0.25 | 0.24 | 2420.0 | 0.01 | 4.0 | 15.0 | LINR |
| TATB | 0.25 | 0.24 | 1288.0 | 0.01 | 4.0 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.25 | 0.25 | 2032.0 | 0.01 | 0.0 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ00?

Instrument ID: TLCLUV1 Calibration Date: 07/04/00 Time: 1413

Lab File ID: 1G03L24 Init. Calib. Date(s): 07/01/00 07/01/00

Init. Calib. Times: 1542 2255

GC Column: CN ID: 4.60 (mm)

| COMPOUND | AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| HMX | 0.25 | 0.22 | 1788.0 | 0.01 | 12.0 | 15.0 | LINR |
| RDX | 0.25 | 0.22 | 2644.0 | 0.01 | 12.0 | 15.0 | LINR |
| 1,3,5-TNB | 0.25 | 0.23 | 8516.0 | 0.01 | 8.0 | 15.0 | LINR |
| 1,3-DNB | 0.25 | 0.23 | 10740 | 0.01 | 8.0 | 15.0 | LINR |
| 2-AM-DNT | 0.25 | 0.23 | 3284.0 | 0.01 | 8.0 | 15.0 | LINR |
| 4-AM-DNT | 0.25 | 0.25 | 2784.0 | 0.01 | 0.0 | 15.0 | LINR |
| 2,4,6-TNT | 0.25 | 0.23 | 5024.0 | 0.01 | 8.0 | 15.0 | LINR |
| 2,4-DNT | 0.25 | 0.23 | 5980.0 | 0.01 | 8.0 | 15.0 | LINR |
| 2,6-DNT | 0.25 | 0.23 | 2976.0 | 0.01 | 8.0 | 15.0 | LINR |
| 2-NT | 0.25 | 0.26 | 3108.0 | 0.01 | 4.0 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.25 | 0.27 | 2188.0 | 0.01 | 8.0 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Instrument ID: TLCLUV1 Calibration Date: 07/04/00 Time: 1457

Lab File ID: 1G03L25 Init. Calib. Date(s): 07/01/00 07/01/00

Init. Calib. Times: 1626 2338

GC Column: CN ID: 4.60 (mm)

| COMPOUND | AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| Tetryl | 0.25 | 0.21 | 1828.0 | 0.01 | 14.0 | 15.0 | LINR |
| Nitrobenzene | 0.25 | 0.24 | 6504.0 | 0.01 | 4.0 | 15.0 | LINR |
| 3-NT | 0.25 | 0.24 | 2704.0 | 0.01 | 4.0 | 15.0 | LINR |
| 4-NT | 0.25 | 0.23 | 2396.0 | 0.01 | 8.0 | 15.0 | LINR |
| TATB | 0.25 | 0.23 | 1244.0 | 0.01 | 8.0 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.25 | 0.25 | 2028.0 | 0.01 | 0.0 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

YES NO N/A

criteria for some analytes the reviewer might reject

those values. In any case, if the 24 hour sequence is exceeded it should be noted in the data assessment under contract non-compliance.

13.0 Method Blanks

13.1 Is the Method Blank Summary (Form IV) present for each of the following matrices?
a. water [ ] ___ ✓

b. soil [✓] ___ ___

13.2 Frequency of Analysis:

Has a Method/Prep blank been analyzed at the same time for each batch of samples extracted. [✓] ___ ___

ACTION: If any method blank data are missing, call lab for explanation/resubmittal. If method blank data are not available, reject "R" all associated positive data.

13.3 Are the positive hits present in the blank less than detection limit? no + [✓] ___ ___

ACTION: If hits are ≥ detection limits, analysis should be discontinued. All associated samples must be re-prepared and re-analyzed with a new blank.
If lab did not follow this action, note in data assessment. Follow guidelines under contamination section.

13.4 Chromatography: review the method blank raw data chromatograms, quant reports or data system printouts.

Is the chromatographic performance (baseline stability) for each instrument acceptable? [✓] ___ ___

ACTION: Use professional judgement to determine the effect on the data.

YES NO N/A

14.0 Contamination

NOTE: "Water blanks", "drill blanks", and distilled water blanks" are validated like any other sample, and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

14.1 Did the lab run an instrument blank following a sample analysis which contained an analyte(s) at high concentration(s) to evaluate possible sample cross-contamination? [ ] ___ ✓

ACTION: Sample analysis results after the high concentration sample must be evaluated for carryover. Sample cross-contamination should be noted for TPO action if an effect on the data is suspected. An Instrument Blank is not required in the methodology.

14.2 Do any Method Blanks have positive results (TCL)? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample dilution factor. ___ ✓ ___

14.3 Are there field/rinse/equipment blanks associated with every sample? [ ] ✓ ___

ACTION: Note in data assessment that there is no associated field/rinse/equipment blank.

14.4 Do any field/rinse blanks have positive results (TCL)? ___ [ ] ✓

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.) no QC BLKS

NOTE: All field blank results associated with a particular group of samples (may exceed one per case) must be used to qualify data. Blanks may not be qualified because of contamination in another blank. Field blanks must be qualified for surrogate recovery, instrument performance criteria, or calibration QC problems.

FORM 4
SV LC METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

0628XMB

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Lab File ID: 1F29K33 Lab Sample ID: METHOD BLANK

Instrument ID: TLCKUV1 Date Extracted: 06/28/00

Matrix: (soil/water) SOIL Date Analyzed: 06/30/00

Level: (low/med) LOW Time Analyzed: 0419

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

| | CLIENT SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED |
|---|---|---|---|---|
| 01 | 0628XMBLCS | LAB SPIKE | 1F29K34 | 06/30/00 |
| 02 | 04125-1 | LIA001 | 1F29K36 | 06/30/00 |
| 03 | 04125-2 | LIA002 | 1F29K37 | 06/30/00 |
| 04 | 04125-3 | LIA003 | 1F29K38 | 06/30/00 |
| 05 | 04125-4 | LIA004 | 1F29K39 | 06/30/00 |
| 06 | 04125-5 | LIA005 | 1F29K40 | 06/30/00 |
| 07 | 04125-5MS | 04125-5MS | 1F29K41 | 06/30/00 |
| 08 | 04125-5MSD | 04125-5MSD | 1F29K42 | 06/30/00 |
| 09 | 04125-6 | LIA006 | 1F29K45 | 06/30/00 |
| 10 | 04125-7 | LIA015 | 1F29K46 | 06/30/00 |
| 11 | 04125-8 | LIA019 | 1F29K47 | 06/30/00 |
| 12 | 04125-9 | LIA020 | 1F29K48 | 06/30/00 |
| 13 | 04125-10 | OWN-WEST-SS-01 | 1F29K49 | 06/30/00 |
| 14 | 04125-11 | OWN-WEST-SS-02 | 1F29K50 | 06/30/00 |
| 15 | 04125-12 | OWN-WEST-SS-03 | 1F29K51 | 06/30/00 |
| 16 | 04125-13 | OWN-WEST-SS-03 | 1F29K52 | 06/30/00 |
| 17 | 04125-14 | LIA001D | 1F29K53 | 06/30/00 |
| 18 | 04125-15 | OWN-WEST-SS-01 | 1F29K55 | 06/30/00 |
| 19 | | | | |
| 20 | | | | |
| 21 | | | | |
| 22 | | | | |
| 23 | | | | |
| 24 | | | | |
| 25 | | | | |
| 26 | | | | |
| 27 | | | | |
| 28 | | | | |
| 29 | | | | |
| 30 | | | | |

COMMENTS: No Contamination

FORM 1
SV LC ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

0628XMB

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix: (soil/water) SOIL Lab Sample ID: METHOD BLANK

Sample wt/vol: 2.0 (g/mL) G Lab File ID: 1F29K33

Level: (low/med) LOW Date Received: _____

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/28/00

Concentrated Extract Volume: 20.0 (mL) Date Analyzed: 06/30/00

Injection Volume: 40.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 2691-41-0 | HMX | 500 | U |
| 99-35-4 | 1,3,5-TNB | 250 | U |
| 121-82-4 | RDX | 500 | U |
| 99-65-0 | 1,3-DNB | 250 | U |
| 479-45-8 | Tetryl | 500 | U |
| 355-72-78-2 | 2-AM-DNT | 250 | U |
| 19406-51-0 | 4-AM-DNT | 500 | U |
| 98-95-3 | Nitrobenzene | 250 | U |
| 118-96-7 | 2,4,6-TNT | 250 | U |
| 121-14-2 | 2,4-DNT | 250 | U |
| 606-20-2 | 2,6-DNT | 500 | U |
| 88-72-2 | 2-NT | 250 | U |
| 99-08-1 | 3-NT | 250 | U |
| 99-99-0 | 4-NT | 250 | U |

YES NO N/A

ACTION: Follow the directions in **Table 3** below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If any blanks are grossly contaminated, all associated data should be qualified as unusable (R) (see item # 12.3).

| Sample conc > CRQL but < 5x blank | Sample conc < CRQL & is < 5x blank value | Sample conc > CRQL & > 5x blank value |
|---|---|---|
| Flag sample result with a "U" | Report CRQL & qualify "U" | No qualification is needed |

NOTE: Analytes qualified "U" for blank contamination are still considered as "hits" when qualifying for calibration or other QC criteria.

15.0 Target Compound List (TCL) Analytes (Form I)

15.1 Are the Organic Analysis Data Sheets (Form I) present with required header information on each page, for each of the following:

a. Samples ? [✓] ___ ___

b. Laboratory Control Samples? [✓] ___ ___

c. Blanks? [✓] ___ ___

d. Matrix spikes and matrix spike duplicates? [✓] ___ ___

e. Lab duplicate? [ ] ___ [✓]

| | YES | NO | N/A |
|---|---|---|---|
| 15.2 Are the Chromatograms, and the data system printouts (Quant Reports) included in the sample package for each of the following: | | | |
| a. Samples? | ✓ | | |
| b. Laboratory Control Samples? | ✓ | | |
| c. Blanks? | ✓ | | |
| d. Matrix spikes and Matrix spike duplicates? | ✓ | | |
| e. Lab duplicate? | | | ✓ |

ACTION: If any data are missing, Contact Lab for resubmittals.

| | | | |
|---|---|---|---|
| 15.3 Are the response factors shown in the Quant Report? | | ✓ | |
| 15.4 Is chromatographic performance acceptable with respect to: | | | |
| Baseline stability? | ✓ | | |
| Resolution? | ✓ | | |
| Peak shape? | ✓ | | |
| Full-scale graph (attenuation)? | ✓ | | |
| Other: _____ | | | |

ACTION: Use professional judgement to determine the acceptability of the data.

16.0 Compound Identification

| | | | |
|---|---|---|---|
| 16.1 Is Form X completed for every sample in which an analyte was detected? | | ✓ | |

ACTION: If no, contact lab for resubmittals.

data validator calculated %Ds - see next pg

| | YES | NO | N/A |
|---|---|---|---|
| 16.2 Are there any transcription/calculation errors between raw data and Forms? | | ☐ | ✓ |

ACTION: If large errors exist, call lab for explanation/resubmittals. Make any necessary corrections and note effect in data assessment. Check at least 2-3 values from each calibration standard and more if errors are found.

| | YES | NO | N/A |
|---|---|---|---|
| 16.3 Are retention times (RT) of sample analytes within the established RT windows for both analyses? | ✓ | | |

ACTION: Qualify as unusable "R" all positive results which were not confirmed by second HPLC column analysis. Also qualify as unusable "R" all positive results not meeting RT window unless associated standard compounds are similarly biased. The reviewer should use professional judgement to assign an appropriate quantitation limit.

| | YES | NO | N/A |
|---|---|---|---|
| 16.4 Is the percent difference (%D) calculated for the positive sample results on the two HPLC columns <25%? | ✓ | | |

ACTION: If the reviewer finds neither column shows interference for the positive hits, the data should be flagged as follows:

LIA 019
RDX 22%

| % Difference | Qualifier |
|---|---|
| 25-90% | J |
| >90% | R |

NOTE: The lower of the two values is reported on Form I. If using professional judgement, the reviewer determines that the higher result was more acceptable, the reviewer should replace the value and indicate the reason for the change in the data assessment.

YES NO N/A

16.5 Check chromatograms for false negatives, interferences and degradation. Tetryl decomposes rapidly in methanol/water solutions as well as with heat. All samples expected to contain tetryl should not be exposed to temperatures above room temperature. Degradation products of tetryl appear as a shoulder on the TNT peak. Peak heights rather than peak areas should be used when tetryl is present in concentrations that are significant relative to the concentration of TNT.

ACTION: Use professional judgement to determine qualification of analytes.

17.0 <u>Compound Quantitation and Reported Detection Limits</u>

17.1 Are there any transcription/calculation errors in Form I results? Check at least two positive values. Verify that the calculations were adjusted for percent moisture. Were any errors found? — ✓ —

NOTE: Single peak analyte results can be checked for rough agreement between quantitative results obtained on the two HPLC columns. The reviewer should use professional judgement to decide whether a much larger concentration obtained on one column versus the other indicates the presence of an interfering compound. If an interfering compound is indicated, the lower of the two values should be reported and qualified as presumptively present at an approximated quantity "JN". This necessitates a determination of an estimated concentration on the confirmation column. The narrative should indicate that the presence of interferences has interfered with the evaluation of the second column confirmation.

17.2 Are the CRQLs adjusted to reflect sample dilutions for each Form I? no DLs ✓ — —

YES NO N/A

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note in data assessment.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" and its associated value on the original Form I and substituting the data from the analysis of the diluted sample. Specify which Form I is to be used, then draw a red "X" with a red pencil across the entire page of all Form I's that should not be used, including any in the summary package.

18.0 Lab Duplicates

18.1 Were any lab duplicates submitted for for each extraction batch?
a. waters [ ] ___ ✓
b. soils [ ] ___ ✓

18.2 Are the Relative Percent Difference (RPD) values for the analytes reported in the duplicate samples <20%? (depending on the SAS-request; the criteria might be <40%). [ ] ___ ✓

ACTION: Compare the reported results for lab duplicates and calculate the relative percent difference.

ACTION: Any gross variation between duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of lab duplicates should be confirmed by contacting the lab.

ACTION: Flag all associated data with an * for "out of control" duplicate.

19.0 Matrix Spikes

19.1 Is the Matrix Spike/Matrix Spike Duplicate recovery Form present? ✓ ___ ___

YES NO N/A

19.2 Were the matrix spikes analyzed at the required frequency? (one per matrix and per SDG). ✓ ___ ___

ACTION: If any matrix spike data are missing, contact the lab for resubmittals.

19.3 The matrix spike consists of all target analytes at concentrations 5-10 times the estimated quantitation limits listed in Table 1/Method 8330.
Were the correct analytes and were the concentrations within range? ✓ ___ ___

NOTE: Field blanks cannot be used for Matrix spike analysis. If field/rinse blanks were MS/MSD, then make note under Contract non-compliance.

19.4 How many spike recoveries are outside the QC limits of 50-140%?

| Water | Soil |
|---|---|
| ____ out of ___ | 0 out of 28 |

19.5 How many RPD's for Matrix Spike and Matrix Spike duplicate recoveries are outside QC limits of 20% (depending what is stated in the SAS-request)?

| Water | Soil |
|---|---|
| ____ out of ___ | 0 out of 14 |

ACTION: Flag all associated data "N" for "out of control" matrix spike for the field sample used for the MS/MSD.

ACTION: No additional action is taken on MS/MSD data alone. However using informed professional judgement, the data reviewer may use the matrix spike data results in conjunction with other QC criteria and determine the need for some qualification of the data.

Field Dups:
LIA001/LIA001D
no + no +

OWN-WEST-SS-01/OWN-WEST-SS-01
no + no +

OWN-WEST-SS-03/OWN-WEST-SS-03
no + no +

FORM 3
SOIL SV LC MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix Spike - Sample No.: 04125-5 Level:(low/med) LOW

| COMPOUND | SPIKE ADDED (ug/Kg) | SAMPLE CONC (ug/Kg) | MS CONC (ug/Kg) | MS % REC# | QC. LIMITS REC. |
|---|---|---|---|---|---|
| 2-NT | 2500 | 0.00 | 2500 | 100 | 52-138 |
| 3-NT | 2500 | 0.00 | 2600 | 104 | 69-137 |
| 4-NT | 2500 | 0.00 | 2500 | 100 | 54-166 |
| 1,3-DNB | 2500 | 0.00 | 2900 | 116 | 50-132 |
| 2,4-DNT | 2500 | 0.00 | 2800 | 112 | 54-120 |
| 2,6-DNT | 2500 | 0.00 | 2800 | 112 | 59-122 |
| 2-AM-DNT | 2500 | 0.00 | 2800 | 112 | 50-150 |
| 4-AM-DNT | 2500 | 0.00 | 2900 | 116 | 58-126 |
| HMX | 2500 | 0.00 | 3100 | 124 | 29-156 |
| Nitrobenzene | 2500 | 0.00 | 2700 | 108 | 52-152 |
| RDX | 2500 | 0.00 | 2800 | 112 | 54-166 |
| Tetryl | 2500 | 0.00 | 2100 | 84 | 41-165 |
| 1,3,5-TNB | 2500 | 0.00 | 3000 | 120 | 47-123 |
| 2,4,6-TNT | 2500 | 0.00 | 2800 | 112 | 74-119 |

# Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS:

FORM 3
SOIL SV LC MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix Spike - Sample No.: 04125-5 Level:(low/med) LOW

| COMPOUND | SPIKE ADDED (ug/Kg) | MSD CONC (ug/Kg) | MSD % REC# | AVG % REC | % RPD$# | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| 2-NT | 2500 | 2400 | 96 | 98 | 4.1 | 40 | 52-138 |
| 3-NT | 2500 | 2600 | 104 | 104 | 0.00 | 30 | 69-137 |
| 4-NT | 2500 | 2400 | 96 | 98 | 4.1 | 30 | 54-166 |
| 1,3-DNB | 2500 | 2900 | 116 | 116 | 0.00 | 30 | 50-132 |
| 2,4-DNT | 2500 | 2700 | 108 | 110 | 3.6 | 30 | 54-120 |
| 2,6-DNT | 2500 | 2800 | 112 | 112 | 0.00 | 30 | 59-122 |
| 2-AM-DNT | 2500 | 2700 | 108 | 110 | 3.6 | 30 | 50-150 |
| 4-AM-DNT | 2500 | 2800 | 112 | 114 | 3.5 | 30 | 58-126 |
| HMX | 2500 | 3000 | 120 | 122 | 3.3 | 60 | 29-156 |
| Nitrobenzene | 2500 | 2700 | 108 | 108 | 0.00 | 30 | 52-152 |
| RDX | 2500 | 2800 | 112 | 112 | 0.00 | 30 | 54-166 |
| Tetryl | 2500 | 2100 | 84 | 84 | 0.00 | 30 | 41-165 |
| 1,3,5-TNB | 2500 | 2900 | 116 | 118 | 3.4 | 30 | 47-123 |
| 2,4,6-TNT | 2500 | 2800 | 112 | 112 | 0.00 | 30 | 74-119 |

$ %RPD calculated using the spike and spike duplicate concentrations as per SW846 8000B

# Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 14 outside limits
Spike Recovery: 0 out of 28 outside limits

COMMENTS:

FORM 3
SOIL SV LC LAB CONTROL SAMPLE

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix Spike - Sample No.: 0628XMB Level:(low/med) LOW

| COMPOUND | SPIKE ADDED (ug/Kg) | SAMPLE CONC (ug/Kg) | LCS CONC (ug/Kg) | LCS % REC# | QC. LIMITS REC. |
|---|---|---|---|---|---|
| 2-NT | 2500 | 0.00 | 2500 | 100 | 52-138 |
| 3-NT | 2500 | 0.00 | 2600 | 104 | 69-137 |
| 4-NT | 2500 | 0.00 | 2500 | 100 | 54-166 |
| 1,3-DNB | 2500 | 0.00 | 2900 | 116 | 50-132 |
| 2,4-DNT | 2500 | 0.00 | 2800 | 112 | 54-120 |
| 2,6-DNT | 2500 | 0.00 | 2800 | 112 | 59-122 |
| 2-AM-DNT | 2500 | 0.00 | 2800 | 112 | 50-150 |
| 4-AM-DNT | 2500 | 0.00 | 2800 | 112 | 58-126 |
| HMX | 2500 | 0.00 | 3000 | 120 | 29-156 |
| Nitrobenzene | 2500 | 0.00 | 2700 | 108 | 52-152 |
| RDX | 2500 | 0.00 | 2800 | 112 | 54-166 |
| Tetryl | 2500 | 0.00 | 2200 | 88 | 41-165 |
| 1,3,5-TNB | 2500 | 0.00 | 3000 | 120 | 47-123 |
| 2,4,6-TNT | 2500 | 0.00 | 2800 | 112 | 74-119 |

# Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 14 outside limits

COMMENTS:

HEARTLAND
ENVIRONMENTAL SERVICES, INC.

MULTI-MEDIA GC ANALYSIS

| | |
|---|---|
| CASE/SDG NUMBER: | VIEQ003 |
| LABORATORY: | STL Tallahassee |
| CLIENT: | CH2M HILL |
| PROJECT: | Vieques (Camp Garcia Live Impact Area) |
| REVIEWER: | Erica K. Ketcham |
| DATE: | September 1, 2000 |
| QA/QC LEVEL: | DQO Level IV |
| STATEMENT OF WORK: | SW-846 Method 8332 |
| ANALYSIS MODIFICATIONS: | Region II |
| NUMBER OF SAMPLES: | 15 |
| SAMPLE MATRIX: | soil |
| NUMBER OF MS/MSDs: | 1 |

## MULTI-MEDIA GC ANALYSIS
## HOLDING TIMES

| | Water | Soil | Analysis |
|---|---|---|---|
| CLP: | 7 days from sampling | 14 days from sampling | 40 days from VTSR |
| SW846: | 7 days from sampling | 14 days from sampling | 40 days from VTSR |
| Region I: | 7 days from sampling | 7 days from sampling | 40 days from VTSR |
| Region II: | 7 days from sampling | 7 days from sampling | 40 days from VTSR |
| Region III: | 7 days from sampling | 7 days from sampling | 40 days from VTSR |
| NYSDEC: | 5 days from VTSR | 5 days from VTSR | 40 days from VTSR |

DA - The number of days that the holding time was exceeded.

| | |
|---|---|
| DA ≤ 5: | Qualify all positive results as estimated (J). |
| DA > 5 ≤ 15: | Qualify all positive results as estimated (J) and all non detects as estimated (UJ). |
| DA > 15: | Qualify all positive results as estimated (J) and reject (R) all non detects. |

**s - 06/21/00, 06/22/00** **e - 06/30/00** **a - 07/15/00 - 07/18/00**

**All associated samples met holding time requirements for extraction and/or analysis. No qualifications are required.**

SAMPLE INFORMATION SUMMARY

Client SDG: VIEQ003 Sample Fraction: SV LC 8332

| CGroup | Batch | DataFile | Sample Type | Client Id | Lab ID | SmplRef | Lab Prep | SDG |
|---|---|---|---|---|---|---|---|---|
| 9702513 | 1J0714.b | 1G14J4.d | CALIB_2 | | CAL2.46179 | 7431286 | | |
| 9702513 | 1J0714.b | 1H14J1.d | CALIB_3 | | CAL3.461710 | 7431288 | | |
| 9702513 | 1J0714.b | 1G14J6.d | CALIB_4 | | CAL4.461711 | 7431287 | | |
| 9702513 | 1J0714.b | 1G14J7.d | CALIB_5 | | CAL5.461712 | 7431273 | | |
| 9702513 | 1J0714.b | 1G14J8.d | CALIB_1 | | CAL1.46178 | 7431281 | | |
| 9702513 | 1J0714.b | 1G14J53.d | CCALIB_3 | | MED.461710 | 7431462 | | |
| 9702513 | 1J0714.b | 1G14J72.d | CCALIB_3 | | MED.461710 | 7431510 | | |
| 9702513 | 1J0714.b | 1G14J54.d | BLANK | 0630BMB | METHOD BLANK | 9807828 | 0630B | VIEQ003 |
| 9702513 | 1J0714.b | 1G14J55.d | LCS | 0630BMBLCS | LAB SPIKE | 9807829 | 0630B | VIEQ003 |
| 9702513 | 1J0714.b | 1G14J62.d | MS | 04125-5MS | 04125-5MS | 9807887 | 0630B | VIEQ003 |
| 9702513 | 1J0714.b | 1G14J63.d | MSD | 04125-5MSD | 04125-5MSD | 9807888 | 0630B | VIEQ003 |
| 9702513 | 1J0714.b | 1G14J57.d | SAMPLE | 04125-1 | LIA001 | 9807875 | 0630B | VIEQ003 |
| 9702513 | 1J0714.b | 1G14J58.d | SAMPLE | 04125-2 | LIA002 | 9807876 | 0630B | VIEQ003 |
| 9702513 | 1J0714.b | 1G14J59.d | SAMPLE | 04125-3 | LIA003 | 9807877 | 0630B | VIEQ003 |
| 9702513 | 1J0714.b | 1G14J60.d | SAMPLE | 04125-4 | LIA004 | 9807878 | 0630B | VIEQ003 |
| 9702513 | 1J0714.b | 1G14J61.d | SAMPLE | 04125-5 | LIA005 | 9807879 | 0630B | VIEQ003 |
| 9702513 | 1J0714.b | 1G14J64.d | SAMPLE | 04125-6 | LIA006 | 9807880 | 0630B | VIEQ003 |
| 9702513 | 1J0714.b | 1G14J65.d | SAMPLE | 04125-7 | LIA015 | 9807881 | 0630B | VIEQ003 |
| 9702513 | 1J0714.b | 1G14J66.d | SAMPLE | 04125-8 | LIA019 | 9807882 | 0630B | VIEQ003 |
| 9702513 | 1J0714.b | 1G14J67.d | SAMPLE | 04125-9 | LIA020 | 9807883 | 0630B | VIEQ003 |
| 9702513 | 1J0714.b | 1G14J68.d | SAMPLE | 04125-10 | OWN-WEST-SS-01 | 9807884 | 0630B | VIEQ003 |
| 9702513 | 1J0714.b | 1G14J69.d | SAMPLE | 04125-11 | OWN-WEST-SS-02 | 9807885 | 0630B | VIEQ003 |
| 9702513 | 1J0714.b | 1G14J70.d | SAMPLE | 04125-12 | OWN-WEST-SS-03 | 9807886 | 0630B | VIEQ003 |
| 7431891 | 1J0717.b | 1G17J1.d | CCALIB_3 | | MED.461710 | 7431899 | | |
| 7431891 | 1J0717.b | 1G17J7.d | CCALIB_3 | | MED.461710 | 9807919 | | |
| 7431891 | 1J0717.b | 1G17J27.d | CCALIB_3 | | MED.46203 | 9808004 | | |
| 7431891 | 1J0717.b | 1G17J29.d | CCALIB_3 | | MED.46203 | 9808056 | | |
| 7431891 | 1J0717.b | 1G17J3.d | SAMPLE | 04125-13 | OWN-WEST-SS-03D | 9807934 | 0630B | VIEQ003 |
| 7431891 | 1J0717.b | 1G17J4.d | SAMPLE | 04125-14 | LIA001D | 9807935 | 0630B | VIEQ003 |
| 7431891 | 1J0717.b | 1G17J5.d | SAMPLE | 04125-15 | OWN-WEST-SS-01D | 9807936 | 0630B | VIEQ003 |
| 7431891 | 1J0717.b | 1G17J28.d | SAMPLE | 04125-13DL | OWN-WEST-SS-03D | 9808062 | 0630B | VIEQ003 |
| 9808070 | 1J0718.b | 1G18J3.d | CALIB_1 | | CAL1.46178 | 9808136 | | |
| 9808070 | 1J0718.b | 1G18J4.d | CALIB_2 | | CAL2.46179 | 9808137 | | |
| 9808070 | 1J0718.b | 1G18J5.d | CALIB_3 | | CAL3.46203 | 9808138 | | |
| 9808070 | 1J0718.b | 1G18J6.d | CALIB_4 | | CAL4.461711 | 9808146 | | |
| 9808070 | 1J0718.b | 1G18J7.d | CALIB_5 | | CAL5.461712 | 9808149 | | |
| 9808070 | 1J0718.b | 1G18J24.d | CCALIB_3 | | MED.46203 | 9808153 | | |
| 9808070 | 1J0718.b | 1G18J18.d | BLANK | 0630BMB | METHOD BLANK | 9808279 | 0630B | VIEQ003 |
| 9808070 | 1J0718.b | 1G18J19.d | SAMPLE | 04125-8 | LIA019 | 9808274 | 0630B | VIEQ003 |
| 9808070 | 1J0718.b | 1G18J20.d | SAMPLE | 04125-12 | OWN-WEST-SS-03 | 9808275 | 0630B | VIEQ003 |
| | | 1G18J21.d | | 04125-13 | OWN-WEST-SS-03D | | | |

FORM 6
SV LC INITIAL CALIBRATION DATA

Lab Name: STL TALLAHASSEE Lab Code: TL

lient: Project: SDG No.: VIEQ003

Instrument ID: TLCJUV1 Calibration Date(s): 07/14/00 07/14/00

Column: C-18 ID: 4.60 (mm) Calibration Time(s): 1105 1324

LAB FILE ID: RF0.2: 1G14J8 RF0.5: 1G14J4 RF0.75: 1H14J1
RF1: 1G14J6 RF2: 1G14J7

| COMPOUND | RF0.2 | RF0.5 | RF0.75 | RF1 | RF2 |
|---|---|---|---|---|---|
| Nitroglycerin | 6720 | 7072 | 6652 | 7426 | 6876 |
| Pentaerythritol tetranitrate | 4240 | 3550 | 3429 | 3606 | 3297 |
| 3,4-Dinitrotoluene | 13255 | 13636 | 13873 | 14684 | 13649 |

FORM VI SV LC

FORM 6
SV LC INITIAL CALIBRATION DATA

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Instrument ID: TLCJUV1 Calibration Date(s): 07/14/00 07/14/00

Column: C-18 ID: 4.60 (mm) Calibration Time(s): 1105 1324

| COMPOUND | CURVE | COEFFICIENTS A0 | A1 | %RSD or R^2 |
|---|---|---|---|---|
| Nitroglycerin | LINR | -5.45e-003 | 1.442e-004 | 0.997 |
| Pentaerythritol tetranitrate | LINR | -6.65e-002 | 3.106e-004 | 0.998 |
| 3,4-Dinitrotoluene | LINR | -9.11e-003 | 7.268e-005 | 0.998 |

FORM VI SV LC

FORM 6
SV LC INITIAL CALIBRATION DATA

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Instrument ID: TLCJUV1 Calibration Date(s): 07/18/00 07/18/00

Column: CN ID: 4.60 (mm) Calibration Time(s): 1446 1659

LAB FILE ID: RF0.2: 1G18J3 RF0.5: 1G18J4 RF0.75: 1G18J5
RF1: 1G18J6 RF2: 1G18J7

| COMPOUND | RF0.2 | RF0.5 | RF0.75 | RF1 | RF2 |
|---|---|---|---|---|---|
| Nitroglycerin | 13135 | 14838 | 13749 | 14583 | 14795 |
| Pentaerythritol tetranitrate | 10515 | 9832 | 9261 | 9763 | 9629 |
| 3,4-Dinitrotoluene | 27845 | 29590 | 27832 | 30122 | 30705 |

FORM VI SV LC

FORM 6
SV LC INITIAL CALIBRATION DATA

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Instrument ID: TLCJUV1 Calibration Date(s): 07/18/00 07/18/00

Column: CN ID: 4.60 (mm) Calibration Time(s): 1446 1659

| COMPOUND | CURVE | COEFFICIENTS A0 | A1 | %RSD or R^2 |
|---|---|---|---|---|
| Nitroglycerin | LINR | 2.791e-002 | 6.68e-005 | 0.999 |
| Pentaerythritol tetranitrate | LINR | -7.54e-003 | 1.044e-004 | 0.999 |
| 3,4-Dinitrotoluene | LINR | 3.87e-002 | 3.206e-005 | 0.999 |

FORM VI SV LC

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Instrument ID: TLCJUV1 Calibration Date: 07/15/00 Time: 1434

Lab File ID: 1G14J53 Init. Calib. Date(s): 07/14/00 07/14/00

Init. Calib. Times: 1105 1324

GC Column: C-18 ID: 4.60 (mm)

| COMPOUND | AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| Nitroglycerin | 0.75 | 0.77 | 7142.7 | 0.01 | 2.7 | 15.0 | LINR |
| Pentaerythritol tetranitrate | 0.75 | 0.82 | 3806.7 | 0.01 | 9.3 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.75 | 0.80 | 14756 | 0.01 | 6.7 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Instrument ID: TLCJUV1 Calibration Date: 07/16/00 Time: 0118

Lab File ID: 1G14J72 Init. Calib. Date(s): 07/14/00 07/14/00

Init. Calib. Times: 1105 1324

GC Column: C-18 ID: 4.60 (mm)

| COMPOUND | AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| Nitroglycerin | 0.75 | 0.72 | 6700.0 | 0.01 | 4.0 | 15.0 | LINR |
| Pentaerythritol tetranitrate | 0.75 | 0.71 | 3329.3 | 0.01 | 5.3 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.75 | 0.76 | 14192 | 0.01 | 1.3 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Instrument ID: TLCJUV1 Calibration Date: 07/17/00 Time: 1159

Lab File ID: 1G17J1 Init. Calib. Date(s): 07/14/00 07/14/00

Init. Calib. Times: 1105 1324

GC Column: C-18 ID: 4.60 (mm)

| COMPOUND | AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| Nitroglycerin | 0.75 | 0.70 | 6536.0 | 0.01 | 6.7 | 15.0 | LINR |
| Pentaerythritol tetranitrate | 0.75 | 0.78 | 3640.0 | 0.01 | 4.0 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.75 | 0.76 | 14183 | 0.01 | 1.3 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Instrument ID: TLCJUV1 Calibration Date: 07/17/00 Time: 1528

Lab File ID: 1G17J7 Init. Calib. Date(s): 07/14/00 07/14/00

Init. Calib. Times: 1105 1324

GC Column: C-18 ID: 4.60 (mm)

| COMPOUND | AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| Nitroglycerin | 0.75 | 0.73 | 6773.3 | 0.01 | 2.7 | 15.0 | LINR |
| Pentaerythritol tetranitrate | 0.75 | 0.78 | 3625.3 | 0.01 | 4.0 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.75 | 0.76 | 14187 | 0.01 | 1.3 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Instrument ID: TLCJUV1 Calibration Date: 07/18/00 Time: 0953

Lab File ID: 1G17J27 Init. Calib. Date(s): 07/14/00 07/14/00

Init. Calib. Times: 1105 1324

GC Column: C-18 ID: 4.60 (mm)

| COMPOUND | AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| Nitroglycerin | 0.75 | 0.74 | 6893.3 | 0.01 | 1.3 | 15.0 | LINR |
| Pentaerythritol tetranitrate | 0.75 | 0.63 | 2988.0 | 0.01 | 16.0 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.75 | 0.69 | 12753 | 0.01 | 8.0 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

OWN-WEST-SS-03D

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Instrument ID: TLCJUV1 Calibration Date: 07/18/00 Time: 1136

Lab File ID: 1G17J29 Init. Calib. Date(s): 07/14/00 07/14/00

Init. Calib. Times: 1105 1324

GC Column: C-18 ID: 4.60 (mm)

| COMPOUND | AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| Nitroglycerin | 0.75 | 0.84 | 7856.0 | 0.01 | 12.0 | 15.0 | LINR |
| Pentaerythritol tetranitrate | 0.75 | 0.066 | 569.33 | 0.01 | 91.2 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.75 | 0.74 | 13764 | 0.01 | 1.3 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

FORM 7
SV LC CALIBRATION VERIFICATION SUMMARY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Instrument ID: TLCJUV1 Calibration Date: 07/19/00 Time: 0228

Lab File ID: 1G18J24 Init. Calib. Date(s): 07/18/00 07/18/00

Init. Calib. Times: 1446 1659

GC Column: CN ID: 4.60 (mm)

| COMPOUND | AMT/ AVG RF | CCAL AMT | CCAL RF | MIN RF | %DRIFT /%D* | MAX %DRIFT /%D* | CURVE |
|---|---|---|---|---|---|---|---|
| Nitroglycerin | 0.75 | 0.70 | 13513 | 0.01 | 6.7 | 15.0 | LINR |
| Pentaerythritol tetranitrate | 0.75 | 0.67 | 8662.7 | 0.01 | 10.7 | 15.0 | LINR |
| 3,4-Dinitrotoluene | 0.75 | 0.72 | 28169 | 0.01 | 4.0 | 15.0 | LINR |

*%Drift is reported for linear and 2nd order curves and %D (%Difference) is reported for average curves.

# MULTI-MEDIA GC ANALYSIS
# BLANK SUMMARY

1. Blank qualification guidelines:

   a) If a compound is found in the blank but not in the sample, no action is taken.

   b) Any compound detected in the sample, which was also detected in the associated blank, must be qualified by elevating the limit of detection or adjusting the limit of detection to the sample result, when the sample concentration is less than five (5) times the blank concentration.

   c) The reviewer should take note that the blank analysis may not involve the same weights, volumes or dilution factors as associated samples. These factors must be taken into consideration when applying the 5X and 10X criteria.

   d) In addition, the reviewer must review the trip blanks, rinseate blanks and field blanks (if they were submitted with the data package) and all associated samples. Apply the same data validation guidelines used in assessing the method blanks.

   e) Qualification/Action codes:

      U - The sample result is greater than the CRQL and less than five times (5X) the blank value. Cross out the "B" flag and qualify the sample result with a "U".

      CRQL - The sample result is less than the CRQL and less than five times (5X) the blank value. Reject the sample result, cross out the "B" flag, and report the CRQL.

      No Action - The sample result is greater than the CRQL and greater than five times (5X) the blank value.

FORM 4
SV LC METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

0630BMB

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Lab File ID: 1G14J54 Lab Sample ID: METHOD BLANK

Instrument ID: TLCJUV1 Date Extracted: 06/30/00

Matrix: (soil/water) SOIL Date Analyzed: 07/15/00

Level: (low/med) LOW Time Analyzed: 1514

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

| | CLIENT SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED |
|---|---|---|---|---|
| 01 | 0630BMBLCS | LAB SPIKE | 1G14J55 | 07/15/00 |
| 02 | 04125-1 | LIA001 | 1G14J57 | 07/15/00 |
| 03 | 04125-2 | LIA002 | 1G14J58 | 07/15/00 |
| 04 | 04125-3 | LIA003 | 1G14J59 | 07/15/00 |
| 05 | 04125-4 | LIA004 | 1G14J60 | 07/15/00 |
| 06 | 04125-5 | LIA005 | 1G14J61 | 07/15/00 |
| 07 | 04125-5MS | 04125-5MS | 1G14J62 | 07/15/00 |
| 08 | 04125-5MSD | 04125-5MSD | 1G14J63 | 07/15/00 |
| 09 | 04125-6 | LIA006 | 1G14J64 | 07/15/00 |
| 10 | 04125-7 | LIA015 | 1G14J65 | 07/15/00 |
| 11 | 04125-8 | LIA019 | 1G14J66 | 07/15/00 |
| 12 | 04125-9 | LIA020 | 1G14J67 | 07/15/00 |
| 13 | 04125-10 | OWN-WEST-SS-01 | 1G14J68 | 07/15/00 |
| 14 | 04125-11 | OWN-WEST-SS-02 | 1G14J69 | 07/15/00 |
| 15 | 04125-12 | OWN-WEST-SS-03 | 1G14J70 | 07/16/00 |
| 16 | 04125-13 | OWN-WEST-SS-03 | 1G17J3 | 07/17/00 |
| 17 | 04125-14 | LIA001D | 1G17J4 | 07/17/00 |
| 18 | 04125-15 | OWN-WEST-SS-01 | 1G17J5 | 07/17/00 |
| 19 | | | | |
| 20 | | | | |
| 21 | | | | |
| 22 | | | | |
| 23 | | | | |
| 24 | | | | |
| 25 | | | | |
| 26 | | | | |
| 27 | | | | |
| 28 | | | | |
| 29 | | | | |
| 30 | | | | |

COMMENTS: No Contamination

FORM 2
SOIL SV LC SURROGATE RECOVERY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Level: (low/med) LOW

| | CLIENT SAMPLE NO. | S1 (DNT) # | S2 # | S3 # | S4 # | S5 # | S6 # | S7 # | S8 # | TOT OUT |
|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0630BMB | 100 | | | | | | | | 0 |
| 02 | 0630BMBLCS | 100 | | | | | | | | 0 |
| 03 | 04125-1 | 93 | | | | | | | | 0 |
| 04 | 04125-2 | 96 | | | | | | | | 0 |
| 05 | 04125-3 | 81 | | | | | | | | 0 |
| 06 | 04125-4 | 97 | | | | | | | | 0 |
| 07 | 04125-5 | 100 | | | | | | | | 0 |
| 08 | 04125-5MS | 96 | | | | | | | | 0 |
| 09 | 04125-5MSD | 100 | | | | | | | | 0 |
| 10 | 04125-6 | 90 | | | | | | | | 0 |
| 11 | 04125-7 | 84 | | | | | | | | 0 |
| 12 | 04125-8 | 86 | | | | | | | | 0 |
| 13 | 04125-9 | 80 | | | | | | | | 0 |
| 14 | 04125-10 | 89 | | | | | | | | 0 |
| 15 | 04125-11 | 90 | | | | | | | | 0 |
| 16 | 04125-12 | 77 | | | | | | | | 0 |
| 17 | 04125-13 | 88 | | | | | | | | 0 |
| 18 | 04125-14 | 96 | | | | | | | | 0 |
| 19 | 04125-15 | 100 | | | | | | | | |
| 20 | | | | | | | | | | |
| 21 | | | | | | | | | | |
| 22 | | | | | | | | | | |
| 23 | | | | | | | | | | |
| 24 | | | | | | | | | | |
| 25 | | | | | | | | | | |
| 26 | | | | | | | | | | |
| 27 | | | | | | | | | | |
| 28 | | | | | | | | | | |
| 29 | | | | | | | | | | |
| 30 | | | | | | | | | | |

S1 (DNT) = 3,4-Dinitrotoluene QC LIMITS (22-128)

# Column to be used to flag recovery values
* Values outside of laboratory QC limits
D Sample diluted

FORM 3
SOIL SV LC MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix Spike - Sample No.: 04125-5 Level:(low/med) LOW

| COMPOUND | SPIKE ADDED (ug/Kg) | SAMPLE CONC (ug/Kg) | MS CONC (ug/Kg) | MS % REC# | QC. LIMITS REC. |
|---|---|---|---|---|---|
| Nitroglycerin | 2900 | 0.00 | 2900 | 100 | 48-152 |

| COMPOUND | SPIKE ADDED (ug/Kg) | MSD CONC (ug/Kg) | MSD % REC# | AVG % REC | % RPD$# | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| Nitroglycerin | 2900 | 2900 | 100 | 100 | 0.00 | 50 | 48-152 |

$ %RPD calculated using the spike and spike duplicate concentrations as per SW846 8000B

# Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 1 outside limits
Spike Recovery: 0 out of 2 outside limits

COMMENTS:

FORM 3
SOIL SV LC LAB CONTROL SAMPLE

Lab Name: STL TALLAHASSEE Lab Code: TL

Client: Project: SDG No.: VIEQ003

Matrix Spike - Sample No.: 0630BMB Level:(low/med) LOW

| COMPOUND | SPIKE ADDED (ug/Kg) | SAMPLE CONC (ug/Kg) | LCS CONC (ug/Kg) | LCS % REC# | QC. LIMITS REC. |
|---|---|---|---|---|---|
| Nitroglycerin | 2500 | 0.00 | 2800 | 112 | 48-152 |

# Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 1 outside limits

COMMENTS:

FORM III SV LC

# MULTI-MEDIA GC ANALYSIS
## FIELD DUPLICATE SAMPLE SUMMARY

**Sample ID:** LIA001 **Duplicate Sample ID:** LIA001D

**Water:** **RPD > 30%** **Soil:** **RPD > 50%**

| Compound | Sample Conc. | Dup. Sample Conc. | RPD |
|---|---|---|---|
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |

**Comments:** No positive results. No qualifications were required.

# MULTI-MEDIA GC ANALYSIS
# FIELD DUPLICATE SAMPLE SUMMARY

**Sample ID:** OWN-WEST-SS-01 **Duplicate Sample ID:** OWN-WEST-SS-01D

**Water:** **RPD > 30%** **Soil:** **RPD > 50%**

| Compound | Sample Conc. | Dup. Sample Conc. | RPD |
|---|---|---|---|
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |

**Comments:** No positive results. No qualifications were required.

## MULTI-MEDIA GC ANALYSIS
## FIELD DUPLICATE SAMPLE SUMMARY

**Sample ID:** OWN-WEST-SS-03 **Duplicate Sample ID:** OWN-WEST-SS-03D

**Water:** **RPD > 30%** **Soil:** **RPD > 50%**

| Compound | Sample Conc. | Dup. Sample Conc. | RPD |
|---|---|---|---|
| Nitroglycerin | 3600 | 19000 | 136 |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |
| | | | ?? |

**Comments:** Nitroglycerin J+

## MULTI-MEDIA GC ANALYSIS
## SAMPLE RESULT VERIFICATION

1. Were the sample results reported within the calibration range (YES/NO)? YES

2. Was the percent moisture reported for all soil samples (YES/NO/NA)? YES

3. Was the data reported on a dry weight basis (YES/NO/NA)? YES

4. Did the GC chromatograms exhibit interferences, off scale peaks or elevated baseline (YES/NO)? NO

5. Did the data contain elevated detection limits that could not be verified (YES/NO)? NO

6. Were any computational or transcription errors found (YES/NO)? NO

**Specific Comments:**

quantitation by linear regression

no QC blanks

Form 10s were not provided for those samples exhibiting positive results. The data validator calculated the %Ds. No qualifications were required.

| Sample ID | Compound | %D |
|---|---|---|
| LIA019 | Nitroglycerin | 23% |
| OWN-WEST-SS-03 | Nitroglycerin | 12.5% |
| OWN-WEST-SS-03D | Nitroglycerin | 0% |

Reviewer Erica K. Ketcham Date: 9/1/00

## Two Digit Code Definitions for Comment Field

During DV, the validator will apply a two-letter code to the right of each project qualifier applied. This code represents why the compound/element was flagged. The data entry personnel will enter this code into the comment field of the database.

| Code | Definition |
|---|---|
| TN | Tune |
| BS | Blank Spike/LCS |
| IS | Internal Standard |
| MS | Matrix Spike and/or Matrix Spike Duplicate Recovery |
| MD | Matrix Spike/Matrix Spike Duplicate Precision |
| 2S | Second Source |
| SD | Serial Dilution |
| SS | Spiked Surrogate |
| LR | Analyte present above linear (or calibration) range |
| IC | Initial Calibration |
| CC | Continuing Calibration Verification |
| PD | Pesticide Degradation |
| LD | Lab Duplicate |
| 2C | Second Column (Confirmation) |
| HT | Holding Time |
| PS | Post Spike |
| BL | Blank |
| RE | Re-extraction |
| DL | Dilution |
| IB | In Between |
| FD | Field Duplicate |
| OT | Other |

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.6: CLP Data Assessment Checklist

Inorganic Analysis

Date: Jan. 1992
Number: HW-2
Revision: 11

INORGANIC REGIONAL DATA ASSESSMENT

Region II

CASE NO. _____

SITE Vieques Island

LABORATORY SLSAV

NO. OF SAMPLES/ MATRIX 15 soils

SDG# VIEQ003

REVIEWER (IF NOT ESD) Heartland ESI

SOW# SW846

REVIEWER'S NAME P. Humburg

DPO: ACTION _____ FYI _____

COMPLETION DATE 9/5/00

DATA ASSESSMENT SUMMARY

| | | ICP | AA | Hg | CYANIDE |
|---|---|---|---|---|---|
| 1. | HOLDING TIMES | O | NA | O | NA |
| 2. | CALIBRATIONS | | | | |
| 3. | BLANKS | | | | |
| 4. | ICS | | | | |
| 5. | LCS | | | | |
| 6. | DUPLICATE ANALYSIS | | | | |
| 7. | MATRIX SPIKE | | | | |
| 8. | MSA | | | | |
| 9. | SERIAL DILUTION | | | | |
| 10. | SAMPLE VERIFICATION | | | | |
| 11. | OTHER QC | | | | |
| 12 | OVERALL ASSESSMENT | | | | |

O = Data has no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.

X = Problems, but do not affect data.

ACTION ITEMS: _____

_____

_____

AREAS OF CONCERN: _____

_____

_____

NOTABLE PERFORMANCE: _____

_____

_____

| .6 Form I to IX | Yes | No | N/A |
|---|---|---|---|
| .6.1 Are all the Form I through Form IX labeled with: | | | |
| Laboratory name? | ✓ | | |
| Case/SAS number? | | | ✓ |
| EPA sample No.? | ✓ | | |
| SDG No.? | ✓ | | |
| Contract No.? | | | ✓ |
| Correct units? | ✓ | | |
| Matrix? | ✓ | | |

ACTION: If no for any of the above, note under Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

.6.2 Do any computation/transcription errors exceed 10% of reported values on Forms I-IX for:

(NOTE: Check all forms against raw data.)

| | | | |
|---|---|---|---|
| (a) all analytes analyzed by ICP? | ✓ | | |
| (b) all analytes analyzed by GFAA? | | | ✓ |
| (c) all analytes analyzed by AA Flame? | | | ✓ |
| (d) Mercury? | ✓ | | |
| (e) Cyanide? | | | ✓ |

ACTION: If yes, prepare Telephone Log, contact laboratory for corrected data and correct errors with red pencil and initial.

le: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

| | | YES | NO | N/A |
|---|---|---|---|---|
| .7 | Raw Data | | | |
| .7.1 | Digestion Log* for flame AA/ICP (Form XIII) present? | [✓] | | |
| | Digestion Log for furnace AA Form XIII present? | [ ] | | ✓ |
| | Distillation Log for mercury Form XIII present? | [✓] | | |
| | Distillation Log for cyanides Form XIII present? | [ ] | | ✓ |
| | Are pH values (pH<2 for all metals, pH>12 for cyanide) present? | [ ] | | ✓ |
| | *Weights, dilutions and volumes used to obtain values. | | | |
| | Percent solids calculation present for soils/sediments? | [✓] | | |
| | Are preparation dates present on sample preparation logs/bench sheets? | [✓] | | |
| .7.2 | Measurement read out record present? ICP | [✓] | | |
| | Flame AA | [ ] | | ✓ |
| | Furnace AA | [ ] | | ✓ |
| | Mercury | [✓] | | |
| | Cyanides | [ ] | | ✓ |
| .7.3 | Are all raw data to support all sample analyses and QC operations present? | [✓] | | |
| | Legible? | [✓] | | |
| | Properly Labeled? | [✓] | | |

ACTION: If no for any of the above questions in sections A.1.7.1 through A.1.7.3, write Telephone Record Log and contact laboratory for resubmittals.

Compliance (Total Review)

| | YES | NO | N/A |
|---|---|---|---|
| **Holding Times** - (aqueous and soil samples ) | | | |
| (Examine sample traffic reports and digestion/distillation logs.) | | | |
| Mercury analysis (28 days). . . . . exceeded? | ___ | [✓] | ___ |
| Cyanide distillation (14 days). . . . . exceeded? | ___ | [___] | ✓ |
| Other Metals analysis (6 months). . . . exceeded? | ___ | [✓] | ___ |

NOTE: Prepare a list of all samples and analytes for which holding times have been exceeded. Specify the number of days from date of collection to the date of preparation (from raw data). Attach to checklist.

ACTION: If yes, reject (red-line) values less than Instrument Detection Limit (IDL) and flag as estimated (J) the values above IDL even though sample(s) was preserved properly.

PBG 9/5/00

| | YES | NO | N/A |
|---|---|---|---|
| .2 Is pH of aqueous samples for: | | | |
| Metals Analysis >2? | ___ | [✓] | ✓ |
| Cyanides Analysis <12? | ___ | [___] | ✓ |

Action: If yes, flag the associated metals and cyanides data as estimated.

**Form I (Final Data)**

| | YES | NO | N/A |
|---|---|---|---|
| .1 Are all Form I's present and complete? | [✓] | ___ | ___ |

ACTION: If no, prepare telephone record log and contact laboratory for submittal.

| | YES | NO | N/A |
|---|---|---|---|
| .2 Are correct units (ug/l for waters and mg/kg for soils) indicated on Form I's? | [___] | ___ | ✓ |
| Are soil sample results for each parameter corrected for percent solids? | [✓] | ___ | ___ |
| Are all "less than IDL" values properly coded with "U"? | [✓] | ___ | ___ |

| | | YES | NO | N/A |
|---|---|---|---|---|
| | Are the correct concentration qualifiers used with final data? | [✓] | | |
| | ACTION: If no for any of the above, prepare Telephone Record Log, and contact laboratory for corrected data. | | | |
| .9.3 | Are EPA sample # s and corresponding laboratory sample ID # s the same as on the Cover Page, Form I's and in the raw data? | [✓] | | |
| | Was a brief physical description of samples given on Form I's? | [✓] | | |
| | Was the dilution of any sample diluted beyond the requirements of the contract noted on Form I or Form XIV? | | [✓] | |
| | ACTION: If no for any of the above, note under Contract-Problem/Non-Compliance of the "Data Assessment Narrative". | | | |
| .10 | Calibration | | | |
| 10.1 | Is record of at least 2 point calibration present for ICP analysis? | [✓] | | |
| | Is record of 5 point calibration present for Hg analysis? | [✓] | | |
| | Is record of 4 point calibration present for: | | | |
| | Flame AA? | [ ] | | ✓ |
| | Furnace AA? | [ ] | | ✓ |
| | Cyanides? | [ ] | | ✓ |
| | Is one calibration standard at the CRDL level for all AA (except Hg) and cyanides analyses? | [ ] | | ✓ |

ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

| | YES | NO | N/A |
|---|---|---|---|
| 10.2 Is correlation coefficient less than 0.995 for: | | | |
| Mercury Analysis? | | ✓ | |
| Cyanide Analysis? | | | ✓ |
| Atomic Absorption Analysis? | | | ✓ |

ACTION: If yes, flag the associated data as estimated.

NOTE: The data validator shall calculate the correlation coefficient using concentrations of the standards and the corresponding instrument response ( e.g. absorbance, peak area, peak height, etc.).

10 In the instance where less than 4 standards are measured in absorbance (or peak area, peak height,etc.) mode, are the remaining standards analyzed in concentration mode immediately after calibration within ±10% of the true values? ✓

ACTION: If no, flag the associated data as estimated if standards are not within ±10% of true values. Do not flag the data as estimated in linear range indicated by good recovery of standard(s).

11 Form II A (Initial and Continuing Calibration Verification)-

| | YES | NO | N/A |
|---|---|---|---|
| 11.1 Present and complete for every metal and cyanide? | ✓ | | |
| Present and complete for AA and ICP when both are used for the same analyte? | | | ✓ |

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

| | YES | NO | N/A |
|---|---|---|---|
| 11.2 Circle on each Form IIA all percent recoveries that are outside the contract windows. | | | |
| e all calibration standards (initial and continuing) thin control limits: | | | |
| Metals- 90-110%R? | ✓ | | |
| Hg - 80-120%R? | ✓ | | |
| Cyanides- 85-115%R? | | | ✓ |

| | YES | NO | N/A |
|---|---|---|---|
| ACTION: Flag as estimated (J) all positive data (not flagged with a "U") analyzed between a calibration standard with %R between 75-89% (65-79% for Hg; 70-84% for CN) or 111-125% (121-135% for Hg; 116-130% for CN) recovery and nearest good calibration standard. Qualify results <IDL as estimated (UJ) if the ICV or CCV %R is 75-89% (CN, 70-84% ; HG, 65-79%). Reject (red-line) as unacceptable data if recovery of the ICV or CCV is outside the range 75-125% (CN, 70-130%; Hg, 65-135%). Qualify five samples on either side of verification standard out of control limits. | | | |
| 11.3 Was continuing calibration performed every 10 samples or every 2 hours? | ✓ | | |
| Was ICV for cyanides distilled? | | | ✓ |
| ACTION: If no for any of the above, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative". | | | |
| 12 Form II B (CRDL Standards for AA and ICP) - | | | |
| 12.1 Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)? | ✓ | | |
| Was a mid-range calib. verification standard distilled and analyzed for cyanide analysis? | ✓ PBM 9/5/00 | | ✓ |
| Was a 2xCRDL ( or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? (Note: CRI for AL,Ba,Ca,Fe,Mg,Na,or K is not required.) | ✓ | | |

ACTION: If no for any of the above, flag as estimated all data falling within the affected ranges. The affected ranges are:
AA Analysis - **True Value ± CRDL
ICP Analysis - **True Value ± 2CRDL
CN Analysis - **True Value ± 0.5 x True Value.

ue value of CRA, CRI or mid-range standard. Substitute IDL for CRDL when IDL > CRDL. ate the concentration of the missing mid-range standard from the calibration range.

| | | YES | NO | N/A |
|---|---|---|---|---|
| .12.2 | Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run? | [✓] | | |
| | ACTION: If no, write in Contract Problem/Non-Compliance Section of the "Data Assessment Narrative". | | | |
| .12.3 | Circle on each Form IIB all the percent recoveries that are outside the acceptance windows. | | | |
| | Are CRA and CRI standards within control limits: | | | |
| | Metals 80 - 120%R? | [ ] | ✓ | |
| | Is mid-range standard within control limits: | | | |
| | Cyanide 80 - 120%R? | [ ] | | ✓ |
| | ACTION: Flag as estimated all sample results within the affected range if the recovery of the standard is between 50-79%; flag only positive data within the affected range if the recovery is between 121-150%; reject all data within the affected range if the recovery is less than 50%; reject only positive data within the affected range if the recovery is greater than 150%. Qualify 50% of the samples on either side of CRI standard outside the control limits. | | | |
| | Note: Flag or reject the final results only when sample raw data are within the affected ranges and the CRDL standards are outside the acceptance windows. | | | |
| .13 | Form III (Initial and Continuing Calibration Blanks) | | | |
| .13.1 | Present and complete? | [✓] | | |
| | For both AA and ICP when both are used for the same analyte? | [ ] | | ✓ |
| | Was an initial calibration blank analyzed? | [✓] | | |
| | Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)? | [✓] | | |

| | YES | NO | N/A |
|---|---|---|---|
| ACTION: If no, prepare Telephone Record Log, contact laboratory and write in the Contract-Problems/ Non-Compliance section of the "Data Assessment Narrative". | | | |
| 3.2 Circle on each Form III all calibration blank values that are above CRDL (or 2 x IDL when IDL > CRDL). | | | |
| Are all calibration blanks (when IDL<CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)? | ✓ | | |
| Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)? | ✓ | | |
| ACTION: If no for any of the above, flag as estimated (J) positive sample results when raw sample value is less than or equal to calibration blank value analyzed between calibration blank with value over CRDL (or 2xIDL) and nearest good calibration blank. Flag five samples on either side of the calibration blank outside the control limits. | | | |
| 4 FORM III (Preparation Blank) - (Note: The preparation blank for mercury is the same as the calibration blank.) | | | |
| 4.1 Was one prep. blank analyzed for: | | | |
| each Sample Delivery Group (SDG)? | ✓ | | |
| each batch of digested samples? | ✓ | | |
| each matrix type? | ✓ | | |
| both AA and ICP when both are used for the same analyte? | | | ✓ |
| ACTION: If no for any of the above, flag as estimated (J) all the associated positive data <10 x IDLs for which prep. blank was not analyzed. | | | |
| NOTE: If only one blank was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J). | | | |

| | | YES | NO | N/A |
|---|---|---|---|---|
| .14.2 | Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL? | | ✓ | |
| | If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep. blank? | | ✓ | |
| | ACTION: If yes, reject (red-line) all associated data greater than CRDL concentration but less than ten times the prep. blank value. | | | |
| .14.3 | Is concentration of prep. blank value (Form III) less than two times IDL, when IDL is greater than CRDL? | ✓ | | |
| | ACTION: If no, reject (red-line) all positive sample results when sample raw data are less than 10 times the prep. blank value. | | | |
| | Is concentration of prep. blank below the negative CRDL? | | ✓ | |
| | ACTION: If yes, reject (red-line) all associated sample results less than 10xCRDL. | | | |
| .15 | Form IV (ICP Interference Check Sample) | | | |
| .15.1 | Present and complete? | ✓ | | |
| | (NOTE: Not required for furnace AA, flame AA, mercury, cyanide and Ca, Mg, K and Na.) | | | |
| | Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)? | ✓ | | |
| | ACTION: If no, flag as estimated (J) all the samples for which Al, Ca, Fe, or Mg is higher than in ICS. | | | |
| .15.2 | Circle all values on each Form IV that are more than ± 20% of true or established mean value. | | | |
| | Are all Interference Check Sample results inside the control limits (± 20%)? | ✓ | | |
| | If no, is concentration of Al, Ca, Fe, or Mg lower than the respective concentration in ICS? | ✓ | | |

# TOTAL METALS

- 4 -

## ICP INTERFERENCE CHECK SAMPLE

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ003

ICP ID Number: TJA61 Trace ICP ICS Source: CPI

Concentration Units): ug/L

| Analyte | True | | Initial Found | | | Final Found | | |
|---|---|---|---|---|---|---|---|---|
| | Sol.A | Sol.AB | Sol.A | Sol.AB | %R | Sol.A | Sol.AB | %R |
| Aluminum | 500035 | 500035 | 527800 | 529300 | 106 | 528500 | 532200 | 106 |
| Antimony | | 607 | 6.768 | 607.9 | 100 | 1.529 | 626.3 | 103 |
| Arsenic | | 100 | -0.45 | 97.32 | 97 | -2.18 | 101.8 | 102 |
| Barium | | 501 | 0.9926 | 550.0 | 110 | 1.030 | 556.7 | 111 |
| Beryllium | | 501 | 0.3517 | 500.7 | 100 | 0.3453 | 504.0 | 101 |
| Cadmium | | 1003 | 0.5346 | 945.7 | 94 | 0.2297 | 951.8 | 95 |
| Chromium | | 505 | 2.220 | 490.8 | 97 | 2.878 | 494.3 | 98 |
| Cobalt | | 500 | -1.07 | 473.7 | 95 | -0.62 | 477.2 | 95 |
| Copper | | 500 | -4.97 | 548.6 | 110 | -8.36 | 551.7 | 110 |
| Iron | 200251 | 200251 | 191100 | 191600 | 96 | 193300 | 194100 | 97 |
| Lead | | 51 | -4.85 | 45.58 | 90 | -2.88 | 45.54 | 90 |
| Manganese | | 499 | -1.32 | 507.2 | 102 | -1.61 | 508.6 | 102 |
| Nickel | | 1004 | 0.1431 | 957.5 | 95 | 1.128 | 963.7 | 96 |
| Selenium | | 50 | 8.746 | 57.84 | 116 | 4.077 | 54.99 | 110 |
| Silver | | 200 | -0.59 | 216.3 | 108 | 1.219 | 221.0 | 111 |
| Thallium | | 100 | -2.47 | 99.10 | 99 | -0.35 | 100.4 | 100 |
| Tin | | 1000 | 12.55 | 1051 | 105 | 14.38 | 1049 | 105 |
| Vanadium | | 500 | -1.27 | 503.7 | 101 | -0.29 | 509.1 | 102 |
| Zinc | | 1012 | 13.44 | 1032 | 102 | 12.31 | 1032 | 102 |

| | | YES | NO | N/A |
|---|---|---|---|---|
| | ACTION: If no, flag as estimated (J) those positive results for which ICS recovery is between 121-150%; flag all sample results as estimated if ICS recovery falls within 50-79%; reject (red-line) those sample results for which ICS recovery is less than 50%; if ICS recovery is above 150%, reject positive results only (not flagged with a "U"). | | | |
| 16 | Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distillation)- ( Note: Not required for Ca, Mg, K, and Na (both matrices), Al, and Fe (soil only.) | | | |
| 16.1 | Present and complete for: each SDG? | [✓] | ___ | ___ |
| | each matrix type? | [✓] | ___ | ___ |
| | each conc. range (i.e. low, med., high)? | [✓] | ___ | ___ |
| | For both AA and ICP when both are used for the same analyte? | [___] | ___ | ✓ |
| | ACTION: If no for any of the above, flag as estimated (J) all the positive data less than four times the spiking levels specified in SOW for which spiked sample was not analyzed. | | | |
| | NOTE: If one spiked sample was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J). | | | |
| 16.2 | Was field blank used for spiked sample? | ___ | [✓] | ___ |
| | ACTION: If yes, flag all positive data less than 4 x spike added as estimated (J) for which field blank was used as spiked sample. | | | |
| 16.3 | Circle on each Form VA all spike recoveries that are outside control limits (75% to 125%). | | | |
| | Are all recoveries within control limits? | [___] | ✓ | ___ |
| | If no, is sample concentration greater than or equal to four times spike concentration? | [___] | ✓ | ___ |

| | YES | NO | N/A |
|---|---|---|---|
| ACTION: If yes, disregard spike recoveries for analytes whose concentrations are greater than or equal to four times spike added. If no, circle those analytes on Form V for which sample concentration is less than four times the spike concentration. | | | |
| Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA? | ✓ | | |
| ACTION: If no, write in the Contract - Problem/Non - Compliance section of "Data Assessment Narrative". | | | |

6.4 Aqueous

Are any spike recoveries:

| | | | |
|---|---|---|---|
| (a) less than 30%? | | | ✓ |
| (b) between 30-74%? | | | ✓ |
| (c) between 126-150%? | | | ✓ |
| (d) greater than 150%? | | | ✓ |

ACTION: If less than 30%, reject all associated aqueous data; if between 30-74%, flag all associated aqueous data as estimated (J); if between 126-150%, flag as estimated (J) all associated aqueous data not flagged with a "U"; if greater than 150%, reject (red-line) all associated aqueous data not flagged with a "U".

6.5 Soil/Sediment

Are any spike recoveries:

| | | | |
|---|---|---|---|
| (a) less than 10%? | | ✓ | |
| (b) between 10-74%? | | ✓ | |
| (c) between 126-200%? | ✓ | | |
| (d) greater than 200%? | | ✓ | |

*Savannah Laboratories*

# TOTAL METALS

- 5a -

## SPIKE SAMPLE RECOVERY

SAMPLE NO.

LIA005S

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ003

Matrix (soil/water): SOIL Level (low/med): LOW

% Solids for Sample: 85.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| Analyte | Control Limit %R | Spiked Sample Result (SSR) | C | Sample Result (SR) | C | Spike Added (SA) | %R | Q | M |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 75 - 125 | 969.2 | | 664.1 | | 235.3 | 130 | N | P |
| Antimony | 75 - 125 | 55.71 | | 2.353 | U | 58.82 | 95 | | P |
| Arsenic | 75 - 125 | 222.6 | | 1.033 | B | 235.3 | 94 | | P |
| Barium | 75 - 125 | 257.6 | | 10.27 | | 235.3 | 105 | | P |
| Beryllium | 75 - 125 | 5.463 | | 0.08735 | B | 5.882 | 91 | | P |
| Cadmium | 75 - 125 | 5.227 | | 0.5882 | U | 5.882 | 89 | | P |
| Chromium | 75 - 125 | 31.32 | | 8.755 | | 23.53 | 96 | | P |
| Cobalt | 75 - 125 | 53.83 | | 0.3540 | B | 58.82 | 91 | | P |
| Copper | 75 - 125 | 33.02 | | 2.074 | B | 29.41 | 105 | | P |
| Iron | | 1097 | | 996.3 | | 117.6 | 86 | | P |
| Lead | 75 - 125 | 54.22 | | 0.5188 | B | 58.82 | 91 | | P |
| Manganese | 75 - 125 | 93.56 | | 35.69 | | 58.82 | 98 | | P |
| Mercury | 80 - 120 | 0.0480 | | 0.0235 | U | 0.0588 | 82 | | CV |
| Nickel | 75 - 125 | 54.69 | | 0.8208 | B | 58.82 | 92 | | P |
| Selenium | 75 - 125 | 222.2 | | 1.176 | U | 235.3 | 94 | | P |
| Silver | 75 - 125 | 5.606 | | 1.176 | U | 5.882 | 95 | | P |
| Thallium | 75 - 125 | 225.6 | | 1.176 | U | 235.3 | 96 | | P |
| Tin | 75 - 125 | 109.6 | | 5.882 | U | 117.6 | 93 | | P |
| Vanadium | 75 - 125 | 59.85 | | 3.558 | | 58.82 | 96 | | P |
| Zinc | 75 - 125 | 61.13 | | 2.353 | B | 58.82 | 100 | | P |

Comments:

# TOTAL METALS

- 5a -

## SPIKE SAMPLE RECOVERY

SAMPLE NO.

LIA005SD

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ003

Matrix (soil/water): SOIL Level (low/med): LOW

% Solids for Sample: 85.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| Analyte | Control Limit %R | Spiked Sample Result (SSR) | C | Sample Result (SR) | C | Spike Added (SA) | %R | Q | M |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | 1002 | | 664.1 | | 235.3 | 144 | N | P |
| Antimony | 75 - 125 | 55.55 | | 2.353 | U | 58.82 | 94 | | P |
| Arsenic | 75 - 125 | 223.1 | | 1.033 | B | 235.3 | 94 | | P |
| Barium | 75 - 125 | 258.8 | | 10.27 | | 235.3 | 106 | | P |
| Beryllium | 75 - 125 | 5.479 | | 0.08735 | B | 5.882 | 92 | | P |
| Cadmium | 75 - 125 | 5.226 | | 0.5882 | U | 5.882 | 89 | | P |
| Chromium | 75 - 125 | 31.50 | | 8.755 | | 23.53 | 97 | | P |
| Cobalt | 75 - 125 | 54.08 | | 0.3540 | B | 58.82 | 91 | | P |
| Copper | 75 - 125 | 33.34 | | 2.074 | B | 29.41 | 106 | | P |
| Iron | | 1140 | | 996.3 | | 117.6 | 122 | | P |
| Lead | 75 - 125 | 54.84 | | 0.5188 | B | 58.82 | 92 | | P |
| Manganese | 75 - 125 | 91.70 | | 35.69 | | 58.82 | 95 | | P |
| Mercury | 80 - 120 | 0.0527 | | 0.0235 | U | 0.0588 | 90 | | CV |
| Nickel | 75 - 125 | 54.70 | | 0.8208 | B | 58.82 | 92 | | P |
| Selenium | 75 - 125 | 223.3 | | 1.176 | U | 235.3 | 95 | | P |
| Silver | 75 - 125 | 5.669 | | 1.176 | U | 5.882 | 96 | | P |
| Thallium | 75 - 125 | 224.8 | | 1.176 | U | 235.3 | 96 | | P |
| Tin | 75 - 125 | 110.4 | | 5.882 | U | 117.6 | 94 | | P |
| Vanadium | 75 - 125 | 60.43 | | 3.558 | | 58.82 | 97 | | P |
| Zinc | 75 - 125 | 61.37 | | 2.353 | B | 58.82 | 100 | | P |

ments:

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# TOTAL METALS
- 5b -
## POST DIGEST SPIKE SAMPLE RECOVERY

SAMPLE NO.

LIA005A

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ003

Matrix (soil/water): SOIL Level (low/med): LOW

Concentration Units: ug/L

| Analyte | Control Limit %R | Spiked Sample Result (SSR) | C | Sample Result (SR) | C | Spike Added (SA) | %R | Q | M |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | 7705 | | 5645 | | 2000 | 103 | | P |
| Antimony | | 475.6 | | 20.00 | U | 500.0 | 95 | | P |
| Arsenic | | 1871 | | 8.777 | B | 2000 | 93 | | P |
| Barium | | 2136 | | 87.28 | | 2000 | 102 | | P |
| Beryllium | | 45.19 | | 0.7425 | B | 50.00 | 89 | | P |
| Cadmium | | 43.33 | | 5.000 | U | 50.00 | 87 | | P |
| Chromium | | 261.2 | | 74.41 | | 200.0 | 93 | | P |
| Cobalt | | 448.4 | | 3.009 | B | 500.0 | 89 | | P |
| Copper | | 273.5 | | 17.63 | B | 250.0 | 102 | | P |
| Iron | | 9092 | | 8468 | | 1000 | 62 | | P |
| Lead | | 448.0 | | 4.410 | B | 500.0 | 89 | | P |
| Manganese | | 766.0 | | 303.4 | | 500.0 | 93 | | P |
| Mercury | | 0.917 | | 0.400 | U | 1.00 | 92 | | CV |
| Nickel | | 455.2 | | 6.977 | B | 500.0 | 90 | | P |
| Selenium | | 1837 | | 10.00 | U | 2000 | 92 | | P |
| Silver | | 47.64 | | 10.00 | U | 50.00 | 95 | | P |
| Thallium | | 1876 | | 10.00 | U | 2000 | 94 | | P |
| Tin | | 970.0 | | 50.00 | U | 1000 | 97 | | P |
| Vanadium | | 502.8 | | 30.25 | | 500.0 | 95 | | P |
| Zinc | | 514.5 | | 20.00 | B | 500.0 | 99 | | P |

Comments:

| | | YES | NO | N/A |
|---|---|---|---|---|
| | ACTION: If less than 10%, reject all associated data; if between 10-74%, flag all associated data as estimated; if between 126-200%, flag as estimated all associated data was not flagged with a "U"; if greater than 200%, reject all associated data not flagged with a "U". | | | |
| .17 | Form VI (Lab Duplicates) | | | |
| .17.1 | Present and complete for: each SDG? | [___] | ___ | ✓ |
| | each matrix type? | [___] | ___ | ✓ |
| | each concentration range (i.e. low, med., high)? | [___] | ___ | ✓ |
| | both AA and ICP when both are used for the same analyte? | [___] | ___ | ✓ |
| | ACTION: If no for any the above, flag as estimated (J) all the data ≥CRDL* for which duplicate sample was not analyzed. | | | |
| | Note: 1. If one duplicate sample was analyzed for more than 20 samples, then first 20 samples do not have to be flagged as estimated. | | | |
| | 2. If percent solids for soil sample and its duplicate differ by more than 1%, prepare a Form VI for each duplicate pair, report concentrations in ug/L on wet weight basis and calculate RPD or Difference for each analyte. | | | |
| .17.2 | Was field blank used for duplicate analysis? | ___ | [___] | ✓ |
| | ACTION: If yes, flag all data ≥CRDL* as estimated (J) for which field blank was used as duplicate. | | | |
| .17.3 | Are all values within control limits (RPD 20% or difference ≤ ±CRDL)? | [___] | ___ | ✓ |
| | If no, are all results outside the control limits flagged with an * on Form I's and VI? | [___] | ___ | ✓ |
| | ACTION: If no, write in the Contract - Problems/Non-Compliance section of "Data Assessment Narrative". | | | |

* Substitute IDL for CRDL when IDL > CRDL.

| | YES | NO | N/A |
|---|---|---|---|
| NOTE: 1. RPD is not calculable for an analyte of the sample - duplicate pair when both values are less than IDL. 2. If the result of lab duplicate analyzed by GFAA is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, do not apply precision criteria to metals analyzed by GFAA. | | | |

17.4 Aqueous

Circle on each Form VI all values that are:

RPD > 50%, or
Difference > CRDL*

| | | | |
|---|---|---|---|
| Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL? | ___ | [___] | ✓ |
| Is any difference** between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL? | ___ | [___] | ✓ |

ACTION: If yes, flag the associated data as estimated.

17.5 Soil/Sediment

Circle on each Form VI all values that are:

RPD > 100%, or

Difference > 2 x CRDL*

| | | | |
|---|---|---|---|
| Is any RPD (where sample and duplicate are both greater than or equal to 5 times *CRDL) : > 100%? | ___ | [___] | ✓ |
| Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x*CRDL) : > 2x*CRDL? | ___ | [___] | ✓ |

*Substitute IDL for CRDL when IDL > CRDL.
**Use absolute values of sample and duplicate to calculate the difference.

| | | YES | NO | N/A |
|---|---|---|---|---|
| | ACTION: If yes, flag the associated data as estimated. | | | |
| .6 | Field Duplicates | | | |
| 16.1 | Were field duplicates analyzed? | [ ] | ___ | ✓ |

ACTION: If yes, prepare a Form VI for each aqueous field duplicate pair. Prepare a Form VI for each soil duplicate pair, if percent solids for sample and its duplicate differ by more than 1%; report concentrations of soils in ug/l on wet weight basis and calculate RPDs or Difference for each analyte.

NOTE: 1. Do not calculate RPD when both values are less than IDL.
2. Flag all associated data only for field duplicate pair.

16.2 Aqueous

Circle all values on self prepared Form VI for field duplicates that are:

RPD > 50%, or
Difference > CRDL*

| | | | |
|---|---|---|---|
| Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL? | ___ | [ ] | ✓ |
| Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL? | ___ | [ ] | ✓ |

ACTION: If yes, flag the associated data as estimated.

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

| | | YES | NO | N/A |
|---|---|---|---|---|
| 18.3 | Soil/Sediment | | | |
| | Circle all values on self prepared Form VI for field duplicates that are: | | | |
| | RPD >100%, or | | | |
| | Difference > 2 x CRDL* | | | |
| | Is any RPD (where sample and duplicate are both greater than 5 times *CRDL) : >100%? | ___ | [___] | ___ ✓ |
| | Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x *CRDL ): >2x *CRDL? | ___ | [___] | ___ ✓ |
| | ACTION: If yes, flag the associated data as estimated. | | | |
| 19 | Form VII (Laboratory Control Sample) (Note: LCS - not required for aqueous Hg and cyanide analyses.) | | | |
| 19.1 | Was one LCS prepared and analyzed for: | | | |
| | ___ each SDG? | [___] ✓ | ___ | ___ |
| | each batch samples digested/distilled? | [___] ✓ | ___ | ___ |
| | both AA and ICP when both are used for the same analyte? | [___] | ___ | ___ ✓ |

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory for submittal of results of LCS. Flag as estimated (J) all the data for which LCS was not analyzed.

NOTE: If only one LCS was analyzed for more than 20 samples, then first 20 samples close to LCS do not have to be flagged as estimated.

Substitute IDL for CRDL when IDL > CRDL.
Use absolute values of sample and duplicate to calculate the difference.

| | | YES | NO | N/A |
|---|---|---|---|---|
| .19.2 | **Aqueous LCS** | | | |
| | Circle on each Form VII the LCS percent recoveries outside control limits (80 - 120%) except for aqueous Ag and Sb. | | | |
| | Is any LCS recovery: less than 50%? | ___ | [___] | ✓ |
| | between 50% and 79%? | ___ | [___] | ✓ |
| | between 121% and 150%? | ___ | [___] | ✓ |
| | greater than 150%? | ___ | [___] | ✓ |

ACTION: Less than 50%, reject (red-line) all data; between 50% and 79%, flag all associated data as estimated (J); between 121% and 150%, flag all positive (not flagged with a "U") results as estimated; greater than 150%, reject all positive results.

| | | | | |
|---|---|---|---|---|
| .19.3 | **Solid LCS** | | | |
| | NOTE: 1. If "Found" value of LCS is rejectable due to duplicate injections or analytical spike recovery criteria, regardless of LCS recovery, flag the associated data as estimated (J). 2. If IDL of an analyte is equal to or greater than true value of LCS, disregard the "Action" below even though LCS is out of control limits. | | | |
| | Is LCS "Found" value higher than the control limits on Form VII? | ___ | [✓] | ___ |

ACTION: If yes, qualify all associated positive data as estimated.

| | | | | |
|---|---|---|---|---|
| | Is LCS "Found" value lower than the Control limits on Form VII? | ___ | [✓] | ___ |

ACTION: If yes, qualify all associated data as estimated.

# TOTAL METALS
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## LABORATORY CONTROL SAMPLE

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ003

Solid LCS Source: CPI

Aqueous LCS Source: CPI

| Analyte | Aqueous (ug/L) True | Found | %R | Solid (mg/kg) True | Found | C | Limits | | %R |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | 214 | 229 | | 159 | 268 | 107 |
| Antimony | | | | 50.0 | 48.8 | | 37.3 | 62.7 | 98 |
| Arsenic | | | | 200 | 193 | | 149 | 251 | 97 |
| Barium | | | | 200 | 207 | | 149 | 251 | 104 |
| Beryllium | | | | 5.00 | 5.28 | | 3.80 | 6.20 | 106 |
| Cadmium | | | | 5.00 | 5.25 | | 3.80 | 6.20 | 105 |
| Chromium | | | | 20.0 | 21.8 | | 15.0 | 25.0 | 109 |
| Cobalt | | | | 50.0 | 52.6 | | 37.3 | 62.7 | 105 |
| Copper | | | | 25.0 | 25.2 | | 18.7 | 31.3 | 101 |
| Iron | | | | 109 | 114 | | 81.3 | 137 | 104 |
| Lead | | | | 50.0 | 51.7 | | 62.7 | 64.2 | 103 |
| Manganese | | | | 50.0 | 53.3 | | 37.3 | 62.7 | 10 |
| Mercury | | | | 1.40 | 1.35 | | 1.10 | 1.70 | 96 |
| Nickel | | | | 50.0 | 53.7 | | 37.3 | 67.6 | 107 |
| Selenium | | | | 200 | 192 | | 149 | 251 | 96 |
| Silver | | | | 5.00 | 4.85 | | 3.80 | 6.20 | 97 |
| Thallium | | | | 200 | 210 | | 149 | 251 | 105 |
| Tin | | | | 100 | 102 | | 74.6 | 125 | 102 |
| Vanadium | | | | 50.0 | 51.5 | | 37.3 | 62.7 | 103 |
| Zinc | | | | 50.0 | 53.4 | | 37.3 | 62.7 | 107 |

| | | YES | NO | N/A |
|---|---|---|---|---|
| 0 | Form IX (ICP Serial Dilution) - | | | |
| | NOTE: Serial dilution analysis is required only for initial concentrations equal to or greater than 10 x IDL. | | | |
| 0.1 | Was Serial Dilution analysis performed for: | | | |
| | each SDG? | ✓ | | |
| | each matrix type? | ✓ | | |
| | each concentration range (i.e. low, med.)? | ✓ | | |
| | ACTION: If no for any of the above, flag as estimated all the positive data ≥ 10xIDLs or ≥ CRDL when 10xIDL ≤ CRDL for which Serial Dilution Analysis was not performed. | | | |
| 20.2 | Was field blank(s) used for Serial Dilution Analysis? | | ✓ | |
| | ACTION: If yes, flag all associated data ≥ 10 x IDL as estimated (J). If 10xIDL ≤ CRDL, flag all data ≥ CRDL. | | | |
| 20.3 | Are results outside control limit flagged with an "E" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater. | ✓ | | |
| | ACTION: If no, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative". | | | |
| 20.4 | Circle on each Form IX all percent difference that are outside the control limits for initial concentrations equal to or greater than 10 x IDLs only. | | | |
| | Are any % difference values: | | | |
| | > 10%? | | ✓ | |
| | ≥ 100%? | | ✓ | |

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# TOTAL METALS
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## ICP SERIAL DILUTIONS

SAMPLE NO.

LIA005L

Contract:

Lab Code: SLSAV Case No.: SAS No.: SDG NO.: VIEQ003

Matrix (soil/water): SOIL Level (low/med): LOW

Concentration Units: ug/L

| Analyte | Initial Sample Result (I) | C | Serial Dilution Result (S) | C | % Difference | Q | M |
|---|---|---|---|---|---|---|---|
| Aluminum | 5645 | | 5681 | | 0.6 | | P |
| Antimony | 20.00 | U | 100.0 | U | | | P |
| Arsenic | 8.777 | B | 50.00 | U | | | P |
| Barium | 87.28 | | 87.40 | | 0.1 | | P |
| Beryllium | 0.7425 | B | 20.00 | U | | | P |
| Cadmium | 5.000 | U | 25.00 | U | | | P |
| Chromium | 74.41 | | 79.89 | | 7.4 | | P |
| Cobalt | 3.009 | B | 50.00 | U | | | P |
| Copper | 17.63 | B | 100.0 | U | | | P |
| Iron | 8468 | | 9300 | | 9.8 | | P |
| Lead | 4.410 | B | 25.00 | U | | | P |
| Manganese | 303.4 | | 328.0 | | 8.1 | | P |
| Mercury | 0.400 | U | 2.00 | U | | | CV |
| Nickel | 6.977 | B | 200.0 | U | | | P |
| Selenium | 10.00 | U | 50.00 | U | | | P |
| Silver | 10.00 | U | 50.00 | U | | | P |
| Thallium | 10.00 | U | 50.00 | U | | | P |
| Tin | 50.00 | U | 250.0 | U | | | P |
| Vanadium | 30.25 | | 31.32 | B | 3.5 | | P |
| Zinc | 20.00 | B | 49.40 | B | 147.0 | | P |

| | | YES | NO | N/A |
|---|---|---|---|---|
| | ACTION: Flag as estimated (J) all the associated sample data ≥ 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which percent difference is greater than 10% but less than 100%. Reject (red-line) all the associated sample results equal to or greater than 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which PD is greater than or equal to 100%. | | | |
| | Note: Flag or reject on Form I's only the sample results whose associated raw data are ≥ 10xIDL (or ≥ CRDL when 10xIDL≤ CRDL) | | | |
| 1.21 | Furnace Atomic Absorption (AA) QC Analysis | | | |
| 1.21.1 | Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed by GFAA? | [___] | ___ | ✓ |
| | ACTION: If no, reject the data on Form I's for which duplicate injections were not performed. | | | |
| 1.21.2 | Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or Coefficient of Variation (CV) for concentration greater than CRDL? | [___] | ___ | ✓ |
| | Was a dilution analyzed for sample with analytical spike recovery less than 40%? | [___] | ___ | ✓ |
| | ACTION: If no for any of the above, flag all the associated data as estimated. | | | |
| 1.21.3 | Is analytical spike recovery outside the control limits (85-115%) for any sample? | ___ | [___] | ✓ |
| | ACTION: If yes, flag the affected sample results if the recovery is between 10-84%; if the recovery is between 115-200%, flag the associated positive sample results as estimated; reject the associated sample results if the recovery is less than 10%; reject positive sample results if the recovery is greater than 200%. | | | |

Analytical spike is not required on the pre-digestion spiked sample.

| | | YES | NO | N/A |
|---|---|---|---|---|
| | NOTE: Reject or flag the data only when the affected sample(s) was not subsequently analyzed by Method of Standard Addition. | | | |
| .22 | Form VIII (Method of Standard Addition Results) | | | |
| .22.1 | Present? | [ ] | ___ | ✓ |
| | If no, is any Form I result coded with "S" or a "+"? | ___ | [ ] | ✓ |
| | ACTION: If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII. | | | |
| .22.2 | Is coefficient of correlation for MSA less than 0.990 for any sample? | ___ | [ ] | ✓ |
| | ACTION: If yes, reject (red-line) the affected data. | | | |
| .22.3 | Was *MSA required for any sample but not performed? | ___ | [ ] | ✓ |
| | Is coefficient of correlation for MSA less than 0.995? | ___ | [ ] | ✓ |
| | Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run? | ___ | [ ] | ✓ |
| | ACTION: If yes for any of the above, flag all the associated data as estimated (J). | | | |
| .22.4 | Was proper quantitation procedure followed correctly as outlined in the SOW on page E-23? | [ ] | ___ | ✓ |
| | ACTION: If no, note exception under Contract Problem/ Non-Compliance section of the "Data Assessment Narrative", and prepare a separate list. | | | |

* MSA is not required on LCS and prep. blank.

| | | YES | NO | N/A |
|---|---|---|---|---|
| 23 | Dissolved/Total or Inorganic/Total Analytes - | | | |
| 23.1 | Were any analyses performed for dissolved as well as total analytes on the same sample(s). | ___ | [___] | ✓ |
| | Were any analyses performed for inorganic as well as total (organic + inorganic) analytes on the same sample(s)? | ___ | [___] | ✓ |
| | NOTE: 1. If yes, prepare a list comparing differences between all dissolved (or inorganic) and total analytes. Compute the differences as a percent of the total analyte only when dissolved concentration is greater than CRDL as well as total concentration. 2. Apply the following questions only if inorganic (or dissolved ) results are (i) above CRDL, and (ii) greater than total constituents. 3. At least one preparation blank, ICS, and LCS should be analyzed in each analytical run. | | | |
| 23.2 | Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%? | ___ | [___] | ✓ |
| 23.3 | Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 50%? | ___ | [___] | ✓ |
| | ACTION: If more than 10%, flag both dissolved (or inorganic) and total values as estimated (J); if more than 50%, reject (red-line) the data for both values. | | | |
| .24 | Form I (Field Blank) - | | | |
| | (Note: Designate 'Field Blank' as such on Form I.) | | | |
| .24.1 | Circle all field blank values on Form I that are greater than CRDL, (or 2 x IDL when IDL > CRDL). | | | |
| | Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples? | [___] | ___ | ✓ |

| | YES | NO | N/A |
|---|---|---|---|
| If no, was field blank value already rejected due to other QC criteria? | [ ] | | ✓ |

ACTION: If no, reject (except field blank results) all associated positive sample data less than or equal to five times the field blank value. Reject on Form I's the soil sample results that when converted to ug/L on wet basis are less than or equal to five times the field blank value in ug/L.

25 Form X, XI, XII (Verification of Instrumental Parameters).

25.1 Is verification report present for:

| | | | |
|---|---|---|---|
| Instrument Detection Limits (quarterly)? | ✓ | | |
| ICP Interelement Correction Factors (annually)? | ✓ | | |
| ICP Linear Ranges (quarterly)? | ✓ | | |

ACTION: If no, contact TPO of the lab.

5.2 Form X (Instrument Detection Limits) - (Note: IDL is not required for Cyanide.)

| | | | |
|---|---|---|---|
| 5.2.1 Are IDLs present for: — all the analytes? | ✓ | | |
| all the instruments used? | ✓ | | |
| For both AA and ICP when both are used for the same analyte? | [ ] | | ✓ |

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

| | | | |
|---|---|---|---|
| 5.2.2 Is IDL greater than CRDL for any analyte? | | ✓ | |
| If yes, is the concentration on Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL. | ✓ | | |

| | YES | NO | N/A |
|---|---|---|---|
| **Action** : If no, flag as estimated all values less than five times IDL of the instrument whose IDL exceeds CRDL. | | | |
| .25.3 Form XI (Linear Ranges) | | | |
| .25.3.1 Was any sample result higher than high linear range of ICP. | | ✓ | |
| Was any sample result higher than the highest calibration standard for non-ICP parameters? | | ✓ | |
| If yes for any of the above, was the sample diluted to obtain the result on Form I? | ✓ | | |
| **ACTION**: If no, flag the result reported on Form I as estimated(J). | | | |
| .26 Percent Solids of Sediments | | | |
| 26.1 Are percent solids in sediment(s): < 50%? | | ✓ | |
| < 10%? | | ✓ | |

**ACTION**: If yes, qualify as estimated all the results of a sample that has per cent solids between 10%-50% (i.e. moisture content between 50%-90%). Reject all the results of a sample that has per cent solids less than 10% (i.e. moisture content greater than 90%).

**NOTE**: Reject or flag(J) only the sample results that were not previously rejected or flaged due to other QC criteria.

# Data Validation Report
Copy

CH2M HILL
Vieques PR
SDG #: 6139, 6140 and 6148

**HEARTLAND**
ENVIRONMENTAL SERVICES, INC.

# Data Validation Report

| | |
|---|---|
| SDG#: | 6139 |
| Date: | September 6, 2000 |
| Client Name: | CH2M Hill |
| Project/Site Name: | Vieques |
| Date Sampled: | June 20 - 21, 2000 |
| Number of Samples: | 20 Non-Aqueous Sample(s) with 0 MS/MSD(s) |
| Laboratory: | GPL Laboratories, LLLP |
| Validation Guidance: | National Functional Guidelines for Organic and Inorganic Data, February, 1994, Region II Modifications |
| QA/QC Level: | DQO Level IV |
| Method(s) Utilized: | SW846 Third Edition |
| Analytical Fractions: | Picric Acid and Perchlorate |

Analytical data in this report were screened to determine usability of results and also to determine contractual compliance relative to these requirements and deliverables. This screening assumes analytical results are correct as reported and merely provides an interpretation of the reported quality control results. A minimum of 10% of all laboratory calculations have been verified as part of this validation. All instrument output, i.e. spectra, chromatograms, etc., for each sample have been carefully reviewed. The end-user is urged to review the Specific Findings and associated Data Qualifications presented in this report. Annotated Form 1s or spreadsheets for all samples reviewed are included after the Data Assessment Narratives. Form 1s for MS/MSD samples or spreadsheets are not annotated.

The release of this Data Validation Report is authorized by the following signature:

Lisa R. Juneau
for Eugene M. Watson, Vice President

9-6-00
Date

4127 Plaza 94 South • St. Charles, MO 63304
(636) 936-1332 • Fax (636) 936-1335

**SDG# 6139**

**Samples and Fractions Reviewed**

Sample Identifications Analytical Fractions

| CH2M HILL ID | MATRIX | PA | | PERC | |
|---|---|---|---|---|---|
| LIA007 | SOIL | | X | | X |
| LIA008 | SOIL | | X | | X |
| LIA014 | SOIL | | X | | X |
| LIA014D | SOIL | | X | | X |
| LIA017 | SOIL | | X | | X |
| LIA018 | SOIL | | X | | X |
| LIA021 | SOIL | | X | | X |
| LIA022 | SOIL | | X | | X |
| LIA023 | SOIL | | X | | X |
| LIA023D | SOIL | | X | | X |
| LIA025 | SOIL | | X | | X |
| LIA026 | SOIL | | X | | X |
| LIA009 | SOIL | | X | | X |
| LIA010 | SOIL | | X | | X |
| LIA011 | SOIL | | X | | X |
| LIA012 | SOIL | | X | | X |
| LIA013 | SOIL | | X | | X |
| LIA016 | SOIL | | X | | X |
| LIA027 | SOIL | | X | | X |
| LIA024 | SOIL | | X | | X |
| Total Billable Samples (Water/Soil) | | 0 | 20 | 0 | 20 |

PA= Picric Acid
PERC= Perchlorate

# DATA ASSESSMENT NARRATIVES

# DATA ASSESSMENT NARRATIVE

# PICRIC ACID

## General

The organic findings offered in this screening report assumes that all analytical results are correct as reported and is based upon the examination of the reported holding times, blank analysis results, surrogate and matrix spike recoveries, HPLC performance, and calibration results. This report was prepared in compliance relative to the analytical and deliverable requirements specified in the SW-846 Method 8330; Region II Data Validation Guidelines, Revision 1.3, September, 1994; and DQO Level IV requirements. All comments made within this report should be considered when examining the analytical results. Please refer the specific findings found in each category to the Summary of Data Qualifications table.

## SDG# 6139

A validation was performed on the Picric Acid data from SDG 6139. The data was evaluated based on the following parameters.

| | | |
|---|---|---|
| * | • | Data Completeness |
| | • | Holding Times |
| * | • | HPLC Performance |
| | • | Calibrations |
| * | • | Blanks |
| * | • | Surrogate Recoveries |
| * | • | Matrix Spike/Matrix Spike Duplicates |
| * | • | Field Duplicates |
| * | • | Compound Identification |
| * | • | Compound Quantitation |

* - All criteria were met for this parameter.

## Holding Times

The Region II extraction holding time of fourteen (14) days was exceeded by twenty-two (22) to twenty-three (23) days for all samples. For the following samples, the positive results are qualified as estimated, J HT, and the non-detect results are rejected, R HT.

All Samples

## Initial Calibration

The samples were analyzed more than twenty-four hours after the analysis of the initial calibration. One (1) associated continuing calibration exhibited one (1) compound with a non-compliant %D. Based on the Region II validation guidelines, for the following samples and compound, the positive results are qualified as estimated, J IC, and the non-detect results are qualified as estimated, UJ IC.

| | |
|---|---|
| LIA016 | Picric Acid |
| LIA027 | |

## Continuing Calibration

The continuing calibration LCB6060.D exhibited one (1) compound with a %D greater than 15%. For the following samples and non-compliant compound, the positive results are qualified as estimated, J CC, and the non-detect results are qualified as estimated, UJ CC.

| | |
|---|---|
| LIA016 | Picric Acid |
| LIA027 | |

## System Performance and Overall Assessment

The data required qualifications.

# GLOSSARY OF DATA QUALIFIERS

## QUALIFICATION CODES

**U** = Not detected

**J** = Estimated value

**UJ** = Reported quantitation limit is qualified as estimated

**NJ** = Result is considered presumptively present at an estimated concentration

**R** = Result is rejected and unusable

**D** = Result value is based on dilution analysis

## METHOD BLANK QUALIFICATION CODES

**CRQL =** The sample result for the blank contaminant is less than the sample CRQL and is less than 5X the method blank value. The sample result for the blank contaminant is rejected and the CRQL for that compound is reported.

**U =** The sample result for the blank contaminant is greater than the sample CRQL and is less than 5X the method blank value. The sample result for the blank contaminant is qualified as non detected at the compound value reported.

**No Action =** The sample result for the blank contaminant is greater than the sample CRQL and is greater than 5X the method blank value. The sample result for the blank contaminant is not qualified with any blank qualifiers.

**Two Digit Code Definitions for Comment Field**

| Code | Definition |
|---|---|
| TN | Tune |
| BS | Blank Spike/LCS |
| IS | Internal Standard |
| MS | Matrix Spike and/or Matrix Spike Duplicate Recovery |
| MD | Matrix Spike/Matrix Spike Duplicate Precision |
| 2S | Second Source |
| SD | Serial Dilution |
| SS | Spiked Surrogate |
| LR | Analyte present above linear (or calibration) range |
| IC | Initial Calibration |
| CC | Continuing Calibration Verification |
| PD | Pesticide Degradation |
| LD | Lab Duplicate |
| 2C | Second Column (Confirmation) |
| HT | Holding Time |
| PS | Post Spike |
| BL | Blank |
| RE | Re-extraction |
| DL | Dilution |
| IB | In Between |
| FD | Field Duplicate |
| OT | Other |

# SUMMARY OF DATA QUALIFICATIONS

| SAMPLE ID | COMPOUND ID | DL | QL | CODE |
|---|---|---|---|---|
| All Samples | ALL | +/- | J/R | HT |
| LIA016<br>LIA027 | Picric Acid | +/- | J/UJ | IC |
| LIA016<br>LIA027 | Picric Acid | +/- | J/UJ | CC |

* DL denotes the Form I qualifier supplied by the laboratory
QL denotes the qualifier used by the data validation firm
+ in the DL column denotes a positive result
- in the DL column denotes a non detect result

# DATA ASSESSMENT NARRATIVE
# PERCHLORATE

General

The inorganic findings offered in this screening report assumes that all analytical results are correct as reported and is based upon the examination of the reported holding times, blank analysis results, matrix spike and LCS recoveries, matrix duplicates and calibration results. This report was prepared in compliance relative to the analytical and deliverable requirements specified in the Method 314.0 for Perchlorate in SW 846; the Functional Guidelines for Inorganic Data Validation, February 1994 with Region II modifications, and DQO Level IV requirements. All comments made within this report should be considered when examining the analytical results. Please refer the specific findings found in each category to the Summary of Data Qualification table.

## SDGs # 6139

A validation was performed on the perchlorate Data from SDG 6139. The data was evaluated based on the following parameters.

| | | |
|---|---|---|
| * | • | Data Completeness |
| * | • | Holding Times |
| * | • | Calibrations |
| * | • | Blanks |
| * | • | Matrix Spike Recovery |
| * | • | Matrix Duplicates |
| * | • | Field Duplicates |
| * | • | Laboratory Control Samples |

* - All criteria were met for this parameter.

# SUMMARY OF DATA QUALIFICATIONS

| Sample ID | Analyte | DL | QL |
|---|---|---|---|

Data stands as reported without qualification.

# ANNOTATED FORM 1s

1B
EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA007

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

atrix: (soil/water) SOIL Lab Sample ID: 6139-001

Sample wt/vol: 2.4 (g/ml) G Lab File ID: LCB6041.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/01/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 830 | ~~U~~ R HT |

EKK
9/5/00

FORM I SV-1

1B
EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA008

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

) Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6139-002

Sample wt/vol: 2.4 (g/ml) G Lab File ID: LCB6042.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/01/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 830 | ~~U~~ R HT |

EXK
9/5/00

FORM I SV-1

PA

1B
EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LJA014

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6139-003

Sample wt/vol: 2.3 (g/ml) G Lab File ID: LCB6043.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/01/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CONCENTRATION UNITS:

| CAS NO. | COMPOUND | (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 870 | ~~U~~ R HT |

EXK
9/5/00

18

EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA014D

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6139-004

Sample wt/vol: 2.7 (g/ml) G Lab File ID: LCB6044.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/01/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 740 | ~~U~~ R HT |

EXK
9/5/00

FORM I SV-1

1B
EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA017

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

.b Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6139-005

Sample wt/vol: 2.5 (g/ml) G Lab File ID: LCB6045.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/01/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 800 | ~~U~~ R HT |

EKK
9/5/00

FORM I SV-1

1B

EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA018

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6139-006

Sample wt/vol: 2 (g/ml) G Lab File ID: LCB6046.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/01/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CONCENTRATION UNITS:

| CAS NO. | COMPOUND | (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 1000 | ~~U~~ R HT |

EXK
9/5/00

FORM I SV-1

1B
EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA021

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6139-007

Sample wt/vol: 2.2 (g/ml) G Lab File ID: LCB6047.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/01/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 910 | ~~U~~ R HJ |

EXK
9/5/00

FORM I SV-1

1B
EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA022

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

ab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6139-008

Sample wt/vol: 2.3 (g/ml) G Lab File ID: LC86048.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/01/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 870 | ~~U~~ R HT |

EPK
9/5/00

1B
EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA023

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6139-009

Sample wt/vol: 2.1 (g/ml) G Lab File ID: LCB6050.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/01/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 950 | ~~U~~ R HT |

EAK
9/5/00

1B

EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA023D

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6139-010

Sample wt/vol: 2.5 (g/ml) G Lab File ID: LCB6051.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/01/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CONCENTRATION UNITS:

| CAS NO. | COMPOUND | (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 800 | ~~U~~ R HT |

EXC
9/5/00

FORM I SV-1

1B
EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA024

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6139-011

Sample wt/vol: 2.1 (g/ml) G Lab File ID: LCB6052.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/01/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 950 | ~~U~~ R HT |

EKK
9/5/00

FORM I SV-1

PA

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020

1B
EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA025

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6139-012

Sample wt/vol: 2.4 (g/ml) G Lab File ID: LCB6053.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/01/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 830 | UL R HJ |

EK
9/5/00

FORM I SV-1

1B

EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA026

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6139-013

Sample wt/vol: 2.4 (g/ml) G Lab File ID: LCB6054.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/01/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CONCENTRATION UNITS:

| CAS NO. | COMPOUND | (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 830 | UL R HT |

EXK
9/5/00

FORM I SV-1

1B

EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA009

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6139-014

Sample wt/vol: 2.7 (g/ml) G Lab File ID: LCB6055.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/01/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CONCENTRATION UNITS:

| CAS NO. | COMPOUND | (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 740 | ~~U~~ R HT |

EXK
9/5/00

FORM I SV-1

1B

EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA010

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6139-015

Sample wt/vol: 2.4 (g/ml) G Lab File ID: LCB6056.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/01/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CONCENTRATION UNITS:

| CAS NO. | COMPOUND | (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 830 | ~~U~~ R HT |

EMK 9/5/00

FORM I SV-1

1B
EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA011

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

b Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6139-016

Sample wt/vol: 2.2 (g/ml) G Lab File ID: LCB6057.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/01/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 910 | ~~U~~ R HT |

EXC
9/5/00

FORM I SV-1

1B
EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA012

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6139-017

Sample wt/vol: 2.4 (g/ml) G Lab File ID: LCB6058.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/01/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 830 | ~~U~~ R HT |

EXC
9/5/00

18

EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA013

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6139-018

Sample wt/vol: 2.1 (g/ml) G Lab File ID: LCB6059.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/01/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 950 | ~~U~~ R HT |

EKK
9/5/00

FORM I SV-1

PA 0-1058

02

1B
EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA016

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6139-019

Sample wt/vol: 2 (g/ml) G Lab File ID: LCB6063.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/02/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 1000 | ~~U~~ R HT |

CKK
9/5/00

1B

EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA027

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6139-020

Sample wt/vol: 2 (g/ml) G Lab File ID: LCB6064.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/02/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 1000 | ~~U~~ R HT |

EXR
9/5/00

FORM I SV-1

PA

001064

029

1B
EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA013 MS

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6139 013 MS

Sample wt/vol: 2 (g/ml) G Lab File ID: LCB6061.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/01/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CONCENTRATION UNITS:

| CAS NO. | COMPOUND | (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 34000 | E |

EKK
9/5/06

FORM I SV-1

1B

EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA013 MSD

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6139-018 MSD

Sample wt/vol: 2 (g/ml) G Lab File ID: LCB6062.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/01/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

| CAS NO. | COMPOUND | | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 34000 | E |

EKK
9/5/00

FORM I SV-1

## Summary of Analytical Results

Client ID LIA007
GPL ID: 6139-001-01-1
Matrix: Soil
Date Collected: Jun-21-2000
Date Received: Jun-22-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-19-2000
Time Analyzed 02:19
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 62.6 | ug/kg | U | 1 |

9/1/00

## Summary of Analytical Results

Client ID LIA008
GPL ID: 6139-002-01-1
Matrix: Soil
Date Collected: Jun-21-2000
Date Received: Jun-22-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-19-2000
Time Analyzed 02:37
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 61.4 | ug/kg | U | 1 |

DBP 9/5/00

# GPL LABORATORIES, LLLP

## Summary of Analytical Results

Client ID LIA014
GPL ID: 6139-003-01-1
Matrix: Soil
Date Collected: Jun-21-2000
Date Received: Jun-22-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-19-2000
Time Analyzed 02:54
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 57.2 | ug/kg | U | 1 |

BK 9/5/00

## Summary of Analytical Results

Client ID LIA014D
GPL ID: 6139-004-01-1
Matrix: Soil
Date Collected: Jun-21-2000
Date Received: Jun-22-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-19-2000
Time Analyzed 03:30
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 57.8 | ug/kg | U | 1 |

9/5/00

## Summary of Analytical Results

Client ID LIA017
GPL ID: 6139-005-01-1
Matrix: Soil
Date Collected: Jun-21-2000
Date Received: Jun-22-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-19-2000
Time Analyzed 03:47
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 56 | ug/kg | U | 1 |

PBW 7/5/00

## Summary of Analytical Results

Client ID LIA018
GPL ID: 6139-006-01-1
Matrix: Soil
Date Collected: Jun-21-2000
Date Received: Jun-22-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-19-2000
Time Analyzed 04:05
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 62.1 | ug/kg | U | 1 |

PBR 9/5/00



0 20

037

## Summary of Analytical Results

Client ID LIA021
GPL ID: 6139-007-01-1
Matrix: Soil
Date Collected: Jun-21-2000
Date Received: Jun-22-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-19-2000
Time Analyzed 04:22
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 52.9 | ug/kg | U | 1 |

DBR 9/15/00

# GPL LABORATORIES, LLLP

## Summary of Analytical Results

Client ID LIA022
GPL ID: 6139-008-01-1
Matrix: Soil
Date Collected: Jun-21-2000
Date Received: Jun-22-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-19-2000
Time Analyzed 04:40
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 53.1 | ug/kg | U | 1 |

9/15/00

# GPL LABORATORIES, LLLP

## Summary of Analytical Results

Client ID LIA023
GPL ID: 6139-009-01-1
Matrix: Soil
Date Collected: Jun-21-2000
Date Received: Jun-22-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-19-2000
Time Analyzed 04:58
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 53 | ug/kg | U | 1 |

9/5/00

## Summary of Analytical Results

Client ID LIA023D
GPL ID: 6139-010-01-1
Matrix: Soil
Date Collected: Jun-21-2000
Date Received: Jun-22-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-19-2000
Time Analyzed 05:15
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 54.5 | ug/kg | U | 1 |

9/5/00

# GPL LABORATORIES, LLLP

## Summary of Analytical Results

Client ID LIA024
GPL ID: 6139-011-01-1
Matrix: Soil
Date Collected: Jun-21-2000
Date Received: Jun-22-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-19-2000
Time Analyzed 05:33
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 55.7 | ug/kg | U | 1 |

9/5/00

# GPL LABORATORIES, LLLP

## Summary of Analytical Results

Client ID LIA025
GPL ID: 6139-012-01-1
Matrix: Soil
Date Collected: Jun-21-2000
Date Received: Jun-22-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-19-2000
Time Analyzed 05:51
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 51 | ug/kg | U | 1 |

7/5/00

# GPL LABORATORIES, LLLP

## Summary of Analytical Results

Client ID LIA026
GPL ID: 6139-013-01-1
Matrix: Soil
Date Collected: Jun-21-2000
Date Received: Jun-22-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-19-2000
Time Analyzed 06:08
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 60.4 | ug/kg | U | 1 |

9/8/00

## Summary of Analytical Results

Client ID LIA009
GPL ID: 6139-014-01-1
Matrix: Soil
Date Collected: Jun-20-2000
Date Received: Jun-22-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-18-2000
Time Analyzed 20:08
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 45.5 | ug/kg | U | 1 |

9/5/00

# GPL LABORATORIES, LLLP

## Summary of Analytical Results

Client ID LIA010
GPL ID: 6139-015-01-1
Matrix: Soil
Date Collected: Jun-20-2000
Date Received: Jun-22-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-18-2000
Time Analyzed 20:26
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 42.2 | ug/kg | U | 1 |

PBW 7/17/00

# GPL LABORATORIES, LLLP

## Summary of Analytical Results

Client ID LIA011
GPL ID: 6139-016-01-1
Matrix: Soil
Date Collected: Jun-20-2000
Date Received: Jun-22-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-18-2000
Time Analyzed 20:44
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 47.7 | ug/kg | U | 1 |

PBW 9/7/00



00 50
047

# GPL LABORATORIES, LLLP

## Summary of Analytical Results

Client ID LIA012
GPL ID: 6139-017-01-1
Matrix: Soil
Date Collected: Jun-20-2000
Date Received: Jun-22-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-18-2000
Time Analyzed 21:02
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 46.8 | ug/kg | U | 1 |

7/17/00

## Summary of Analytical Results

Client ID LIA013
GPL ID: 6139-018-01-1
Matrix: Soil
Date Collected: Jun-20-2000
Date Received: Jun-22-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-18-2000
Time Analyzed 21:19
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 58.4 | ug/kg | U | 1 |

PBL 9/8/00

# GPL LABORATORIES, LLLP

## Summary of Analytical Results

Client ID LIA016
GPL ID: 6139-019-01-1
Matrix: Soil
Date Collected: Jun-20-2000
Date Received: Jun-22-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-18-2000
Time Analyzed 21:37
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 50.1 | ug/kg | U | 1 |

7/5/0.

*GPL LABORATORIES, LLLP*

## Summary of Analytical Results

Client ID LIA027
GPL ID: 6139-020-01-1
Matrix: Soil
Date Collected: Jun-20-2000
Date Received: Jun-22-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-18-2000
Time Analyzed 21:54
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 53.9 | ug/kg | U | 1 |

9/15/00

# DATA VALIDATION WORKSHEETS

DPO: [ ]ACTION [ ]FYI REGION II

# ORGANIC REGIONAL DATA ASSESSMENT SUMMARY

CASE/SAS NO.: _____ LABORATORY: GPL Laboratories, LLCP

SDG NO.: 6139 DATA USER: EPA Region II

SOW: ~~OLM03.2~~ SW846 REVIEW COMPLETION DATE: 9/5/00

NO. OF SAMPLES: ____ WATER 20 SOIL ____ OTHER

REVIEWER: [ ] ESD [ ] ESAT [✓] OTHER, CONTRACTOR HESI

| QC ITEM | VOA | BNA | PES | PICRIC ACID | |
|---|---|---|---|---|---|
| HOLDING TIMES | | | | Z | |
| GC-MS PERFORMANCE | | | | O | |
| INITIAL CALIBRATIONS | | | | M | |
| CONTINUING CAL | | | | M | |
| FIELD BLANKS (F = | | | | — | |
| LABORATORY BLANKS | | | | O | |
| SURROGATES | | | | — | |
| MATRIX MS/MSD | | | | O | |
| QC SAMPLES (LCS, PVS) | | | | O | |
| INTERNAL STANDARDS | | | | — | |
| COMPOUND ID | | | | O | |
| COMPOUND QUANT | | | | O | |
| SYSTEM PERFORMANCE | | | | O | |
| OVERALL ASSESSMENT | | | | O | |

O = No problems or minor problems that do not affect data usability.
X = No more than about 5% of the data points are qualified as either estimated or unusable.
M = More than about 5% of the data points are qualified as either estimated or unusable.
Z = More than about 5% of the data points are qualified as unusable.

DPO ACTION ITEMS: _____

YES NO N/A

CASE NUMBER: 6139 LAB: GPL Laboratories, LLLP

SITE: CH2M Hill Vieques PR (Camp Garcia Live Impact Area)

1.0 Introduction

1.1 The attached Standard Operating Procedure (SOP) is applicable to nitro substituted aromatics and nitro substituted amines by High Performance Liquid Chromatography (HPLC) data. Its scope is not only to facilitate the data validation process of the data reported by the contracting laboratory but also to ensure that the data is being reviewed in a uniform manner.

1.2 The SOP is based upon the quality control and quality assurance requirement specified in the analytical **Method 8330, November 1992 (Revision 0).**

2.0 Responsibilities

2.1 The reviewer must be knowledgeable of the analytical method and its QC criteria.

2.2 The reviewer must complete and/or file the following:

**Data Assessment Checklist-** The data reviewer evaluates each criterion carefully and checks if data is in compliance, non-compliance or not applicable.

**Data Assessment Narrative-** The data reviewer must present professional judgement, address areas of concern and comment on the validity of the overall data package. The reviewer must explain the reasons for rejecting and/or qualifying the data.

**Rejection Summary Form-**The reviewer must submit a completed form using a ratio format.

**Organic Regional Data Assessment Summary-** A completed form must be submitted.

**Telephone Record Log-**All phone conversations must be transcribed by the reviewer. Upon completion of the data review, the original telephone logis attached to the data assessment narrative.

| | YES | NO | N/A |
|---|---|---|---|
| **3.0 Data Completeness and Deliverables** | | | |
| 3.1 Have any missing deliverables been received and added to the data package? | [ ] | | ✓ |
| ACTION: Call lab for explanation/resubmittal of any missing deliverables. If lab cannot provide them, note the effect on review of the package under the "Contract Problems/Non-Compliance" section of reviewer narrative. | | | |
| 3.2 Was SAS-request included with package? | [ ] | ✓ | |
| If no, a SAS-request can be retrieved from RSCC. | | | |
| **4.0 Cover Letter SDG Narrative** | | | |
| 4.1 Is the Narrative or Cover Letter Present? | ✓ | | |
| 4.2 Are Case Number and/or SAS number contained in the Narrative or Cover letter? work order number | ✓ | | |
| **5.0 Traffic Reports and Laboratory Narrative** | | | |
| 5.1 Are Traffic Report Forms present for all samples? | ✓ | | |
| ACTION: If no, contact lab for replacement of missing or illegible copies. | | | |
| 5.2 Do Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data? | | ✓ | |
| NOTE: Samples are not preserved. | | | |
| ACTION: If samples were not iced upon receipt at the laboratory, flag all positive results "J" and all non-detects "UJ". | | | |

YES NO N/A

NOTE: Samples must be kept below 4°C from the time of collection through analysis. Degradation of some compounds occurs with heat. Samples should not be exposed to sunlight or temperatures above room temperature.

6.0 Special QC

6.1 Prior to preparation of stock solutions, acetonitrile, methanol, and water should be analyzed to determine possible interferences with analyte peaks. A different batch of solvent should be used if contamination is present.

6.2 Chromatograms are to be submitted showing that there are no interferences with analyte peaks.

Are these chromatograms present in package? [ ] ___ ✓

Are the chromatograms free of interferences? [ ] ___ ✓

ACTION: Ask lab for resubmittals. If deliverables are unavailable, judge the effect on the validity of the data. If questionable, contact SMO and note in data assessment.

7.0 Holding Times

7.1 Have any technical holding times, determined from date of collection to date of analysis, been exceeded?

A. For aqueous samples 7 days from sample collection to extraction ___ [ ] ✓

B. For soil/sediment samples 14 days from sample collection to extraction ✓ [ ] ___
S - 6/20, 6/21 e - 7/27

C. For all samples extracts 40 days from time of extraction to time of analysis ___ [✓] ___
a - 8/1, 8/2

YES NO N/A

Holding Time Violations
Table 1

(See Traffic Report)

| Sample ID | Date Sampled | Date Received | Date Lab Extracted | Date Analyzed | |
|---|---|---|---|---|---|
| all | 6/20, 6/21 | 6/22 | 7/27 (22-23) | 8/1, 8/2 | J/R |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

ACTION: If technical holding times are exceeded, flag all positive results as estimated ("J") and sample quantitation limits as estimated ("UJ"), and document in the narrative that holding times were exceeded. The reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results must be qualified "J", but the reviewer may determine that non-detect data are unusable (R).

8.0 Surrogate Recovery

8.1 Are the Organic Analysis Data Sheets (Form I) present and complete with surrogate recoveries for each of the following matrices:

a. Water? [ ] ___ ✓

b. Soil/Solid? [ ] ___ ✓

ACTION: Call lab for explanation/resubmittals. If missing deliverables or information are unavailable document the effect in the data assessment.

no surrogate added

YES NO N/A

8.2 Was the surrogate % recovery out of specifications for any field sample, method blank or QC sample? ___ [ ] ✓

8.3 Were surrogate retention times (RT) within ± 1.0% of the mean surrogate RT calculated from the initial calibration? [ ] ___ ✓

ACTION: Circle outliers in red.

ACTION: If the retention time shift (RTS) or % recovery of the surrogate in the field or QC samples is out of specification, then all associated sample data should be qualified. Use **Table 2** below as a guide.

**Surrogate Recovery**

**TABLE 2**

**The following table summarizes the surrogate recovery criteria and the data qualificat guidelines for all associated field samples.**

| SURROGATE | NOT QUALIFIED | J | R | N |
|---|---|---|---|---|
| % RECOVERY - FIELD SAMPLES | | | | |
| Detects | 50 - 125% | < 50%; > 125% | | |
| Non-detects | ≥ 10% | < 10%* | < 10%* | |
| % RECOVERY - BLANKS AND QC SAMPLES ** | | | | |
| Detects | 50 - 125% | < 50%; > 125% | | |
| Non-detects | ≥ 20% | 10 - 19% | < 10% | |
| RTS - field samples | ± 1.0% | | > 1.5%; < -1.5% * | ± 1.1 - 1.5% * |
| RTS - QC samples | ± 1.0% | | > 1.5%; < -1.5% * | ± 1.1 - 1.5% * |

* Use professional judgement.
** If the surrogate recovery in a QC sample or blank was less than 50 percent or greater than 125 percent, then the field sample data should be qualified if the surrogate in the field sample is outside 50 - 125 percent recovery.

YES NO N/A

8.4 Are there any transcription/calculation errors between raw data and surrogate recoveries on Forms: __ [ ] ✓

ACTION: If large errors exist, call lab for explanation/ resubmittal, make necessary corrections and note errors in the data assessment.

9.0 QC Check Reference Sample

9.1 Is the QC Check Reference Sample Recovery Form present? (Created by Lab) [ ] __ ✓

9.2 Was the QC Check Reference Sample analyzed at the required frequency (once per SDG or every 20 samples, for each matrix? [ ] __ ✓

NOTE: The QC Check Form has to be created by the Lab. Concentration of the spiking solution is 5-10 times the estimated quantitation limits for all analytes listed in section 12 of the SAS.

NOTE: QC Check Reference Sample information is important, data is used to judge extraction efficiency.

ACTION: If any QC Check data are missing, call the lab for explanation/resubmittal. If the lab cannot provide missing deliverables, document the effect on the validity of the data in the data assessment. Positive hits should be flagged "J" and non-detects should be flagged "R".

9.3 How many QC check recoveries are outside QC limits of 70-125%?

| Water | Soil |
|---|---|
| NA out of ___ | NA out of ___ |

ACTION: If any recovery is greater than 125%, positive results should be flagged "J" for the affected compound.

YES NO N/A

When two or more analytes have recoveries above 10% but below 70% all associated data should be flagged "J" (positive and non-detects).

When one or more analytes have recoveries below 10% qualify all associated data "R".

Note in data assessment. If further assistance is required, contact SMO for instructions.

It should be noted for TPO action, if a laboratory fails to analyze a QC Check Reference Sample or if a laboratory consistently fails to generate acceptable recoveries.

10.0 Calibration Data

10.1 Initial Calibration

The initial calibration standards must be analyzed daily prior to any sample analysis. The lab may have to create two sets of initial standard solutions if several analytes coelute.

The initial calibration curve must be injected in triplicate for each of the 5 levels. triplicate not required

10.2 Are the chromatograms and data system printouts (Quant reports) present for initial and triplicate calibrations? ✓ ___ ___

10.3 Are the modified Initial Calibration Forms (Pest VI-1, VI-2 Forms) present? ✓ ___ ___

10.4 Are modified Forms present and completed for each analytical sequence and each column? ✓ ___ ___

ACTION: If any Calibration Standard chromatograms and forms are missing, contact the lab for resubmittals.

10.5 Are there any transcription/calculation errors between raw data and Forms? ___ ✓ ___

YES NO N/A

ACTION: If large errors exist, call lab for explanation/resubmittal. Make necessary corrections and document effect in data assessment. Check at least 2-3 values from each calibration standard and more if errors are found.

10.6 Do all standard retention times, including each compound in each level, fall within the windows established during the initial calibration analytical sequence? ☑ ___ ___

NOTE: All injections are taken into account: A total of 15 injections (three injections for each of the five levels). If the lab had to run two sets of standards there would be a total of 30 injections.

ACTION: The average retention time (RT) for each analyte is determined from the mean of the triplicate injection for each 5 point level of the initial calibration. The RT window for each analyte is equal to the average RT ± three (3) times the standard deviation. If the standard deviation comes out to equal zero, the window will be ±0.08. The (Pest form VI-1) Form should be modified to include the average of the three injections for each of the 5 levels.

10.7 Are the linearity criteria for the initial analyses within limits for both columns? (%RSD must be ≤20%) ☑ [ ] ___

ACTION: If no, qualify all associated positive results generated during the sequence "J" and all non-detects "UJ". When %RSD >90%, flag all non-detects results for that analyte as unusable "R".

10.8 Do the standards show degradation products of tetryl? ___ [ ] ☑

NOTE: Degradation products of tetryl appear as a shoulder on the TNT peak. Peak heights rather than peak areas should be used when tetryl is present in concentrations that are significant relative to the concentration of TNT.

YES NO N/A

ACTION: If degradation is detected or suspected, qualify positive hits for tetryl and TNT as "J". If degradation is suspected, and tetryl is reported as non-detected, qualify the analyte as "UJ". Note in data assessment.

11.0 Continuing Calibration

11.1 Are Forms (Modified Pest VII-2) present for each continuing calibration? ✓ ___ ___

11.2 Are there any transcription/calculation errors between raw data and forms? ___ ✓ ___

ACTION: If large errors exist, call lab for explanation/resubmittals. Make any necessary corrections, and document effect in data assessment. Check at least 2-3 values from each calibration standard and more if errors are found.

11.3 Were continuing calibrations analyzed at the required frequency? (standard should bracket every 10 samples). ✓ ___ ___

ACTION: Criteria must be met. Determine effect on data. At a minimum, all data should be qualified "J", but the reviewer may determine that data are unusable "R". Document the data qualifications in data assessment.

11.4 Do all standard retention times for each continuing calibration fall within the windows established by the initial calibration? ✓ ___ ___

ACTION: If no, beginning with the samples which followed the last in-control standard, check to see if the chromatograms contain interfering peaks. If peaks are present, qualify positive results and non-detects for analytes outside their respective windows as unusable "R".

11.5 Are the RPD values for all continuing calibration standards ≤15%? [ ] ✓ ___

YES NO N/A

ACTION: If the %RPD is >15% for the analyte being quantitated, qualify all associated positive results "J" and non-detects "UJ". The "associated samples" are those which followed the last in-control standard up to the next passing standard. If the %RPD is >90%, flag all non-detects for that analyte unusable "R".

11.6 Compare the peak heights of continuing calibration checks obtained during the day with peak heights obtained from first calibration check of the sequence.

Is the percent RPD for peak heights less than 20% for each of the analytes of each of the Continuing Calibration Checks? [ ] ___ ✓

ACTION: Use professional judgement to verify the reliability of the data.

.0 Analytical Sequence

12.1 Is Form VIII present and completed for each column and each period of analyses? Run Log ✓ ___ ___

ACTION: If no, contact lab for resubmittals.

12.2 Was the proper analytical sequence followed for each initial calibration and subsequent analyses? ✓ ___ ___

NOTE: Sequence is as follows: 5 point Initial Calibration, Method Blank, Laboratory Control Sample (LCS), Continuing Calibration, 10 sample extracts, Continuing Calibration, 10 sample extracts and so on. The sequence must always end with a Continuing Calibration. All sample extracts, Method Blanks, LCS, and continuing calibrations must be analyzed within 24 hours after the analysis of the Initial Calibration Standards and the calculation of the RT windows.

ACTION: Flag "J" all data generated outside an acceptable twenty-four hour sequence starting after the calculation of the RT windows resulting from the initial calibration unless the daily calibration meets the calibration criteria for all target analytes. If the daily calibration standard does not meet the >24 hrs CCAL out

J/UJ
LIA 016
↓ 027

# HPLC ANALYSIS LOGBOOK

Instrument ID: LC # B

| | |
|---|---|
| Method File: H:\Lcdata\lcb\methods | Data File Path: H:\Lcdata\lcb\ |
| Detector(s): UV | Mobile Phase: Buffer |
| Pump(s): Waters 501 | Flow Rate: 1.5 ml/min |
| Autosampler: 712 | Detector Wavelength: 365 nm |
| Column: C18 | Injection Volume: 50 uL. |

ICAL Date: PA 2/4/00 Analyst: MW Reviewed by: [illegible] Date: 7/3/00

| File | Lab ID | Date | Time | Dilution | Matrix | Comments |
|---|---|---|---|---|---|---|
| LCB 785.d | BLNK | 07/03/00 | 11:15 | 1 | BLNK | |
| LCB 786 | PICRIC ACID STD-1 | | | | STD | INITIAL CAL. PASS |
| LCB 787 | STD-2 | | | | | |
| LCB 788 | STD-3 | | | | | |
| LCB 789 | STD-4 | | | | | |
| LCB 790 | STD-5 | | | | | For Check |
| LCB 791 | STD-5 ✓ | | | | | Initial. cal. ok |
| LCB 792 | PICRIC ACID STD | | | | | cont-cal-OK |
| LCB 793 | NBLK-3267 | | | | soil | OK |
| LCB 794 | -3267 MS2 | | | | | |
| LCB 795 | 6173-001 | | | | | |
| LCB 796 | -002 | | | | | |
| LCB 797 | -003 | | | | | |
| LCB 798 | -004 | | | | | |
| LCB 799 | -005 | | | | | |
| LCB 5800 | -005 MS2 | | | | | |
| LCB 801 | -005 MSD2 | | | | | |
| LCB 802 | NBLK-3264 | | | | $H_2O$ | |
| LCB 803 | Picric Acid Std. | | | | Std | Cont. cal-OK |
| LCB 804 | NBLK-3264 MS2 | | | | $H_2O$ | OK |
| LCB 805 | -3264 MSD2 | | | | | |
| LCB 806 | 6173-006 | | | | | |
| LCB 807 | 6173-003 RT | | | | soil | |
| LCB 808 | PICRIC ACID STD | | | | Std | cont-cal-OK |

| Remarks | Standard | Solution ID | Conc. | Date Prep. |
|---|---|---|---|---|
| | PA | # 9624 | 100ppm | 04/04/00 |



0 1106

064

# HPLC ANALYSIS LOGBOOK

Instrument ID: LC # B

| | |
|---|---|
| Method File: H:\Ldata\ccb\methods | Data File Path: H:\Ldata\ccb\c |
| Detector(s): UV | Mobile Phase: Buffer |
| Pump(s): Waters - 501 | Flow Rate: |
| Autosampler: -712 | Detector Wavelength: 365 nm |
| Column: C18 | Injection Volume: 50 ul |

ICAL Date: ~~NR-M~~ PA 2400-M MW 05/04/00 Analyst: MW Reviewed by: _____ Date: _____

| File | Lab ID | Date | Time | Dilution | Matrix | Comments |
|---|---|---|---|---|---|---|
| LCB 6038d | ✓ Picric Acid STD | ~~05/04/00~~ | 18:37 | 1 | Std | Cont-cal-OK |
| LCB 039 | NBLK-3310 - | 05/04/00 MW | | | Soil | |
| LCB 040 | - 3310MS | | | | | OK |
| LCB 041 | 6139-001 ✓ | | | | | |
| LCB 042 | -002 ✓ | | | | | |
| LCB 043 | -003 ✓ | | | | | |
| LCB 044 | -004 ✓ | | | | | |
| LCB 045 | -005 ✓ | | | | | |
| LCB 046 | -006 ✓ | | | | | |
| LCB 047 | -007 ✓ | | | | | |
| LCB 048 | -008 ✓ | | | | | |
| LCB 049 | ✓ Picric Acid Std- | | | | Std | Cont-cal-OK |
| LCB 050 | 6139-009 ✓ | | | | Soil | |
| LCB 051 | -010 ✓ | | | | | OK |
| LCB 052 | -011 ✓ | | | | | |
| LCB 053 | -012 ✓ | | | | | |
| LCB 054 | -013 ✓ | | | | | |
| LCB 055 | -014 ✓ | | | | | |
| LCB 056 | -015 ✓ | | | | | |
| LCB 057 | -016 ✓ | | | | | |
| LCB 058 | -017 ✓ | | | | | |
| LCB 059 | -018 ✓ | | | | | |
| LCB 060 | ✓ Picric Acid Std. | | | | Std. | Cont cal-OK |
| LCB 061 | 6139-018MS ✓ | | | | Soil | |

| Remarks | Standard | Solution ID | Conc. | Date Prep. |
|---|---|---|---|---|
| | Picric Acid | #9624 | 100ppm | 04/04/00 |

# HPLC ANALYSIS LOGBOOK

Instrument ID: LC # B

| | |
|---|---|
| Method File: H:\Lcdata\lcb\methods | Data File Path: H:\Lcdata\lcb |
| Detector(s): UV | Mobile Phase: Buffer |
| Pump(s): Waters - 501 | Flow Rate: 1-5 ml/min |
| Autosampler: - 712 | Detector Wavelength: 365 nm |
| Column: C18 | Injection Volume: 50 µl. |

ICAL Date: PA-2400.M Analyst: MW Reviewed by: Date:

| File | Lab ID | Date | Time | Dilution | Matrix | Comments |
|---|---|---|---|---|---|---|
| LCB 060624 | 6139-018 MSD | 08/01/00 | 23:59 | 1 | soil | |
| LCB 063 | -019 ✓ | | | | | OK |
| LCB 064 | -020 ✓ | | | | | |
| LCB 065 | NBLK-3311 | | | | | |
| LCB 066 | -3311 MS | | | | | |
| LCB 067 | 6148-001 | | | | | |
| LCB 068 | -002 | | | | | |
| LCB 069 | -003 | | | | | |
| LCB 070 | -004 | | | | | |
| LCB 071 | ✓ Picric Acid Std | | | | Std | cont cal-ok |
| LCB 072 | 6148-005 | | | | soil | |
| LCB 073 | -005 MS | | | | | OK |
| LCB 074 | -005MSD | | | | | |
| LCB 075 | -008 | | | | | |
| LCB 076 | -009 | | | | | |
| LCB 077 | -010 | | | | | |
| LCB 078 | -011 | | | | | |
| LCB 079 | -012 | | | | | |
| LCB 080 | -013 | | | | | |
| LCB 081 | -016 | | | | | |
| LCB 082 | Picric Acid Std | | | | Std | Cont-cal-ok |
| LCB 083 | 6148-015 | | | | soil | OK |
| LCB 084 | -016 | | | | | |
| LCB 085 | -017 | | | | | |

| Remarks | Standard | Solution ID | Conc. | Date Prep. |
|---|---|---|---|---|
| | Picric Acid Std | #9624 | 100ppm | 04/04/00 |

**8330 RETENTION TIME WINDOW ESTABLISHMENT**

INTRUMENT TYPE: LCB
COLUMN: C-18 ANALYST MW
DATE: 8/1/00 - 8/2/00

| COMPOUND | Retent Time 1 | Retent Time 2 | Retent Time 3 | AVG | Stand Dev | 3X Stnd Dev | Average Peak Width | RT WINDOW |
|---|---|---|---|---|---|---|---|---|
| Picric Acid | 4.880 | 4.910 | 4.800 | 4.863 | 0.057 | 0.171 | 0.20 | 0.17 |

Advisory Retention Time Windows are based on three daily calibration check standards run within a 72 hour window

Windows are the greater of 1/2 the average peak width, or +/- 3 times the retention time standard deviation

0 1109 067

Response Factor Report LCB_LINEA

Method : H:\LCDATA\LCB\METHODS\PA2400.M (Chemstation Integrator)
Title : PICRIC ACID - 5 POINT IC
La Update : Thu Aug 03 08:08:05 2000

Calibration Files
LEV1 =LCB5786.D LEV2 =LCB5787.D LEV3 =LCB5788.D
LEV4 =LCB5789.D LEV5 =LCB5791.D

| Compound | LEV1 | LEV2 | LEV3 | LEV4 | LEV5 | Avg | %RSD |
|---|---|---|---|---|---|---|---|
| 1) TM PICRIC ACID | 1.082 | 0.950 | 1.104 | 1.026 | 1.103 | 1.053 E8 | 6.22 |

#) = Out of Range



001063

# Continuing Calibration Report LCB_LINEA

Method : H:\LCDATA\LCB\METHODS\PA2400.M (Chemstation Integrator)
Title : PICRIC ACID - 5 POINT IC
Last Update : Fri Aug 18 14:26:30 2000
Response via : Initial Calibration

Continuing Calibration File: LCB6038.D

Min. RRF : 0.000 Min. Rel. Area : 50%
Max. RRF Dev : 25% Max. Rel. Area : 150%

| | Compound | AvgRF | CCRF | | %Dev | Area% |
|---|---|---|---|---|---|---|
| 1 TM | PICRIC ACID | 105.018 | 98.315 | E6 | 6.4 | 89 |

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

# Continuing Calibration Report LCB_LINEA

Method : H:\LCDATA\LCB\METHODS\PA2400.M (Chemstation Integrator)
Title : PICRIC ACID - 5 POINT IC
Last Update : Fri Aug 18 14:26:43 2000
Response via : Initial Calibration

Continuing Calibration File: LCB6049.D

Min. RRF : 0.000 Min. Rel. Area : 50%
Max. RRF Dev : 25% Max. Rel. Area : 150%

| | Compound | AvgRF | CCRF | | %Dev | Area% |
|---|---|---|---|---|---|---|
| 1 TM | PICRIC ACID | 105.018 | 90.213 | E6 | 14.1 | 82 |

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

# Continuing Calibration Report LCB_LINEA

Method : H:\LCDATA\LCB\METHODS\PA2400.M (Chemstation Integrator)
Title : PICRIC ACID - 5 POINT IC
Last Update : Fri Aug 18 14:26:59 2000
Response via : Initial Calibration

Continuing Calibration File: LCB6060.D

Min. RRF : 0.000 Min. Rel. Area : 50%
Max. RRF Dev : 25% Max. Rel. Area : 150%

| | Compound | AvgRF | CCRF | | %Dev | Area% | |
|---|---|---|---|---|---|---|---|
| 1 TM | PICRIC ACID | 105.018 | 81.410 | E6 | 22.5 | 74 | JUJ |

LIA016
LIA027

(#) = Out of Range SPCC's out = 0 CCC's out = 0
LCB6060.D PA2400.M Fri Aug 18 14:27:01 2000 Page 1

# Continuing Calibration Report LCB_LINEA

Method : H:\LCDATA\LCB\METHODS\PA2400.M (Chemstation Integrator)
Title : PICRIC ACID - 5 POINT IC
Last Update : Fri Aug 18 14:27:18 2000
Response via : Initial Calibration

Continuing Calibration File: LCB6071.D

Min. RRF : 0.000 Min. Rel. Area : 50%
Max. RRF Dev : 25% Max. Rel. Area : 150%

| | Compound | AvgRF | CCRF | | %Dev | Area% |
|---|---|---|---|---|---|---|
| 1 TM | PICRIC ACID | 105.018 | 91.464 | E6 | 12.9 | 83 |

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

YES NO N/A

criteria for some analytes the reviewer might reject

those values. In any case, if the 24 hour sequence is exceeded it should be noted in the data assessment under contract non-compliance.

13.0 Method Blanks

13.1 Is the Method Blank Summary (Form IV) present for each of the following matrices?

a. water [ ] ___ ✓

b. soil ✓ ___ ___

13.2 Frequency of Analysis:

Has a Method/Prep blank been analyzed at the same time for each batch of samples extracted. ✓ ___ ___

ACTION: If any method blank data are missing, call lab for explanation/resubmittal. If method blank data are not available, reject "R" all associated positive data.

13.3 Are the positive hits present in the blank less than detection limit? no + ✓ ___ ___

ACTION: If hits are ≥ detection limits, analysis should be discontinued. All associated samples must be re-prepared and re-analyzed with a new blank. If lab did not follow this action, note in data assessment. Follow guidelines under contamination section.

13.4 Chromatography: review the method blank raw data chromatograms, quant reports or data system printouts.

Is the chromatographic performance (baseline stability) for each instrument acceptable? ✓ ___ ___

ACTION: Use professional judgement to determine the effect on the data.

YES NO N/A

14.0 Contamination

NOTE: "Water blanks", "drill blanks", and distilled water blanks" are validated like any other sample, and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

14.1 Did the lab run an instrument blank following a sample analysis which contained an analyte(s) at high concentration(s) to evaluate possible sample cross-contamination? [ ] ___ ✓

ACTION: Sample analysis results after the high concentration sample must be evaluated for carryover. Sample cross-contamination should be noted for TPO action if an effect on the data is suspected. An Instrument Blank is not required in the methodology.

14.2 Do any Method Blanks have positive results (TCL)? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample dilution factor. ___ ✓ ___

14.3 Are there field/rinse/equipment blanks associated with every sample? [ ] ✓ ___

ACTION: Note in data assessment that there is no associated field/rinse/equipment blank.

14.4 Do any field/rinse blanks have positive results (TCL)? ___ [ ] ✓

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.) no QC BLKS

NOTE: All field blank results associated with a particular group of samples (may exceed one per case) must be used to qualify data. Blanks may not be qualified because of contamination in another blank. Field blanks must be qualified for surrogate recovery, instrument performance criteria, or calibration QC problems.

4B

# SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

NBLKA

ab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Lab File ID: LCB6039.D Lab Sample ID: NBLK-3310

Instrument ID: LCB Date Extracted: 07/27/00

Matrix: (soil/water) SOIL Date Analyzed: 08/01/00

Level: (low/med) LOW Time Analyzed: 19:45

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

| | Client SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED |
|---|---|---|---|---|
| 01 | NLCSA | NBLK-3310 MS | LCB6040.D | 08/01/00 |
| 02 | LIA007 | 6139-001 | LCB6041.D | 08/01/00 |
| 03 | LIA008 | 6139-002 | LCB6042.D | 08/01/00 |
| 04 | LIA014 | 6139-003 | LCB6043.D | 08/01/00 |
| 05 | LIA014D | 6139-004 | LCB6044.D | 08/01/00 |
| 06 | LIA017 | 6139-005 | LCB6045.D | 08/01/00 |
| 07 | LIA018 | 6139-006 | LCB6046.D | 08/01/00 |
| 08 | LIA021 | 6139-007 | LCB6047.D | 08/01/00 |
| 09 | LIA022 | 6139-008 | LCB6048.D | 08/01/00 |
| 10 | LIA023 | 6139-009 | LCB6050.D | 08/01/00 |
| 11 | LIA023D | 6139-010 | LCB6051.D | 08/01/00 |
| 12 | LIA025 | 6139-012 | LCB6053.D | 08/01/00 |
| 13 | LIA026 | 6139-013 | LCB6054.D | 08/01/00 |
| 14 | LIA009 | 6139-014 | LCB6055.D | 08/01/00 |
| 15 | LIA010 | 6139-015 | LCB6056.D | 08/01/00 |
| 16 | LIA011 | 6139-016 | LCB6057.D | 08/01/00 |
| 17 | LIA012 | 6139-017 | LCB6058.D | 08/01/00 |
| 18 | LIA013 | 6139-018 | LCB6059.D | 08/01/00 |
| 19 | LIA013 MS | 6139-018 MS | LCB6061.D | 08/01/00 |
| 20 | LIA013 MSD | 6139-018 MSD | LCB6062.D | 08/01/00 |
| 21 | LIA016 | 6139-019 | LCB6063.D | 08/02/00 |
| 22 | LIA027 | 6139-020 | LCB6064.D | 08/02/00 |

COMMENTS: No Contamination

YES NO N/A

ACTION: Follow the directions in **Table 3** below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If any blanks are grossly contaminated, all associated data should be qualified as unusable (R) (see item # 12.3).

| Sample conc > CRQL but < 5x blank | Sample conc < CRQL & is < 5x blank value | Sample conc > CRQL & > 5x blank value |
|---|---|---|
| Flag sample result with a "U" | Report CRQL & qualify "U" | No qualification is needed |

NOTE: Analytes qualified "U" for blank contamination are still considered as "hits" when qualifying for calibration or other QC criteria.

15.0 Target Compound List (TCL) Analytes (Form I)

15.1 Are the Organic Analysis Data Sheets (Form I) present with required header information on each page, for each of the following:

a. Samples ? [X] ___ ___

b. Laboratory Control Samples? [X] ___ ___

c. Blanks? [X] ___ ___

d. Matrix spikes and matrix spike duplicates? [X] ___ ___

e. Lab duplicate? [ ] ___ [X]

| | YES | NO | N/A |
|---|---|---|---|
| 15.2 Are the Chromatograms, and the data system printouts (Quant Reports) included in the sample package for each of the following: | | | |
| a. Samples? | ☑ | | |
| b. Laboratory Control Samples? | ☑ | | |
| c. Blanks? | ☑ | | |
| d. Matrix spikes and Matrix spike duplicates? | ☑ | | |
| e. Lab duplicate? | [ ] | | ✓ |
| ACTION: If any data are missing, Contact Lab for resubmittals. | | | |
| 15.3 Are the response factors shown in the Quant Report? | [ ] | ✓ | |
| 15.4 Is chromatographic performance acceptable with respect to: | | | |
| Baseline stability? | ☑ | | |
| Resolution? | ☑ | | |
| Peak shape? | ☑ | | |
| Full-scale graph (attenuation)? | ☑ | | |
| Other: _____ | [ ] | | |
| ACTION: Use professional judgement to determine the acceptability of the data. | | | |

16.0 <u>Compound Identification</u>

| | YES | NO | N/A |
|---|---|---|---|
| 16.1 Is Form X completed for every sample in which an analyte was detected? | [ ] | | ✓ |
| ACTION: If no, contact lab for resubmittals. | | | |

YES NO N/A

16.2 Are there any transcription/calculation errors between raw data and Forms? ___ [ ] ✓

ACTION: If large errors exist, call lab for explanation/resubmittals. Make any necessary corrections and note effect in data assessment. Check at least 2-3 values from each calibration standard and more if errors are found.

16.3 Are retention times (RT) of sample analytes within the established RT windows for both analyses? [ ] ___ ✓

ACTION: Qualify as unusable "R" all positive results which were not confirmed by second HPLC column analysis. Also qualify as unusable "R" all positive results not meeting RT window unless associated standard compounds are similarly biased. The reviewer should use professional judgement to assign an appropriate quantitation limit.

16.4 Is the percent difference (%D) calculated for the positive sample results on the two HPLC columns <25%? [ ] ___ ✓

ACTION: If the reviewer finds neither column shows interference for the positive hits, the data should be flagged as follows:

| % Difference | Qualifier |
|---|---|
| 25-90% | J |
| >90% | R |

NOTE: The lower of the two values is reported on Form I. If using professional judgement, the reviewer determines that the higher result was more acceptable, the reviewer should replace the value and indicate the reason for the change in the data assessment.

YES NO N/A

16.5 Check chromatograms for false negatives, interferences and degradation. Tetryl decomposes rapidly in methanol/water solutions as well as with heat. All samples expected to contain tetryl should not be exposed to temperatures above room temperature. Degradation products of tetryl appear as a shoulder on the TNT peak. Peak heights rather than peak areas should be used when tetryl is present in concentrations that are significant relative to the concentration of TNT.

ACTION: Use professional judgement to determine qualification of analytes.

17.0 <u>Compound Quantitation and Reported Detection Limits</u>

17.1 Are there any transcription/calculation errors in Form I results? Check at least two positive values. Verify that the calculations were adjusted for percent moisture. Were any errors found? ___ ✓ ___

NOTE: Single peak analyte results can be checked for rough agreement between quantitative results obtained on the two HPLC columns. The reviewer should use professional judgement to decide whether a much larger concentration obtained on one column versus the other indicates the presence of an interfering compound. If an interfering compound is indicated, the lower of the two values should be reported and qualified as presumptively present, at an approximated quantity "JN". This necessitates a determination of an estimated concentration on the confirmation column. The narrative should indicate that the presence of interferences has interfered with the evaluation of the second column confirmation.

17.2 Are the CRQLs adjusted to reflect sample dilutions for each Form I? no DLS ✓ ___ ___

YES NO N/A

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note in data assessment.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" and its associated value on the original Form I and substituting the data from the analysis of the diluted sample. Specify which Form I is to be used, then draw a red "X" with a red pencil across the entire page of all Form I's that should not be used, including any in the summary package.

18.0 Lab Duplicates

18.1 Were any lab duplicates submitted for for each extraction batch?
a. waters [ ] ___ ___
b. soils [ ] ___ ___

18.2 Are the Relative Percent Difference (RPD) values for the analytes reported in the duplicate samples <20%? (depending on the SAS-request; the criteria might be <40%). [ ] ___ ___

ACTION: Compare the reported results for lab duplicates and calculate the relative percent difference.

ACTION: Any gross variation between duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of lab duplicates should be confirmed by contacting the lab.

ACTION: Flag all associated data with an * for "out of control" duplicate.

19.0 Matrix Spikes

19.1 Is the Matrix Spike/Matrix Spike Duplicate recovery Form present? [✓] ___ ___

YES NO N/A

19.2 Were the matrix spikes analyzed at the required frequency? (one per matrix and per SDG). ✓ ___ ___

ACTION: If any matrix spike data are missing, contact the lab for resubmittals.

19.3 The matrix spike consists of all target analytes at concentrations 5-10 times the estimated quantitation limits listed in Table 1/Method 8330.
Were the correct analytes and were the concentrations within range? 75-10 x (50 x) ✓ ___ ___

NOTE: Field blanks cannot be used for Matrix spike analysis. If field/rinse blanks were MS/MSD, then make note under Contract non-compliance.

19.4 How many spike recoveries are outside the QC limits of 50-140%?

| Water | Soil |
|---|---|
| _____ out of ___ | 0 out of 2 |

19.5 How many RPD's for Matrix Spike and Matrix Spike duplicate recoveries are outside QC limits of 20% (depending what is stated in the SAS-request)?

| Water | Soil |
|---|---|
| _____ out of ___ | 0 out of 1 |

ACTION: Flag all associated data "N" for "out of control" matrix spike for the field sample used for the MS/MSD.

ACTION: No additional action is taken on MS/MSD data alone. However using informed professional judgement, the data reviewer may use the matrix spike data results in conjunction with other QC criteria and determine the need for some qualification of the data.

Field Dups:
LIA014/LIA014D
no + no+

LIA023/LIA023D
no + no+



LIA011/LIA011D*

LIA016/LIA016D*

*SDG 6148

081

3D

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

b Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix Spike - EPA Sample No.: LIA013 Level: (low/med) LOW

| COMPOUND | SPIKE ADDED (ug/Kg) | SAMPLE CONCENTRATION (ug/Kg) | MS CONCENTRATION (ug/Kg) | MS % REC # | QC LIMITS REC. |
|---|---|---|---|---|---|
| PICRIC ACID | 50000 | 0.0 | 34000 | 68 | 50 - 125 |

| COMPOUND | SPIKE ADDED (ug/Kg) | MSD CONCENTRATION (ug/Kg) | MSD % REC # | % RPD # | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| PICRIC ACID | 50000 | 34000 | 68 | 0 | 25 | 50 - 125 |

# Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 1 outside limits

ike Recovery: 0 out of 2 outside limits

COMMENTS: _____

3F

SOIL PICRIC ACID LABORATORY CONTROL SPIKE RECOVERY

L.. Name: GPL LABORATORIES, LLLP Client: URS Greiner Woodwar

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

EPA Sample No.: NLCSA GP ID: NBLK 3310 MS

| COMPOUND | SPIKE ADDED (ug/Kg) | LCS CONCENTRATION (ug/Kg) | LCS % REC | QC LIMITS |
|---|---|---|---|---|
| PICRIC ACID | 50000 | 25,050 | 50 | 50-125 |

* OUTSIDE QC LIMIT

COMMENTS:

FORM III PA

## RUN SUMMARY SHEET
### Perchlorate

INSTRUMENT: IC-500

ANALYZED: 7/18/00 VHM
PREPARED:7/17/00 VHM

| Lab ID | Client ID | Raw Conc. | Result | MDL | Units | %Recovery | %RPD |
|---|---|---|---|---|---|---|---|
| ICP | ICP-25ug/L | 24.97 | 25.0 | 5.0 | ug/L | 100 | |
| LRB | LRB | 0 | BQL | 5.0 | ug/L | | |
| ICV | ICV-10ug/L(10737) | 11.84 | 11.8 | 5.0 | ug/L | 118 | |
| LCSW | LCS-25ug/L(10714) | 25.34 | 25.3 | 5.0 | ug/L | 101 | |
| CCV(MID) | CCV - 250ug/L(10737) | 241.40 | 241 | 5.0 | ug/L | 96.4 | |
| PBS | SOIL EXT. BLANK | 0 | BQL | 5.0 | ug/L | | |
| LCSS | SOIL LCS-50ug/L | 49.82 | 49.8 | 5.0 | ug/L | 99.6 | |
| 6139-014 | LIA009 | 0 | BQL | 5.0 | ug/L | | |
| 6139-015 | LIA010 | 0 | BQL | 5.0 | ug/L | | |
| 6139-016 | LIA011 | 0 | BQL | 5.0 | ug/L | | |
| 6139-017 | LIA012 | 0 | BQL | 5.0 | ug/L | | |
| 6139-018 | LIA013 | 0 | BQL | 5.0 | ug/L | | |
| 6139-019 | LIA016 | 0 | BQL | 5.0 | ug/L | | |
| 6139-020 | LIA027 | 0 | BQL | 5.0 | ug/L | | |
| 6139-018M | LIA013 (+50ug/L) | 46.93 | 46.9 | 5.0 | ug/L | 93.8 | |
| 6139-018M | LIA013 (+50ug/L) | 49.36 | 49.4 | 5.0 | ug/L | 98.8 | 5.2 |
| CCV(HIGH) | CCV - 500ug/L(10737) | 499.42 | 499 | 5.0 | ug/L | 99.8 | |
| IPC | ICP-25ug/L | 24.97 | 25.0 | 5.0 | ug/L | 100 | |
| LRB | LRB | 0 | BQL | 5.0 | ug/L | | |
| ICV | ICV-10ug/L(10737) | 10.95 | 11.0 | 5.0 | ug/L | 110 | |
| LCSW | LCS-25ug/L(10714) | 24.51 | 24.5 | 5.0 | ug/L | 98.0 | |
| 6139-001 | LIA007 | 0 | BQL | 5.0 | ug/L | | |
| 6139-002 | LIA008 | 0 | BQL | 5.0 | ug/L | | |
| 6139-003 | LIA014 | 0 | BQL | 5.0 | ug/L | | |
| CCV(MID) | CCV - 250ug/L(10737) | 251.09 | 251 | 5.0 | ug/L | 100.0 | |
| 6139-004 | LIA014D | 0 | BQL | 5.0 | ug/L | | |
| 6139-005 | LIA017 | 0 | BQL | 5.0 | ug/L | | |
| 6139-006 | LIA018 | 0 | BQL | 5.0 | ug/L | | |
| 6139-007 | LIA021 | 0 | BQL | 5.0 | ug/L | | |
| 6139-008 | LIA022 | 0 | BQL | 5.0 | ug/L | | |
| 6139-009 | LIA023 | 0 | BQL | 5.0 | ug/L | | |
| 6139-010 | LIA023D | 0 | BQL | 5.0 | ug/L | | |
| 6139-011 | LIA024 | 0 | BQL | 5.0 | ug/L | | |
| 6139-012 | LIA025 | 0 | BQL | 5.0 | ug/L | | |
| 6139-013 | LIA026 | 0 | BQL | 5.0 | ug/L | | |
| CCV(HIGH) | CCV - 500ug/L(10737) | 501.90 | 502 | 5.0 | ug/L | 100 | |

8-3-00
Analyst/Date

8/3/2000
Reviewed by/Date

**BENCH SHEET**
**E314.0**

| Lab ID | Client ID | Dilution | Size | Volume | % Solids | Analyzed Date/Time |
|---|---|---|---|---|---|---|
| ICP | ICP-25ug/L | 1 | 1 | 1 | n/a | 7/18/00 13:58 |
| LRB | LRB | 1 | 1 | 1 | n/a | 7/18/00 14:16 |
| ICV | ICV-10ug/L(10737) | 1 | 1 | 1 | n/a | 7/18/00 14:34 |
| LCSW | LCS-25ug/L(10714) | 1 | 1 | 1 | n/a | 7/18/00 14:51 |
| CCV(MID) | CCV - 250ug/L(10737) | 1 | 1 | 1 | n/a | 7/18/00 18:40 |
| PBS | SOIL EXT. BLANK | 1 | 5.00 | 50 | 100 | 7/18/00 19:33 |
| LCSS | SOIL LCS-50ug/L | 1 | 5.00 | 50 | 100 | 7/18/00 19:51 |
| 6139-014 | LIA009 | 1 | 5.87 | 50 | 93.7 | 7/18/00 20:09 |
| 6139-015 | LIA010 | 1 | 8.34 | 50 | 71.1 | 7/18/00 20:26 |
| 6139-016 | LIA011 | 1 | 5.58 | 50 | 93.9 | 7/18/00 20:44 |
| 6139-017 | LIA012 | 1 | 5.62 | 50 | 95.1 | 7/18/00 21:02 |
| 6139-018 | LIA013 | 1 | 5.09 | 50 | 83.3 | 7/18/00 21:19 |
| 6139-019 | LIA016 | 1 | 5.33 | 50 | 93.7 | 7/18/00 21:37 |
| 6139-020 | LIA027 | 1 | 5.41 | 50 | 85.8 | 7/18/00 21:54 |
| 6139-018M | LIA013 (+50ug/L) | 1 | 5.06 | 50 | 83.3 | 7/18/00 22:12 |
| 6139-018M | LIA013 (+50ug/L) | 1 | 5.17 | 50 | 83.3 | 7/18/00 22:30 |
| CCV(HIGH) | CCV - 500ug/L(10737) | 1 | 1 | 1 | n/a | 7/18/00 22:47 |
| IPC | ICP-25ug/L | 1 | 1 | 1 | n/a | 7/18/00 23:05 |
| LRB | LRB | 1 | 1 | 1 | n/a | 7/18/00 23:23 |
| ICV | ICV-10ug/L(10737) | 1 | 1 | 1 | n/a | 7/18/00 23:40 |
| LCSW | LCS-25ug/L(10714) | 1 | 1 | 1 | n/a | 7/18/00 23:58 |
| 6139-001 | LIA007 | 1 | 4.59 | 50 | 87.1 | 7/19/00 2:19 |
| 6139-002 | LIA008 | 1 | 4.61 | 50 | 88.3 | 7/19/00 2:37 |
| 6139-003 | LIA014 | 1 | 4.87 | 50 | 89.8 | 7/19/00 2:54 |
| CCV(MID) | CCV - 250ug/L(10737) | 1 | 1 | 1 | n/a | 7/19/00 3:12 |
| 6139-004 | LIA014D | 1 | 4.79 | 50 | 91.3 | 7/19/00 3:30 |
| 6139-005 | LIA017 | 1 | 5.41 | 50 | 82.6 | 7/19/00 3:47 |
| 6139-006 | LIA018 | 1 | 4.88 | 50 | 82.4 | 7/19/00 4:04 |
| 6139-007 | LIA021 | 1 | 5.39 | 50 | 87.7 | 7/19/00 4:22 |
| 6139-008 | LIA022 | 1 | 5.22 | 50 | 90.1 | 7/19/00 4:40 |
| 6139-009 | LIA023 | 1 | 5.39 | 50 | 87.5 | 7/19/00 4:58 |
| 6139-010 | LIA023D | 1 | 5.23 | 50 | 87.7 | 7/19/00 5:15 |
| 6139-011 | LIA024 | 1 | 5.17 | 50 | 86.8 | 7/19/00 5:33 |
| 6139-012 | LIA025 | 1 | 5.21 | 50 | 94.1 | 7/19/00 5:51 |
| 6139-013 | LIA026 | 1 | 4.69 | 50 | 88.3 | 7/19/00 6:08 |
| CCV(HIGH) | CCV - 500ug/L(10737) | 1 | 1 | 1 | n/a | 7/19/00 6:26 |

8-3-00
Analyst/Date

8/3/2000
Reviewed by/Date

# Method Report - 000510-Perchlorate

## Method Information : Select Module(s)

System Name : DX 500
System Number : 1
Method Type : Ion Chromatography
Column :
Analyst :
Comment : (null)

## CD20 Timed Events

Module Name : CD20
Module Serial Number :
SRS Current : 300 mA
Temperature Compensation : 1.7 (% / °C)
Cell Temperature : 35 °C

| Time | Range (µS) | Offset | Mark | TTL1 | TTL2 | Relay1 | Relay2 | Collect |
|---|---|---|---|---|---|---|---|---|
| Init | 10.000 | | | Low | Low | Open | Open | |
| 0.00 | 10.000 | | | Low | Low | Open | Open | |
| 2.40 | 10.000 | * | | Low | Low | Open | Open | |
| 2.50 | 10.000 | | | Low | Low | Open | Open | Begin |

## CD20 Detector Parameters

Detector Type : CD20
Data collection time (minutes) : 15.00
Data Collection Rate : 5.00
Real time plot scale maximum (µS) : 10.000
Real time plot scale minimum (µS) : -1.000

## CD20 Integration Parameters

Peak detection algorithm : Standard
Starting peak width (seconds) : 10.00
Peak threshold : 0.50
Peak area reject (area counts) : 1000.00
Reference peak area reject (area counts) : 1000.00

## CD20 Smoothing Parameters

Filter Type : No filter

## CD20 Report Data

Report Format File : C:\PeakNet\method\DEFAULT.RPT
Print Sample Analysis : No
Print Calibration Update : No
Print Check Standard : No
System Suitability Tests :
No system suitability tests selected.

## CD20 Integration Data Events

## CD20 Calibration Parameters

External or internal calibration : EXTERNAL
Number of replicates for calibration : 1
Rejection : Manual
Level Weighting : Equal
Calibration standard volume : 1.00
Default sample volume : 1.00
Amount units :
Replace retention time : Yes
Update response : Yes
Default dilution factor : 1.00
Default response factor for unknown peaks : 0.00
Calculate unknowns by area or height : Area

## CD20 Component Identification Table

| Component | Retention | Tolerance | Reference |
|---|---|---|---|
| Ammonium Perchlor | 9.97 min | 0.50 min | |

## CD20 Component Quantitation Table

| Component | Retention | Low Limit | High Limit |
|---|---|---|---|
| Ammonium Perchlor | 9.97 min | 0 | 0 |

## CD20 Component Calibration Table

| Component | Retention Time | Curve Fit | Origin | Cal. by | Response Component | Relative Factor |
|---|---|---|---|---|---|---|
| Ammonium Perchlor | 9.97 min | Linear | Ignore | Area | | 0.00 |

CD20 Component = Ammonium Perchlor Levels Table

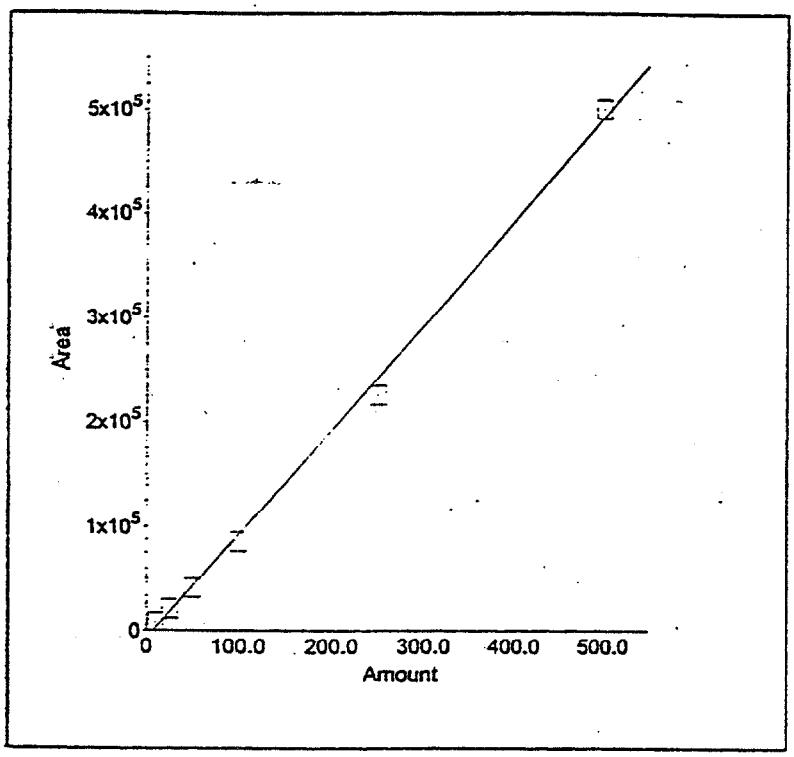
Retention Time : 9.97 min
Amount units :
Replicate unit type : Area
Number of levels : 8
Number of replicates : 1

| Level | Amount | Replicate 1 |
|---|---|---|
| 1 | 0.00 | 6077 |
| 2 | 5.00 | 5353.2 |
| 3 | 10.00 | 8487.7 |
| 4 | 25.00 | 23173.2 |
| 5 | 50.00 | 45706.4 |
| 6 | 100.00 | 95704.3 |
| 7 | 250.00 | 252558 |
| 8 | 500.00 | 560403 |

CD20 XY Data Parameters

Method:I:\ICDATA\METHODS\AM.PERCH\000510-PERCHLORATE.MET Updated:5/11/00 12:39:

1. Component:Ammonium Perchlor
Standard:External Fit Type:Linear
Origin:Ignore Calibration:Area
$r^2$= 97537
Y =0.0008935*Resp+7.746






0-2030
089

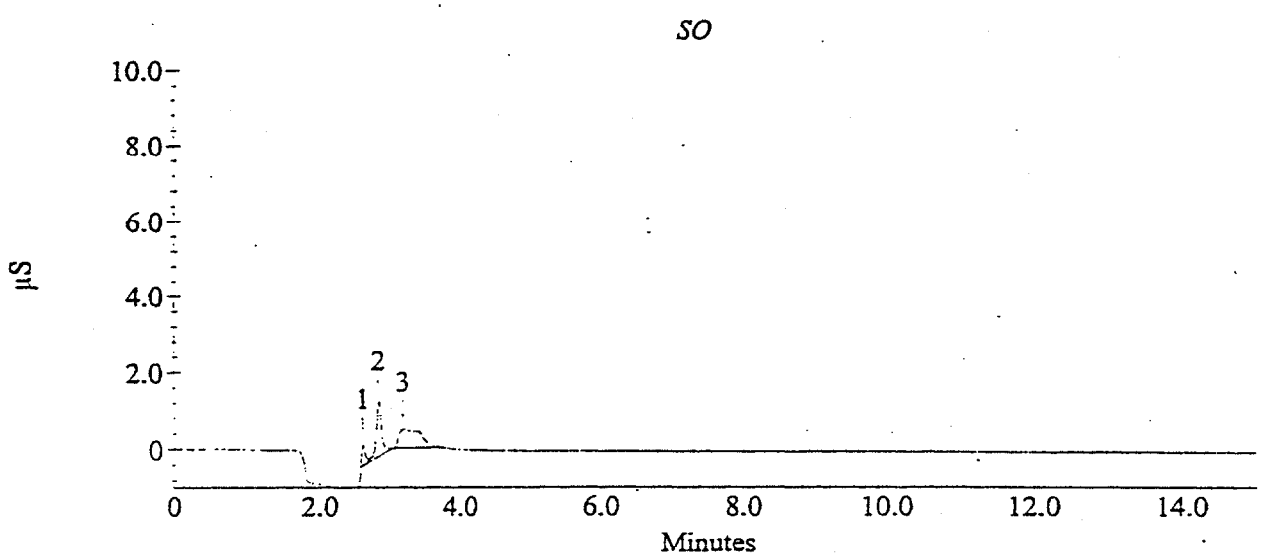
# Calibration Update Report

**Sample Name : SO**
**Data File Name : I:\ICDATA\IC500\000510\000510__001.DXD**

Method File Name : I:\icdata\methods\am.perch\000510-perchlorate.met
Schedule File Name : i:\icdata\schedules\000510-per.sch
Date Time Collected : 5/10/00 5:54:45 PM
Calibration Date : 5/11/00 12:40:39 PM
System Operator : Virginia Markowitz

Peak Information : All Components

| Peak # | Component Name | Retention Time | Cal Response (Previous) | Cal Response (Measured) | Cal Response (New) |
|---|---|---|---|---|---|
| 1 | | 2.60 | | | |



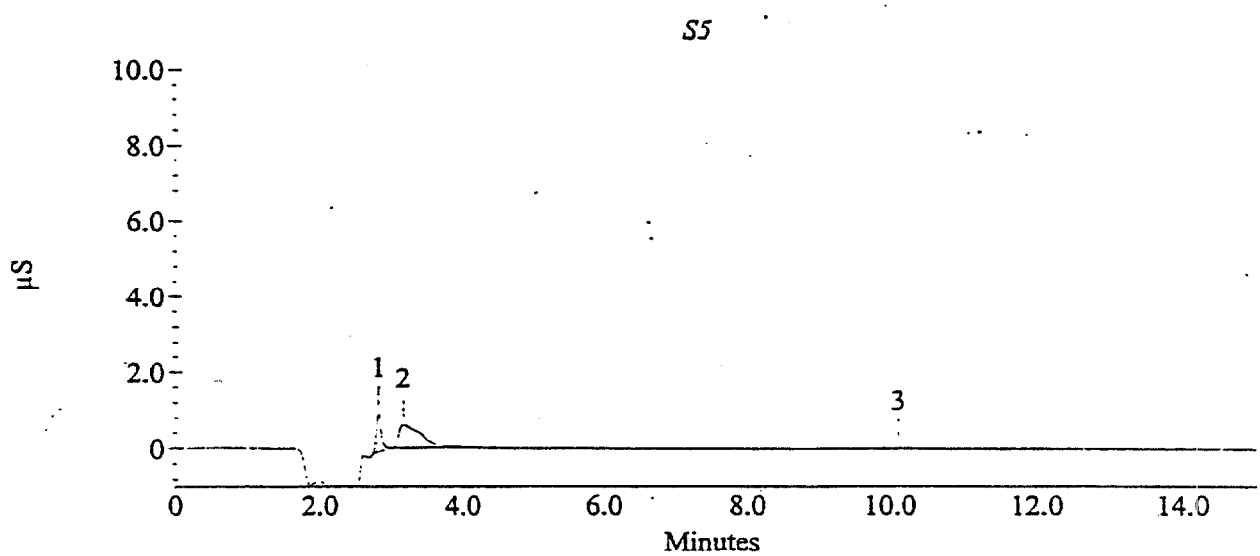
# Calibration Update Report

**Sample Name : S5**
**Data File Name : I:\ICDATA\IC500\000510\000510__002.DXD**

Method File Name : I:\icdata\methods\am.perch\000510-perchlorate.met
Schedule File Name : i:\icdata\schedules\000510-per.sch
Date Time Collected : 5/10/00 6:12:24 PM
Calibration Date : 5/11/00 12:40:39 PM
System Operator : Virginia Markowitz

Peak Information : All Components

| Peak # | Component Name | Retention Time | Cal Response (Previous) | Cal Response (Measured) | Cal Response (New) |
|---|---|---|---|---|---|
| 3 | Ammonium Perchlor | 10.12 | 5353 | 5353 | 5353 |



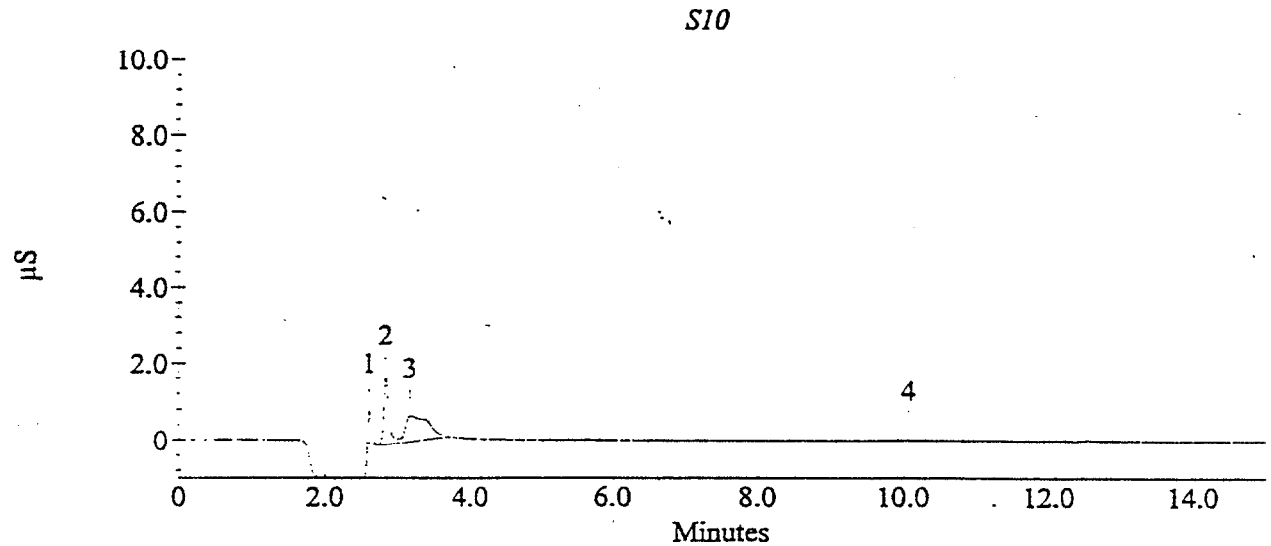
# Calibration Update Report

**Sample Name : S10**
**Data File Name : I:\ICDATA\IC500\000510\000510__003.DXD**

Method File Name : I:\icdata\methods\am.perch\000510-perchlorate.met
Schedule File Name : i:\icdata\schedules\000510-per.sch
Date Time Collected : 5/10/00 6:30:03 PM
Calibration Date : 5/11/00 12:40:39 PM
System Operator : Virginia Markowitz

Peak Information : All Components

| Peak # | Component Name | Retention Time | Cal Response (Previous) | Cal Response (Measured) | Cal Response (New) |
|---|---|---|---|---|---|
| 4 | Ammonium Perchlor | 10.08 | 8488 | 8488 | 8488 |



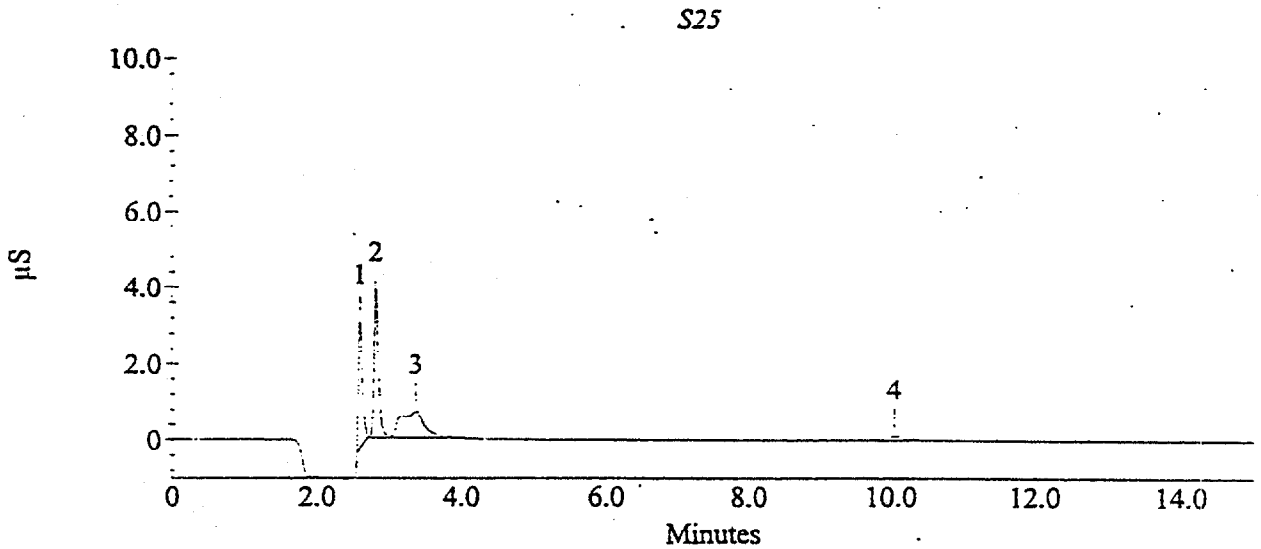
# Calibration Update Report

**Sample Name : S25**
**Data File Name : I:\ICDATA\IC500\000510\000510__004.DXD**

Method File Name : I:\icdata\methods\am.perch\000510-perchlorate.met
Schedule File Name : i:\icdata\schedules\000510-per.sch
Date Time Collected : 5/10/00 6:47:42 PM
Calibration Date : 5/11/00 12:40:39 PM
System Operator : Virginia Markowitz

Peak Information : All Components

| Peak # | Component Name | Retention Time | Cal Response (Previous) | Cal Response (Measured) | Cal Response (New) |
|---|---|---|---|---|---|
| 4 | Ammonium Perchlor | 10.05 | 23173 | 23173 | 23173 |



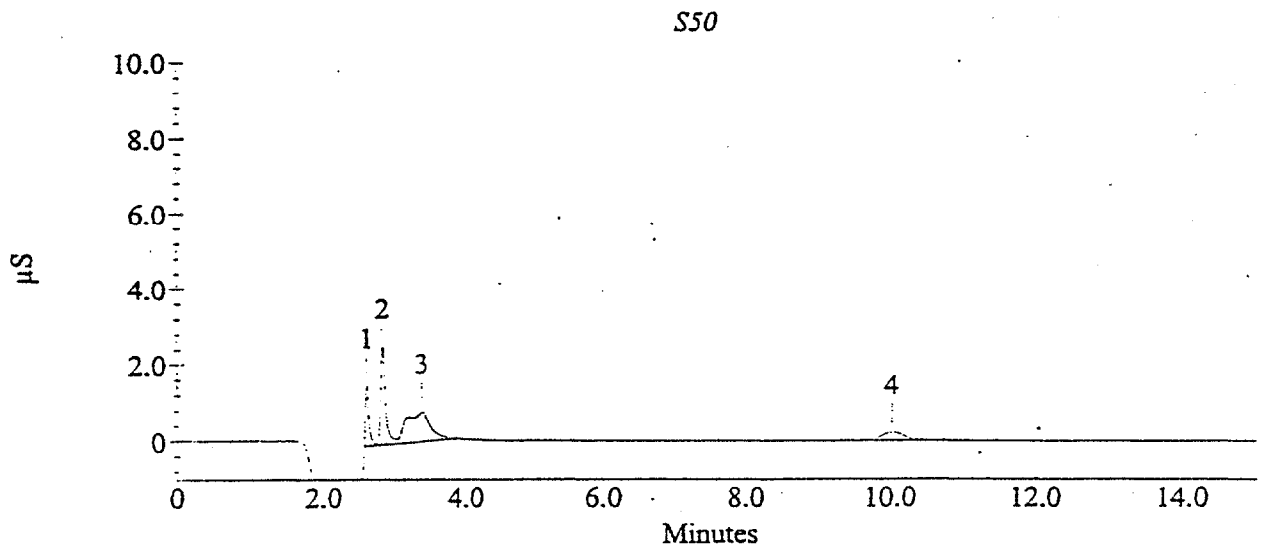
# Calibration Update Report

**Sample Name : S50**
**Data File Name : I:\ICDATA\IC500\000510\000510__005.DXD**

Method File Name : I:\icdata\methods\am.perch\000510-perchlorate.met
Schedule File Name : i:\icdata\schedules\000510-per.sch
Date Time Collected : 5/10/00 7:05:19 PM
Calibration Date : 5/11/00 12:40:39 PM
System Operator : Virginia Markowitz

Peak Information : All Components

| Peak # | Component Name | Retention Time | Cal Response (Previous) | Cal Response (Measured) | Cal Response (New) |
|---|---|---|---|---|---|
| 4 | Ammonium Perchlor | 10.03 | 45706 | 45706 | 45706 |



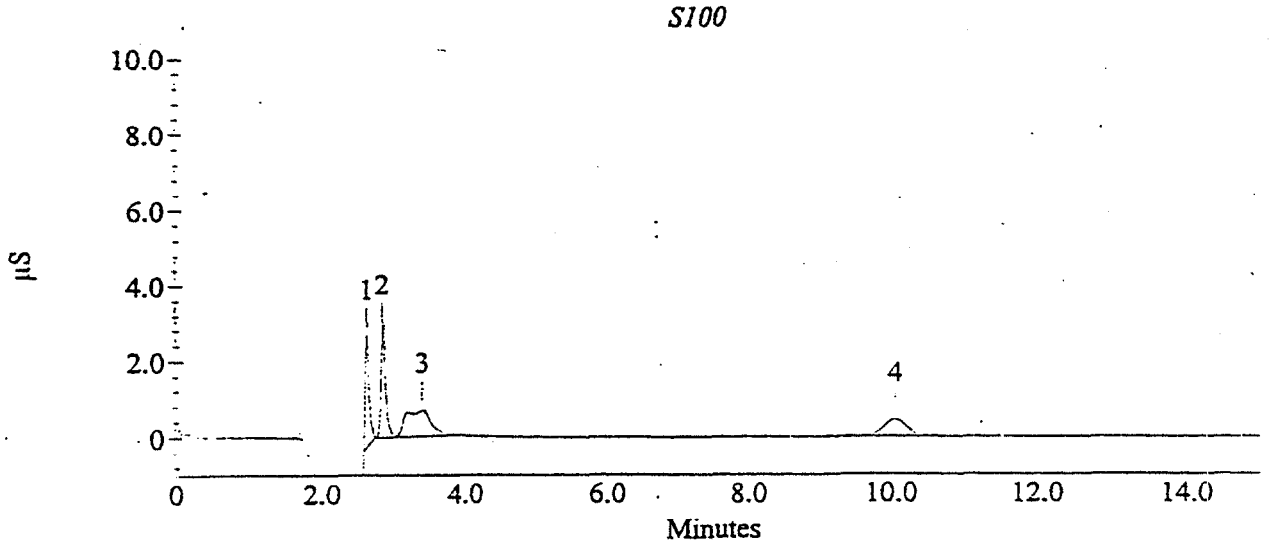
# Calibration Update Report

**Sample Name : S100**
**Data File Name : I:\ICDATA\IC500\000510\000510__006.DXD**

Method File Name : I:\icdata\methods\am.perch\000510-perchlorate.met
Schedule File Name : i:\icdata\schedules\000510-per.sch
Date Time Collected : 5/10/00 7:22:58 PM
Calibration Date : 5/11/00 12:40:39 PM
System Operator : Virginia Markowitz

Peak Information : All Components

| Peak # | Component Name | Retention Time | Cal Response (Previous) | Cal Response (Measured) | Cal Response (New) |
|---|---|---|---|---|---|
| 4 | Ammonium Perchlor | 10.07 | 95704 | 95704 | 95704 |



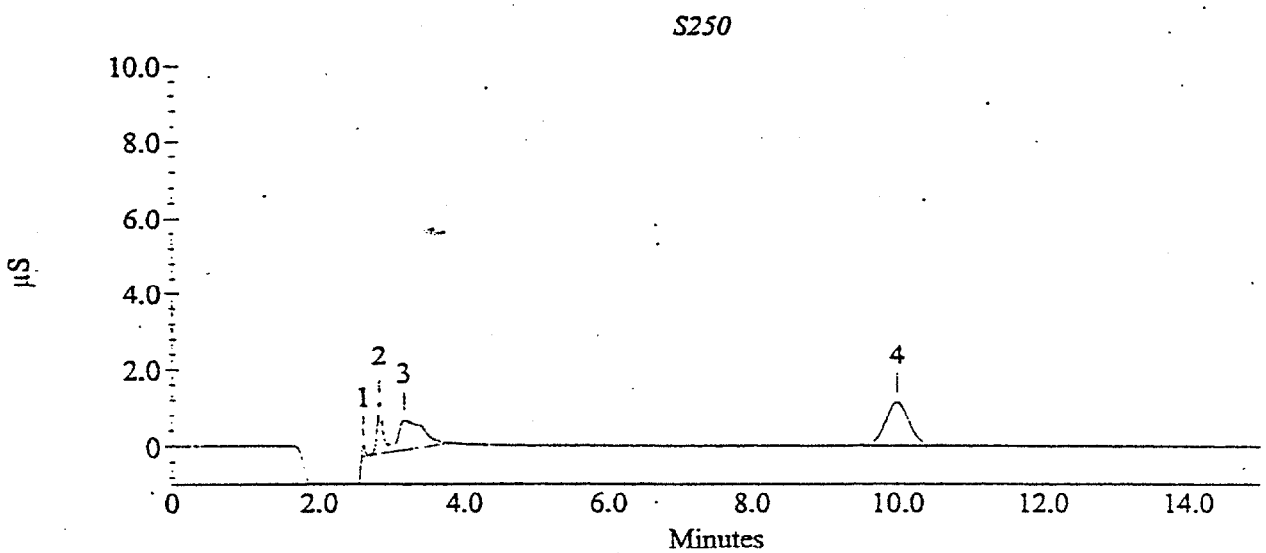
# Calibration Update Report

**Sample Name : S250**
**Data File Name : I:\ICDATA\IC500\000510\000510__007.DXD**

Method File Name : I:\icdata\methods\am.perch\000510-perchlorate.met
Schedule File Name : i:\icdata\schedules\000510-per.sch
Date Time Collected : 5/10/00 7:40:36 PM
Calibration Date : 5/11/00 12:40:39 PM
System Operator : Virginia Markowitz

Peak Information : All Components

| Peak # | Component Name | Retention Time | Cal Response (Previous) | Cal Response (Measured) | Cal Response (New) |
|---|---|---|---|---|---|
| 4 | Ammonium Perchlor | 10.00 | 252558 | 252558 | 252558 |



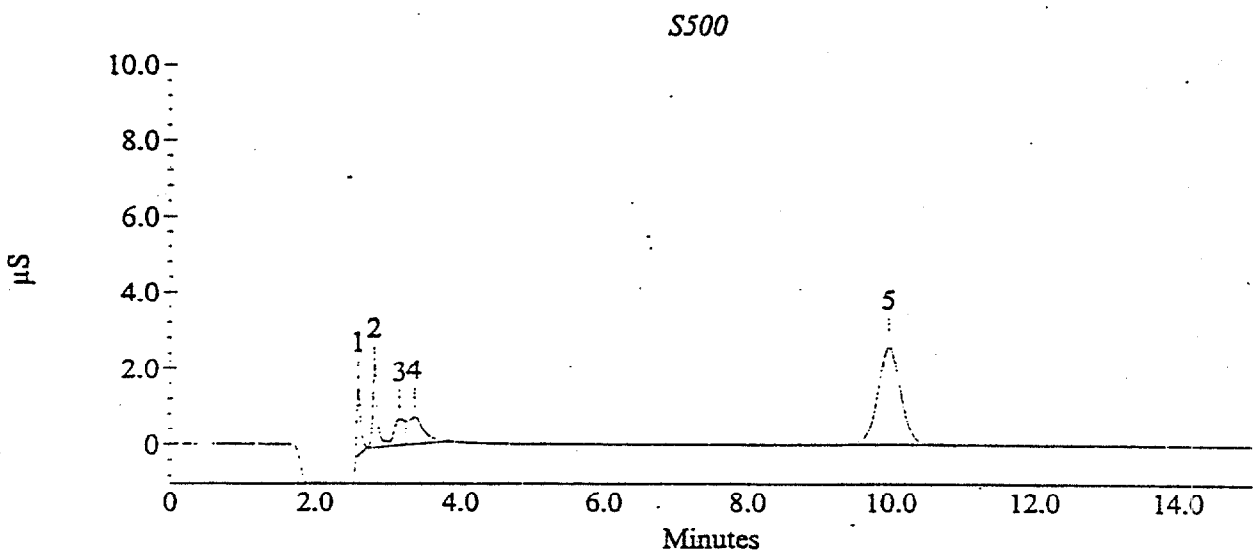
# Calibration Update Report

**Sample Name : S500**
**Data File Name : I:\ICDATA\IC500\000510\000510__008.DXD**

Method File Name : I:\icdata\methods\am.perch\000510-perchlorate.met
Schedule File Name : i:\icdata\schedules\000510-per.sch
Date Time Collected : 5/10/00 7:58:14 PM
Calibration Date : 5/11/00 12:40:39 PM
System Operator : Virginia Markowitz

Peak Information : All Components

| Peak # | Component Name | Retention Time | Cal Response (Previous) | Cal Response (Measured) | Cal Response (New) |
|---|---|---|---|---|---|
| 5 | Ammonium Perchlor | 9.97 | 560403 | 560403 | 560403 |



# Sample Analysis Report

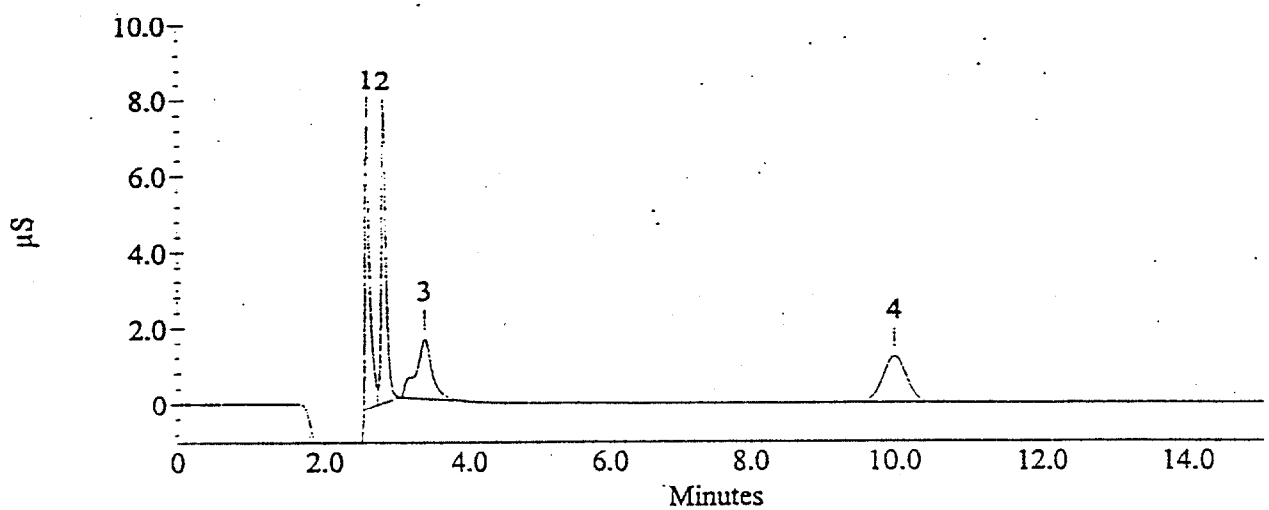
**Sample Name : SECOND SOURCE CONFIRM**
**Data File Name : I:\ICDATA\IC500\000510\000510__009.DXD**

Method File Name : i:\icdata\methods\am.perch\000510-perchlorate.met
Date Time Collected : 5/10/00 8:15:53 PM
System Operator : Virginia Markowitz

Peak Information : All Peaks

| Peak # | Component Name | Retention Time | Amount | Peak Area | Peak Height |
|---|---|---|---|---|---|
| 1 | | 2.60 | 0.00 | 330756 | 74204 |
| 2 | | 2.82 | 0.00 | 341378 | 72374 |
| 3 | | 3.37 | 0.00 | 242839 | 15744 |
| 4 | Ammonium Perchlor | 10.00 | 245.05 | 265593 | 11978 |

*SECOND SOURCE CONFIRM*



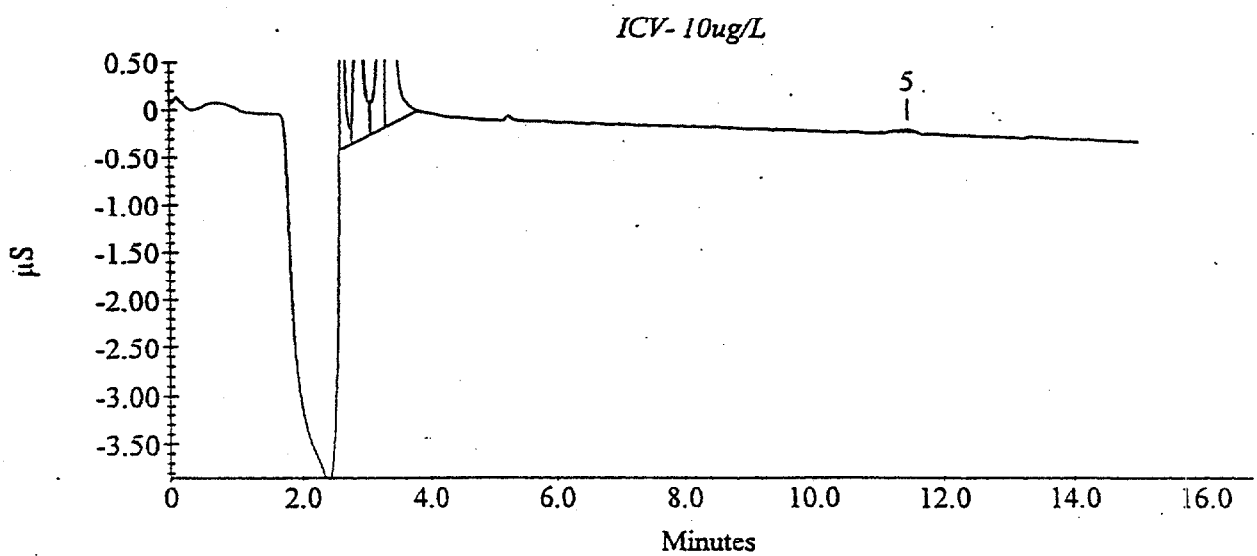
# Sample Analysis Report

**Sample Name : ICV- 10ug/L**
**Data File Name : I:\ICDATA\IC500\000718\000718__003.DXD**

Method File Name : i:\icdata\methods\am.perch\000510-perchlorate.met
Date Time Collected : 7/18/00 2:33:40 PM
System Operator : VHM

Peak Information : All Peaks

| Peak # | Component Name | Retention Time | Amount | Peak Area | Peak Height |
|---|---|---|---|---|---|
| 1 | | 2.62 | 0.00 | 124076 | 28147 |
| 2 | | 2.87 | 0.00 | 397440 | 78392 |
| 3 | | 3.23 | 0.00 | 117837 | 14104 |
| 4 | | 3.38 | 0.00 | 171682 | 17529 |
| 5 | Ammonium Perchlor | 11.47 | 11.84 | 4581 | 320 |



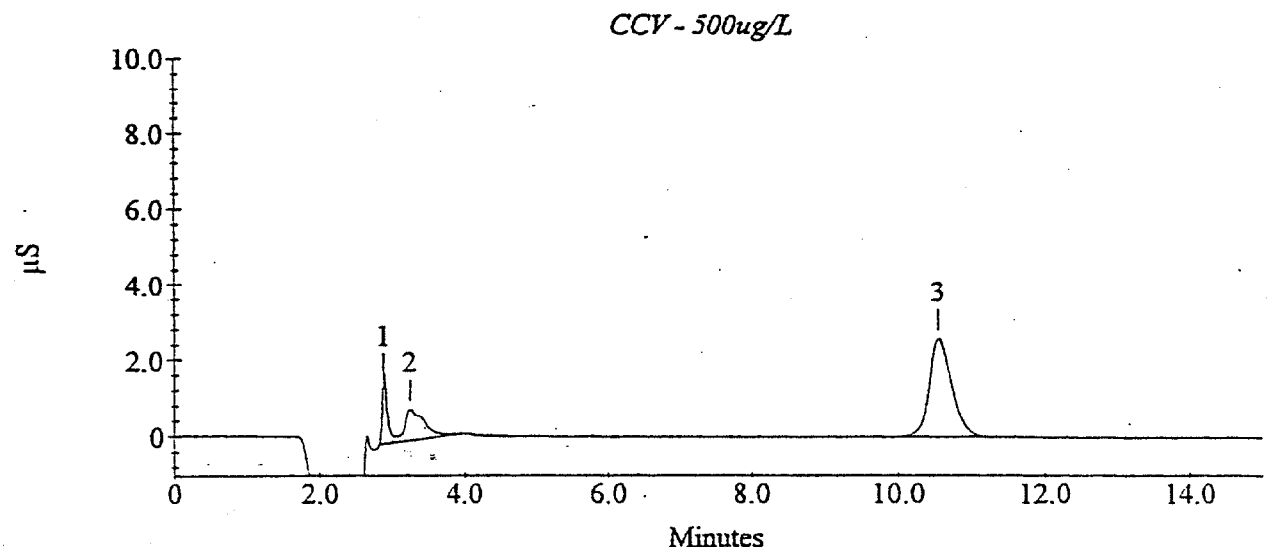
# Sample Analysis Report

**Sample Name : CCV - 500ug/L**
**Data File Name : I:\ICDATA\IC500\000718\000718__031.DXD**

Method File Name : i:\icdata\methods\am.perch\000510-perchlorate.met
Date Time Collected : 7/18/00 10:47:19 PM
System Operator : VHM

Peak Information : All Peaks

| Peak # | Component Name | Retention Time | Amount | Peak Area | Peak Height |
|---|---|---|---|---|---|
| 1 | | 2.87 | 0.00 | 85357 | 16169 |
| 2 | | 3.23 | 0.00 | 154118 | 8195 |
| 3 | Ammonium Perchlor | 10.55 | 499.42 | 550287 | 25893 |



# Sample Analysis Report

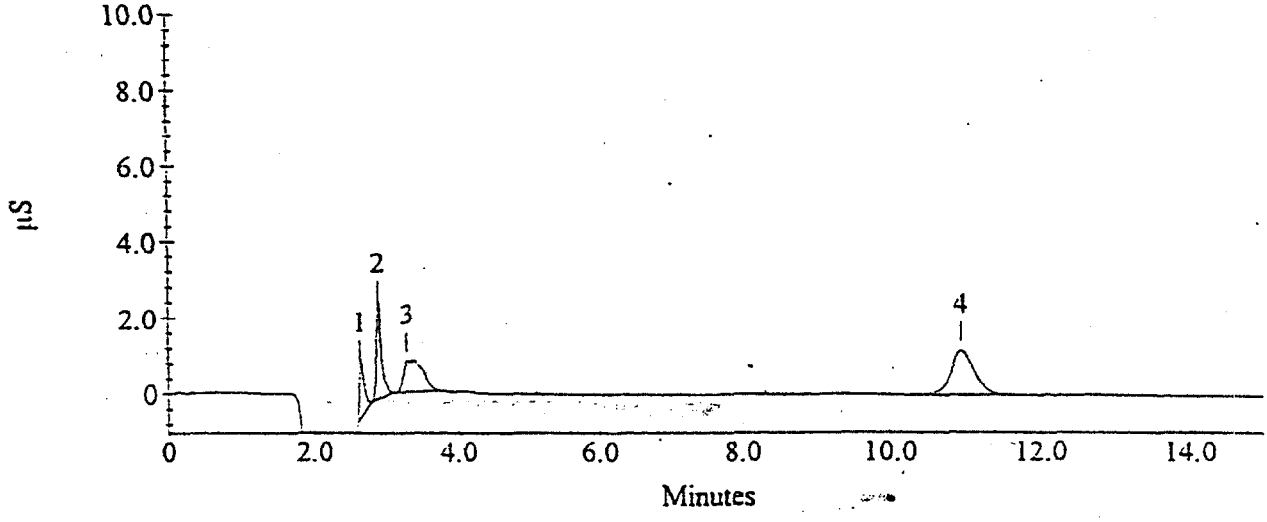
'ample Name : CCV - 250ug/L
Data File Name : I:\ICDATA\IC500\000718\000718__017.DXD

Method File Name : i:\icdata\methods\am.perch\000510-perchlorate.met
Date Time Collected : 7/18/00 6:40:26 PM
System Operator : VHM

Peak Information : All Peaks

| Peak # | Component Name | Retention Time | Amount | Peak Area | Peak Height |
|---|---|---|---|---|---|
| 1 | | 2.63 | 0.00 | 68800 | 13225 |
| 2 | | 2.88 | 0.00 | 120836 | 23449 |
| 3 | | 3.28 | 0.00 | 153224 | 8272 |
| 4 | Ammonium Perchlor | 10.95 | 241.40 | 261510 | 11779 |

*CCV - 250ug/L*




0 2042

Current Date : 7 19
Current Time : 12:34

# Sample Analysis Report

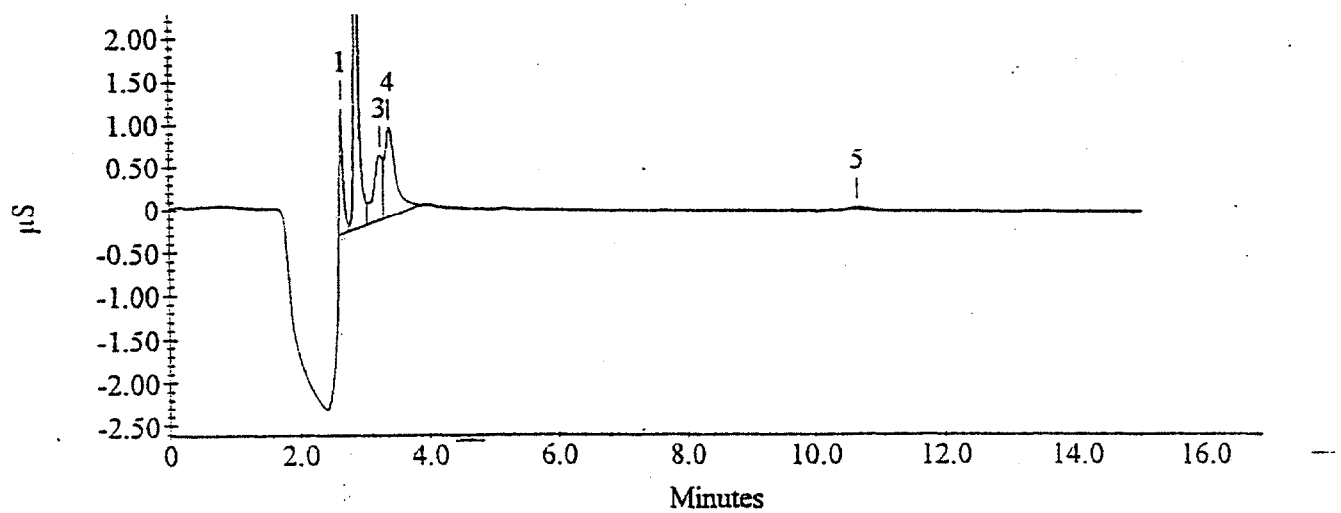
**Sample Name : ICV - 10ug/L**
**Data File Name : I:\ICDATA\IC500\000718\000718__034.DXD**

Method File Name : i:\icdata\methods\am.perch\000510-perchlorate.met
Date Time Collected : 7/18/00 11:40:19 PM
System Operator : VHM

Peak Information : All Peaks

| Peak # | Component Name | Retention Time | Amount | Peak Area | Peak Height |
|---|---|---|---|---|---|
| 1 | | 2.63 | 0.00 | 56897 | 14688 |
| 2 | | 2.87 | 0.00 | 215390 | 44720 |
| 3 | | 3.23 | 0.00 | 70684 | 7620 |
| 4 | | 3.37 | 0.00 | 120204 | 10294 |
| 5 | Ammonium Perchlor | 10.65 | 10.95 | 3582 | 262 |

*ICV - 10ug/L*



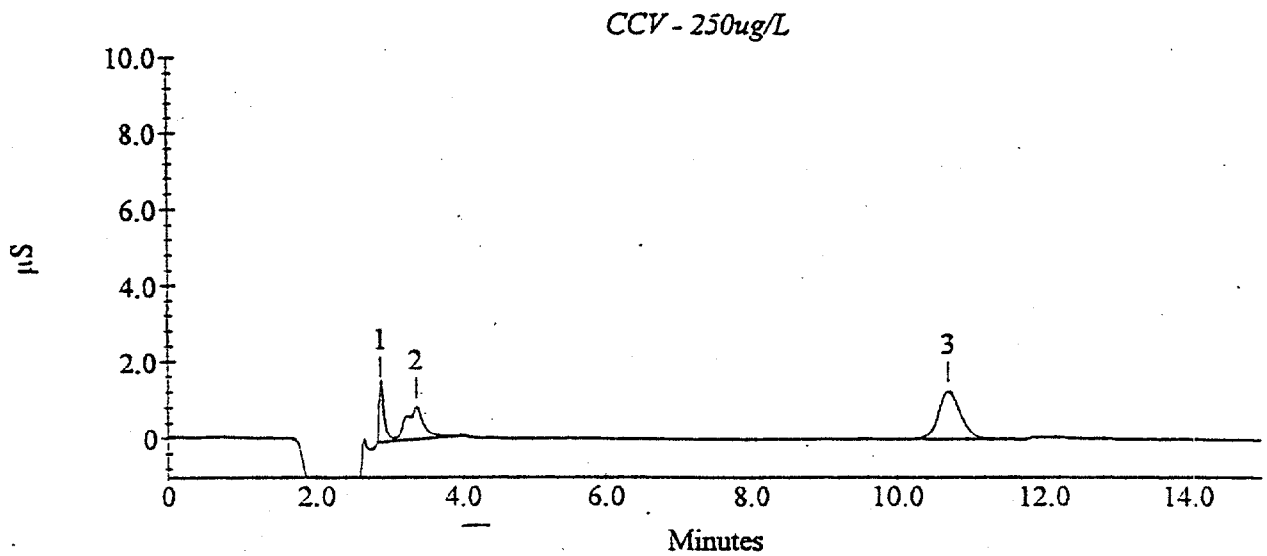
# Sample Analysis Report

**Sample Name : CCV - 250ug/L**
**Data File Name : I:\ICDATA\IC500\000718\000718__046.DXD**

Method File Name : i:\icdata\methods\am.perch\000510-perchlorate.met
Date Time Collected : 7/19/00 3:11:55 AM
System Operator : VHM

Peak Information : All Peaks

| Peak # | Component Name | Retention Time | Amount | Peak Area | Peak Height |
|---|---|---|---|---|---|
| 1 | | 2.87 | 0.00 | 75270 | 14743 |
| 2 | | 3.35 | 0.00 | 143984 | 8547 |
| 3 | Ammonium Perchlor | 10.70 | 251.09 | 272355 | 12659 |



# Sample Analysis Report

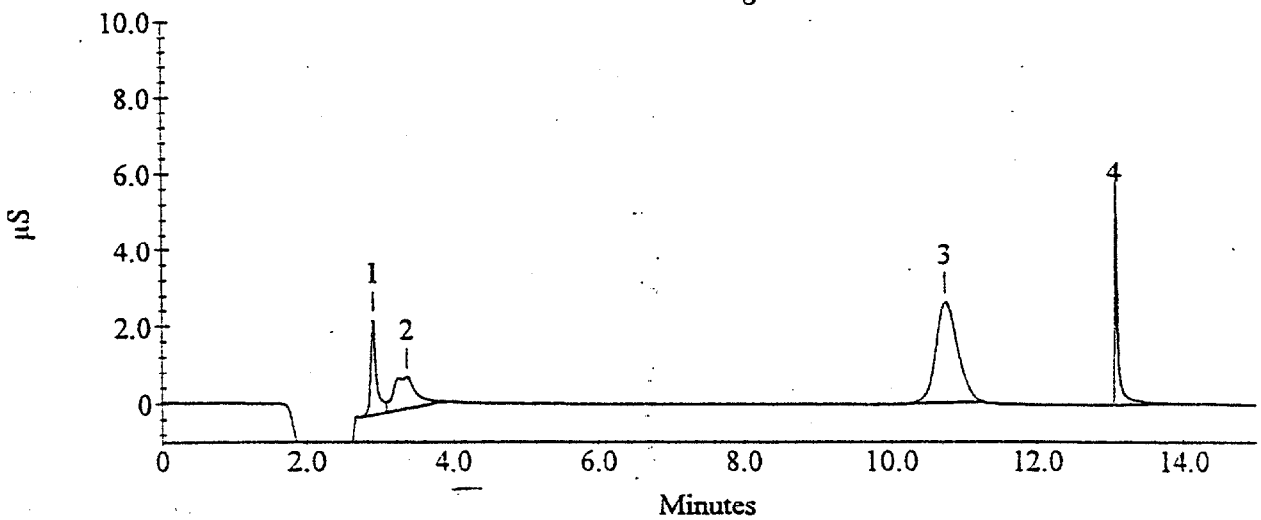
**Sample Name : CCV - 500ug/L**
**Data File Name : I:\ICDATA\IC500\000718\000718__057.DXD**

Method File Name : i:\icdata\methods\am.perch\000510-perchlorate.met
Date Time Collected : 7/19/00 6:25:52 AM
System Operator : VHM

Peak Information : All Peaks

| Peak # | Component Name | Retention Time | Amount | Peak Area | Peak Height |
|---|---|---|---|---|---|
| 1 | | 2.88 | 0.00 | 136637 | 24530 |
| 2 | | 3.35 | 0.00 | 177580 | 8115 |
| 3 | Ammonium Perchlor | 10.72 | 501.90 | 553066 | 26286 |
| 4 | | 13.07 | 0.00 | 177734 | 48709 |

*CCV - 500ug/L*



**HEARTLAND**
**ENVIRONMENTAL SERVICES, INC.**

# Data Validation Report

| | |
|---|---|
| SDG#: | 6140 |
| Date: | September 6, 2000 |
| Client Name: | CH2M Hill |
| Project/Site Name: | Vieques |
| Date Sampled: | June 20, 2000 |
| Number of Samples: | 10 Non-Aqueous Sample(s) with 0 MS/MSD(s) |
| Laboratory: | GPL Laboratories, LLLP |
| Validation Guidance: | National Functional Guidelines for Organic and Inorganic Data, February, 1994, Region II Modifications |
| QA/QC Level: | DQO Level IV |
| Method(s) Utilized: | SW846 Third Edition |
| Analytical Fractions: | Picric Acid and Perchlorate |

Analytical data in this report were screened to determine usability of results and also to determine contractual compliance relative to these requirements and deliverables. This screening assumes analytical results are correct as reported and merely provides an interpretation of the reported quality control results. A minimum of 10% of all laboratory calculations have been verified as part of this validation. All instrument output, i.e. spectra, chromatograms, etc., for each sample have been carefully reviewed. The end-user is urged to review the Specific Findings and associated Data Qualifications presented in this report. Annotated Form 1s or spreadsheets for all samples reviewed are included after the Data Assessment Narratives. Form 1s for MS/MSD samples or spreadsheets are not annotated.

The release of this Data Validation Report is authorized by the following signature:

Lisa R. Jineau
for Eugene M. Watson, Vice President

9-6-00
Date

4127 Plaza 94 South • St. Charles, MO 63304
(636) 936-1332 • Fax (636) 936-1335

**SDG# 6140**

**Samples and Fractions Reviewed**

Sample Identifications Analytical Fractions

| CH2M HILL ID | MATRIX | PA | | PERC | |
|---|---|---|---|---|---|
| LIA028 | SOIL | | X | | X |
| LIA029 | SOIL | | X | | X |
| LIA030 | SOIL | | X | | X |
| UP-EAST-SS-01 | SOIL | | X | | X |
| UP-EAST-SS-02 | SOIL | | X | | X |
| UP-EAST-SS-03 | SOIL | | X | | X |
| UP-EAST-SS-04 | SOIL | | X | | X |
| LIA011D | SOIL | | X | | X |
| LIA016D | SOIL | | X | | X |
| LIA029D | SOIL | | X | | X |
| Total Billable Samples (Water/Soil) | | 0 | 10 | 0 | 10 |

PA= Picric Acid
PERC= Perchlorate

# DATA ASSESSMENT NARRATIVES

# DATA ASSESSMENT NARRATIVE

# PICRIC ACID

## General

The organic findings offered in this screening report assumes that all analytical results are correct as reported and is based upon the examination of the reported holding times, blank analysis results, surrogate and matrix spike recoveries, HPLC performance, and calibration results. This report was prepared in compliance relative to the analytical and deliverable requirements specified in the SW-846 Method 8330; Region II Data Validation Guidelines, Revision 1.3, September, 1994; and DQO Level IV requirements. All comments made within this report should be considered when examining the analytical results. Please refer the specific findings found in each category to the Summary of Data Qualifications table.

## SDG# 6140

A validation was performed on the Picric Acid data from SDG 6140. The data was evaluated based on the following parameters.

| | | |
|---|---|---|
| * | • | Data Completeness |
| | • | Holding Times |
| * | • | HPLC Performance |
| | • | Calibrations |
| * | • | Blanks |
| * | • | Surrogate Recoveries |
| * | • | Matrix Spike/Matrix Spike Duplicates |
| * | • | Field Duplicates |
| * | • | Compound Identification |
| * | • | Compound Quantitation |

* - All criteria were met for this parameter.

## Holding Times

The Region II extraction holding time of fourteen (14) days was exceeded by twenty-three (23) days for all samples. For the following samples, the positive results are qualified as estimated, J HT, and the non-detect results are rejected, R HT.

All Samples

## Initial Calibration

The samples were analyzed more than twenty-four hours after the analysis of the initial calibration. One (1) associated continuing calibration exhibited one (1) compound with a non-compliant %D. Based on the Region II validation guidelines, for the following samples and compound, the positive results are qualified as estimated, J IC, and the non-detect results are qualified as estimated, UJ IC.

| | |
|---|---|
| LIA028 | Picric Acid |
| LIA029 | |
| LIA030 | |
| UP_EAST-SS-01 | |
| UP_EAST-SS-02 | |
| UP_EAST-SS-03 | |

## Continuing Calibration

The continuing calibration LCB6087.D exhibited one (1) compound with a %D greater than 15%. For the following samples and non-compliant compound, the positive results are qualified as estimated, J CC, and the non-detect results are qualified as estimated, UJ CC.

| | |
|---|---|
| LIA028 | Picric Acid |
| LIA029 | |
| LIA030 | |
| UP_EAST-SS-01 | |
| UP_EAST-SS-02 | |
| UP_EAST-SS-03 | |

## System Performance and Overall Assessment

The data required qualifications.

# GLOSSARY OF DATA QUALIFIERS

## QUALIFICATION CODES

**U** = Not detected

**J** = Estimated value

**UJ** = Reported quantitation limit is qualified as estimated

**NJ** = Result is considered presumptively present at an estimated concentration

**R** = Result is rejected and unusable

**D** = Result value is based on dilution analysis

## METHOD BLANK QUALIFICATION CODES

**CRQL =** The sample result for the blank contaminant is less than the sample CRQL and is less than 5X the method blank value. The sample result for the blank contaminant is rejected and the CRQL for that compound is reported.

**U =** The sample result for the blank contaminant is greater than the sample CRQL and is less than 5X the method blank value. The sample result for the blank contaminant is qualified as non detected at the compound value reported.

**No Action =** The sample result for the blank contaminant is greater than the sample CRQL and is greater than 5X the method blank value. The sample result for the blank contaminant is not qualified with any blank qualifiers.

**Two Digit Code Definitions for Comment Field**

| Code | Definition |
|---|---|
| TN | Tune |
| BS | Blank Spike/LCS |
| IS | Internal Standard |
| MS | Matrix Spike and/or Matrix Spike Duplicate Recovery |
| MD | Matrix Spike/Matrix Spike Duplicate Precision |
| 2S | Second Source |
| SD | Serial Dilution |
| SS | Spiked Surrogate |
| LR | Analyte present above linear (or calibration) range |
| IC | Initial Calibration |
| CC | Continuing Calibration Verification |
| PD | Pesticide Degradation |
| LD | Lab Duplicate |
| 2C | Second Column (Confirmation) |
| HT | Holding Time |
| PS | Post Spike |
| BL | Blank |
| RE | Re-extraction |
| DL | Dilution |
| IB | In Between |
| FD | Field Duplicate |
| OT | Other |

# SUMMARY OF DATA QUALIFICATIONS

| SAMPLE ID | COMPOUND ID | DL | QL | CODE |
|---|---|---|---|---|
| All Samples | ALL | +/- | J/R | HT |
| LIA028<br>LIA029<br>LIA030<br>UP_EAST-SS-01<br>UP_EAST-SS-02<br>UP_EAST-SS-03 | Picric Acid | +/- | J/UJ | IC |
| LIA028<br>LIA029<br>LIA030<br>UP_EAST-SS-01<br>UP_EAST-SS-02<br>UP_EAST-SS-03 | Picric Acid | +/- | J/UJ | CC |

* DL denotes the Form I qualifier supplied by the laboratory
QL denotes the qualifier used by the data validation firm
+ in the DL column denotes a positive result
- in the DL column denotes a non detect result

# DATA ASSESSMENT NARRATIVE
# PERCHLORATE

General

The inorganic findings offered in this screening report assumes that all analytical results are correct as reported and is based upon the examination of the reported holding times, blank analysis results, matrix spike and LCS recoveries, matrix duplicates and calibration results. This report was prepared in compliance relative to the analytical and deliverable requirements specified in the Method 314.0 for Perchlorate in SW 846; the Functional Guidelines for Inorganic Data Validation, February 1994 with Region II modifications, and DQO Level IV requirements. All comments made within this report should be considered when examining the analytical results. Please refer the specific findings found in each category to the Summary of Data Qualification table.

## SDGs # 6140

A validation was performed on the perchlorate Data from SDG 6140. The data was evaluated based on the following parameters.

| | | |
|---|---|---|
| * | • | Data Completeness |
| * | • | Holding Times |
| * | • | Calibrations |
| * | • | Blanks |
| * | • | Matrix Spike Recovery |
| * | • | Matrix Duplicates |
| * | • | Field Duplicates |
| * | • | Laboratory Control Samples |

* - All criteria were met for this parameter.

# SUMMARY OF DATA QUALIFICATIONS

| Sample ID | Analyte | DL | QL |
|---|---|---|---|

Data stands as reported without qualification.

# ANNOTATED FORM 1s

1B

EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA028

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6140-001

Sample wt/vol: 2.2 (g/ml) G Lab File ID: LCB6090.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/02/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 910 | ~~U~~ R HT |

EKK
9/5/00

FORM I SV-1

PA

1007 0

1B

# EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA029

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6140-002

Sample wt/vol: 2 (g/ml) G Lab File ID: LCB6093.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/02/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q | |
|---|---|---|---|---|
| 88-89-1 | PICRIC ACID | 1000 | U | R HT |

EOK
9/5/00

FORM I SV-1 PA

1B

EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA030

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6140-003

Sample wt/vol: 2.2 (g/ml) G Lab File ID: LCB6094.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/02/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CONCENTRATION UNITS:

| CAS NO. | COMPOUND | (ug/L or ug/Kg) UG/KG | Q | |
|---|---|---|---|---|
| 88-89-1 | PICRIC ACID | 910 | ~~U~~ | R HJ |

EXK
9/5/00

FORM I SV-1

PA

1B
EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

UP_EAST-SS-01

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6140-004

Sample wt/vol: 2.2 (g/ml) G Lab File ID: LCB6095.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/02/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CONCENTRATION UNITS:

| CAS NO. | COMPOUND | (ug/L or ug/Kg) UG/KG | Q | |
|---|---|---|---|---|
| 88-89-1 | PICRIC ACID | 910 | U | R HT |

EXL
9/5/00

FORM I SV-1 PA

1B
EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

UP_EAST-SS-02

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

.b Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6140-005

Sample wt/vol: 2 (g/ml) G Lab File ID: LCB6096.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/02/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 1000 | ~~U~~ R HT |

EVK
7/5/00

1B
EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

UP_EAST-SS-03

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6140-006

Sample wt/vol: 2.2 (g/ml) G Lab File ID: LCB6097.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/02/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 910 | ~~U~~ R HT |

EKK
9/5/00



102D1

1B
EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

UP_EAST-SS-04

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6140-007

Sample wt/vol: 2.5 (g/ml) G Lab File ID: LCB6099.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/02/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q | |
|---|---|---|---|---|
| 88-89-1 | PICRIC ACID | 800 | ~~U~~ | R HT |

EXK
9/5/00

FORM I SV-1 PA

1025 01

1B
EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA011D

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6140-008

Sample wt/vol: 2 (g/ml) G Lab File ID: LCB6100.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/02/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q | |
|---|---|---|---|---|
| 88-89-1 | PICRIC ACID | 1000 | ~~U~~ | R HT |

EXK
9/5/00

1B

EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA016D

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6140-009

Sample wt/vol: 2.6 (g/ml) G Lab File ID: LCB6101.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/02/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CONCENTRATION UNITS:

| CAS NO. | COMPOUND | (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 770 | ~~U~~ R HT |

EXL 9/5/00

1B
EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA029D

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6140-010

Sample wt/vol: 2.2 (g/ml) G Lab File ID: LCB6102.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/02/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q | |
|---|---|---|---|---|
| 88-89-1 | PICRIC ACID | 910 | ~~U~~ | R HT |

EXL 9/5/00

1B

EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA028 MS

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6140-001 MS

Sample wt/vol: 2.1 (g/ml) G Lab File ID: LCB6091.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/02/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 24000 | E |

EXL
9/5/00

1B
EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA028 MSD

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6140-001 MSD

Sample wt/vol: 2.1 (g/ml) G Lab File ID: LCB6092.D

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/02/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CONCENTRATION UNITS:

| CAS NO. | COMPOUND | (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 24000 | E |

EVK
9/5/00

# Summary of Analytical Results

Client ID LIA028
L ID: 6140-001-01-I
Matrix: Soil
Date Collected: Jun-20-2000
Date Received: Jun-22-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-18-2000
Time Analyzed 15:44
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 48.4 | ug/kg | U | 1 |

PBW 7/5/00

# Summary of Analytical Results

| | | |
|---|---|---|
| Client ID LIA029 | Prep Method: | Analytical Method: E314.0 |
| Lab ID: 6140-002-01-1 | Prep Date: | Date Analyzed: Jul-18-2000 |
| Matrix: Soil | Prep Time: | Time Analyzed 16:37 |
| Date Collected: Jun-20-2000 | Prep Chemist: | Analyst: Virginia Markowitz |
| Date Received: Jun-22-2000 | | |

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 49.5 | ug/kg | U | 1 |

9/5/00

# Summary of Analytical Results

| | | |
|---|---|---|
| Client ID LIA030 | Prep Method: | Analytical Method: E314.0 |
| GPL ID: 6140-003-01-1 | Prep Date: | Date Analyzed: Jul-18-2000 |
| Matrix: Soil | Prep Time: | Time Analyzed 16:55 |
| Date Collected: Jun-20-2000 | Prep Chemist: | Analyst: Virginia Markowitz |
| Date Received: Jun-22-2000 | | |

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 48.3 | ug/kg | U | 1 |

7/25/00

# Summary of Analytical Results

Client ID UP_EAST-SS-01
Lab ID: 6140-004-01-1
Matrix: Soil
Date Collected: Jun-20-2000
Date Received: Jun-22-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-18-2000
Time Analyzed 17:12
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | 123 | 58 | ug/kg | | 1 |

PBW 9/15/00

## Summary of Analytical Results

Client ID UP_EAST-SS-02
Lab ID: 6140-005-01-1
Matrix: Soil
Date Collected: Jun-20-2000
Date Received: Jun-22-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-18-2000
Time Analyzed 17:30
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 65.6 | ug/kg | U | 1 |

RBW 9/5/00

# Summary of Analytical Results

| | | |
|---|---|---|
| nt ID UP_EAST-SS-03 | Prep Method: | Analytical Method: E314.0 |
| ID: 6140-006-01-1 | Prep Date: | Date Analyzed: Jul-18-2000 |
| Matrix: Soil | Prep Time: | Time Analyzed 17:48 |
| Date Collected: Jun-20-2000 | Prep Chemist: | Analyst: Virginia Markowitz |
| Date Received: Jun-22-2000 | | |

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 51.9 | ug/kg | U | 1 |

9/5/00

# Summary of Analytical Results

Client ID UP_EAST-SS-04
Lab ID: 6140-007-01-1
Matrix: Soil
Date Collected: Jun-20-2000
Date Received: Jun-22-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-18-2000
Time Analyzed 18:05
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 61.3 | ug/kg | U | 1 |

9/5/00

# Summary of Analytical Results

Client ID LIA011D
Lab ID: 6140-008-01-1
Matrix: Soil
Date Collected: Jun-20-2000
Date Received: Jun-22-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-18-2000
Time Analyzed 18:23
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 49.5 | ug/kg | U | 1 |

PBW 9/15/00

# Summary of Analytical Results

Client ID LIA016D
ID: 6140-009-01-1
Matrix: Soil
Date Collected: Jun-20-2000
Date Received: Jun-22-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-18-2000
Time Analyzed 18:58
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 50.1 | ug/kg | U | 1 |

9/5/00

# Summary of Analytical Results

Client ID LIA029D
ID: 6140-010-01-1
Matrix: Soil
Date Collected: Jun-20-2000
Date Received: Jun-22-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-18-2000
Time Analyzed 19:16
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 50.1 | ug/kg | U | 1 |

9/5/03

# DATA VALIDATION WORKSHEETS

DPO: [ ]ACTION [ ]FYI REGION II

# ORGANIC REGIONAL DATA ASSESSMENT SUMMARY

CASE/SAS NO.: _____ LABORATORY: GPC Laboratories.

SDG NO.: 6140 DATA USER: EPA Region II

SOW: ~~OLM03.2~~ SW846 REVIEW COMPLETION DATE: 9/5/00

NO. OF SAMPLES: ____ WATER 10 SOIL ____ OTHER

REVIEWER: [ ] ESD [ ] ESAT [✓] OTHER, CONTRACTOR HESI

| QC ITEM | VOA | BNA | PES | PICRIC ACID | |
|---|---|---|---|---|---|
| HOLDING TIMES | | | | Z | |
| GC-MS PERFORMANCE | | | | O | |
| INITIAL CALIBRATIONS | | | | M | |
| CONTINUING CAL | | | | M | |
| FIELD BLANKS(F = | | | | — | |
| LABORATORY BLANKS | | | | O | |
| SURROGATES | | | | — | |
| MATRIX MS/MSD | | | | O | |
| QC SAMPLES(LCS, PVS) | | | | O | |
| INTERNAL STANDARDS | | | | — | |
| COMPOUND ID | | | | O | |
| COMPOUND Quant | | | | O | |
| SYSTEM PERFORMANCE | | | | O | |
| OVERALL ASSESSMENT | | | | O | |

O = No problems or minor problems that do not affect data usability.
X = No more than about 5% of the data points are qualified as either estimated or unusable.
M = More than about 5% of the data points are qualified as either estimated or unusable.
Z = More than about 5% of the data points are qualified as unusable.

DPO ACTION ITEMS: _____

YES NO N/A

CASE NUMBER: 6140 LAB: GPL Laboratories

SITE: ~~GPL Laboratories, LLP~~ CH2M Hill Vieques (Camp Garcia Live Impact Area)

EDK 9/5/00

1.0 Introduction

1.1 The attached Standard Operating Procedure (SOP) is applicable to nitro substituted aromatics and nitro substituted amines by High Performance Liquid Chromatography (HPLC) data. Its scope is not only to facilitate the data validation process of the data reported by the contracting laboratory but also to ensure that the data is being reviewed in a uniform manner.

1.2 The SOP is based upon the quality control and quality assurance requirement specified in the analytical **Method 8330, November 1992 (Revision 0).**

2.0 Responsibilities

2.1 The reviewer must be knowledgeable of the analytical method and its QC criteria.

2.2 The reviewer must complete and/or file the following:

**Data Assessment Checklist-** The data reviewer evaluates each criterion carefully and checks if data is in compliance, non-compliance or not applicable.

**Data Assessment Narrative-** The data reviewer must present professional judgement, address areas of concern and comment on the validity of the overall data package. The reviewer must explain the reasons for rejecting and/or qualifying the data.

**Rejection Summary Form-**The reviewer must submit a completed form using a ratio format.

**Organic Regional Data Assessment Summary-** A completed form must be submitted.

**Telephone Record Log-**All phone conversations must be transcribed by the reviewer. Upon completion of the data review, the original telephone logis attached to the data assessment narrative.

| | YES | NO | N/A |
|---|---|---|---|
| **3.0 Data Completeness and Deliverables** | | | |
| 3.1 Have any missing deliverables been received and added to the data package? | [ ] | | ✓ |
| ACTION: Call lab for explanation/resubmittal of any missing deliverables. If lab cannot provide them, note the effect on review of the package under the "Contract Problems/Non-Compliance" section of reviewer narrative. | | | |
| 3.2 Was SAS-request included with package? | [ ] | ✓ | |
| If no, a SAS-request can be retrieved from RSCC. | | | |
| **4.0 Cover Letter SDG Narrative** | | | |
| 4.1 Is the Narrative or Cover Letter Present? | ✓ | | |
| 4.2 Are Case Number and/or SAS number contained in the Narrative or Cover letter? | ✓ | | |
| Work Order # | | | |
| **5.0 Traffic Reports and Laboratory Narrative** | | | |
| 5.1 Are Traffic Report Forms present for all samples? | ✓ | | |
| ACTION: If no, contact lab for replacement of missing or illegible copies. | | | |
| 5.2 Do Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data? | | ✓ | |
| NOTE: Samples are not preserved. | | | |
| ACTION: If samples were not iced upon receipt at the laboratory, flag all positive results "J" and all non-detects "UJ". | | | |

YES NO N/A

NOTE: Samples must be kept below 4°C from the time of collection through analysis. Degradation of some compounds occurs with heat. Samples should not be exposed to sunlight or temperatures above room temperature.

6.0 Special QC

6.1 Prior to preparation of stock solutions, acetonitrile, methanol, and water should be analyzed to determine possible interferences with analyte peaks. A different batch of solvent should be used if contamination is present.

6.2 Chromatograms are to be submitted showing that there are no interferences with analyte peaks.

Are these chromatograms present in package? [ ] ___ ✓

Are the chromatograms free of interferences? [ ] ___ ✓

ACTION: Ask lab for resubmittals. If deliverables are unavailable, judge the effect on the validity of the data. If questionable, contact SMO and note in data assessment.

7.0 Holding Times

7.1 Have any technical holding times, determined from date of collection to date of analysis, been exceeded?

A. For aqueous samples 7 days from sample collection to extraction ___ [ ] ✓

B. For soil/sediment samples 14 days from sample collection to extraction ✓ [ ] ___
s - 6/20 e - 7/27

C. For all samples extracts 40 days from time of extraction to time of analysis ___ [✓] ___
a - 8/2

YES NO N/A

Holding Time Violations
Table 1

(See Traffic Report)

| Sample ID | Date Sampled | Date Received | Date Lab Extracted | Date Analyzed | |
|---|---|---|---|---|---|
| all | 6/20 | 6/22 | 7/27 (23) | 8/2 | JTR |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

ACTION: If technical holding times are exceeded, flag all positive results as estimated ("J") and sample quantitation limits as estimated ("UJ"), and document in the narrative that holding times were exceeded. The reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results must be qualified "J", but the reviewer may determine that non-detect data are unusable (R).

8.0 Surrogate Recovery

8.1 Are the Organic Analysis Data Sheets (Form I) present and complete with surrogate recoveries for each of the following matrices:

a. Water? [ ] ___ ✓

b. Soil/Solid? [ ] ___ ✓

ACTION: Call lab for explanation/resubmittals. If missing deliverables or information are unavailable document the effect in the data assessment.

no Surrogate

YES NO N/A

8.2 Was the surrogate % recovery out of specifications for any field sample, method blank or QC sample? ___ [ ] ✓

8.3 Were surrogate retention times (RT) within ± 1.0% of the mean surrogate RT calculated from the initial calibration? [ ] ___ ✓

ACTION: Circle outliers in red.

ACTION: If the retention time shift (RTS) or % recovery of the surrogate in the field or QC samples is out of specification, then all associated sample data should be qualified. Use **Table 2** below as a guide.

**Surrogate Recovery**

**TABLE 2**

**The following table summarizes the surrogate recovery criteria and the data qualificat guidelines for all associated field samples.**

| SURROGATE | NOT QUALIFIED | J | R | N |
|---|---|---|---|---|
| % RECOVERY - FIELD SAMPLES | | | | |
| Detects | 50 - 125% | < 50%; > 125% | | |
| Non-detects | ≥ 10% | < 10%* | < 10%* | |
| % RECOVERY - BLANKS AND QC SAMPLES ** | | | | |
| Detects | 50 - 125% | < 50%; > 125% | | |
| Non-detects | ≥ 20% | 10 - 19% | < 10% | |
| RTS - field samples | ± 1.0% | | > 1.5%; < -1.5% * | ± 1.1 - 1.5% * |
| RTS - QC samples | ± 1.0% | | > 1.5%; < -1.5% * | ± 1.1 - 1.5% * |

* Use professional judgement.
** If the surrogate recovery in a QC sample or blank was less than 50 percent or greater than 125 percent, then the field sample data should be qualified if the surrogate in the field sample is outside 50 - 125 percent recovery.

YES NO N/A

8.4 Are there any transcription/calculation errors between raw data and surrogate recoveries on Forms: __ [ ] ✓

ACTION: If large errors exist, call lab for explanation/ resubmittal, make necessary corrections and note errors in the data assessment.

9.0 QC Check Reference Sample

9.1 Is the QC Check Reference Sample Recovery Form present? (Created by Lab) [ ] __ ✓

9.2 Was the QC Check Reference Sample analyzed at the required frequency (once per SDG or every 20 samples, for each matrix? [ ] __ ✓

NOTE: The QC Check Form has to be created by the Lab. Concentration of the spiking solution is 5-10 times the estimated quantitation limits for all analytes listed in section 12 of the SAS.

NOTE: QC Check Reference Sample information is important, data is used to judge extraction efficiency.

ACTION: If any QC Check data are missing, call the lab for explanation/resubmittal. If the lab cannot provide missing deliverables, document the effect on the validity of the data in the data assessment. Positive hits should be flagged "J" and non-detects should be flagged "R".

9.3 How many QC check recoveries are outside QC limits of 70-125%?

| Water | Soil |
|---|---|
| NA out of ___ | NA out of ___ |

ACTION: If any recovery is greater than 125%, positive results should be flagged "J" for the affected compound.

YES NO N/A

When two or more analytes have recoveries above 10% but below 70% all associated data should be flagged "J" (positive and non-detects).

When one or more analytes have recoveries below 10% qualify all associated data "R".

Note in data assessment. If further assistance is required, contact SMO for instructions.

It should be noted for TPO action, if a laboratory fails to analyze a QC Check Reference Sample or if a laboratory consistently fails to generate acceptable recoveries.

## 10.0 Calibration Data

### 10.1 Initial Calibration

The initial calibration standards must be analyzed daily prior to any sample analysis. The lab may have to create two sets of initial standard solutions if several analytes coelute.

The initial calibration curve must be injected in triplicate for each of the 5 levels. triplicate not required

10.2 Are the chromatograms and data system printouts (Quant reports) present for initial and triplicate calibrations? ☑ ___ ___

10.3 Are the modified Initial Calibration Forms (Pest VI-1, VI-2 Forms) present? ☑ ___ ___

10.4 Are modified Forms present and completed for each analytical sequence and each column? ☑ ___ ___

ACTION: If any Calibration Standard chromatograms and forms are missing, contact the lab for resubmittals.

10.5 Are there any transcription/calculation errors between raw data and Forms? ___ ☑ ___

YES NO N/A

ACTION: If large errors exist, call lab for explanation/resubmittal. Make necessary corrections and document effect in data assessment. Check at least 2-3 values from each calibration standard and more if errors are found.

10.6 Do all standard retention times, including each compound in each level, fall within the windows established during the initial calibration analytical sequence? ✓ ___ ___

NOTE: All injections are taken into account: A total of 15 injections (three injections for each of the five levels). If the lab had to run two sets of standards there would be a total of 30 injections.

ACTION: The average retention time (RT) for each analyte is determined from the mean of the triplicate injection for each 5 point level of the initial calibration. The RT window for each analyte is equal to the average RT ± three (3) times the standard deviation. If the standard deviation comes out to equal zero, the window will be ±0.08. The (Pest form VI-1) Form should be modified to include the average of the three injections for each of the 5 levels.

10.7 Are the linearity criteria for the initial analyses within limits for both columns? (%RSD must be ≤20%) ___ ✓ ___

ACTION: If no, qualify all associated positive results generated during the sequence "J" and all non-detects "UJ". When %RSD >90%, flag all non-detects results for that analyte as unusable "R".

10.8 Do the standards show degradation products of tetryl? ___ ___ ✓

NOTE: Degradation products of tetryl appear as a shoulder on the TNT peak. Peak heights rather than peak areas should be used when tetryl is present in concentrations that are significant relative to the concentration of TNT.

YES NO N/A

ACTION: If degradation is detected or suspected, qualify positive hits for tetryl and TNT as "J". If degradation is suspected, and tetryl is reported as non-detected, qualify the analyte as "UJ". Note in data assessment.

11.0 Continuing Calibration

11.1 Are Forms (Modified Pest VII-2) present for each continuing calibration? [X] ___ ___

11.2 Are there any transcription/calculation errors between raw data and forms? ___ [X] ___

ACTION: If large errors exist, call lab for explanation/resubmittals. Make any necessary corrections, and document effect in data assessment. Check at least 2-3 values from each calibration standard and more if errors are found.

11.3 Were continuing calibrations analyzed at the required frequency? (standard should bracket every 10 samples). [X] ___ ___

ACTION: Criteria must be met. Determine effect on data. At a minimum, all data should be qualified "J", but the reviewer may determine that data are unusable "R". Document the data qualifications in data assessment.

11.4 Do all standard retention times for each continuing calibration fall within the windows established by the initial calibration? [X] ___ ___

ACTION: If no, beginning with the samples which followed the last in-control standard, check to see if the chromatograms contain interfering peaks. If peaks are present, qualify positive results and non-detects for analytes outside their respective windows as unusable "R".

11.5 Are the RPD values for all continuing calibration standards ≤15%? [ ] [X] ___

YES NO N/A

ACTION: If the %RPD is >15% for the analyte being quantitated, qualify all associated positive results "J" and non-detects "UJ". The "associated samples" are those which followed the last in-control standard up to the next passing standard. If the %RPD is >90%, flag all non-detects for that analyte unusable "R".

11.6 Compare the peak heights of continuing calibration checks obtained during the day with peak heights obtained from first calibration check of the sequence.

Is the percent RPD for peak heights less than 20% for each of the analytes of each of the Continuing Calibration Checks? [ ] ___ ✓

ACTION: Use professional judgement to verify the reliability of the data.

0 Analytical Sequence

12.1 Is Form VIII present and completed for each column and each period of analyses? Run Log ✓ ___ ___

ACTION: If no, contact lab for resubmittals.

12.2 Was the proper analytical sequence followed for each initial calibration and subsequent analyses? ✓ ___ ___

NOTE: Sequence is as follows: 5 point Initial Calibration, Method Blank, Laboratory Control Sample (LCS), Continuing Calibration, 10 sample extracts, Continuing Calibration, 10 sample extracts and so on. The sequence must always end with a Continuing Calibration. All sample extracts, Method Blanks, LCS, and continuing calibrations must be analyzed within 24 hours after the analysis of the Initial Calibration Standards and the calculation of the RT windows.

ACTION: Flag "J" all data generated outside an acceptable twenty-four hour sequence starting after the calculation of the RT windows resulting from the initial calibration unless the daily calibration meets the calibration criteria for all target analytes. If the daily calibration standard does not meet the

J/UJ
>24 hrs
CCAL out
UP_EAST-SS-0
0
0



LIA 028
029
030

043

# HPLC ANALYSIS LOGBOOK

Instrument ID: LC # B

| | |
|---|---|
| Method File: | H:\Lcdata\Lcb\methods |
| Detector(s): | UV |
| Pump(s): | Waters 501 |
| Autosampler: | 712 |
| Column: | C18 |

| | |
|---|---|
| Data File Path: | H:\Lcdata\lcb\ |
| Mobile Phase: | Buffer |
| Flow Rate: | 1.5ml/min |
| Detector Wavelength: | 265nm |
| Injection Volume: | 50 µL |

ICAL Date: PA 2/4/00 Analyst: MW Reviewed by: [illegible] Date: 7/3/00

| File | Lab ID | Date | Time | Dilution | Matrix | Comments |
|---|---|---|---|---|---|---|
| LCB 785.d | BLNK | 07/20/00 | 11:15 | 1 | BLNK | |
| LCB 786 | PICRIC ACID STD-1 | | | | STD | INITIAL CAL. DATA |
| LCB 787 | STD-2 | | | | | |
| LCB 788 | STD-3 | | | | | |
| LCB 789 | STD-4 | | | | | |
| LCB 790 | STD-5 | | | | | For Check |
| LCB 791 | STD-5 | | | | | Initial. cal-ok |
| LCB 792 | PICRICACID STD | | | | | cont-cal-OK |
| LCB 793 | NBLK-3267 | | | | soil | OK |
| LCB 794 | -3267MS2 | | | | | |
| LCB 795 | 6173-001 | | | | | |
| LCB 796 | -002 | | | | | |
| LCB 797 | -003 | | | | | |
| LCB 798 | -004 | | | | | |
| LCB 799 | -005 | | | | | |
| LCB 5800 | -005 MS2 | | | | | |
| LCB 801 | -005 MSD2 | | | | | |
| LCB 802 | NBLK-3264 | | | | $H_2O$ | |
| LCB 803 | Picric Acid Std. | | | | Std | Cont. cal-OK |
| LCB 804 | NBLK-3264 MS2 | | | | $H_2O$ | OK |
| LCB 805 | -3264 MSD2 | | | | | |
| LCB 806 | 6173-006 | | | | | |
| LCB 807 | 6173-003 RT | | | | soil | |
| LCB 808 | PICRIC ACID STD | | | | Std | cont-cal-OK |

| Remarks | Standard | Solution ID | Conc. | Date Prep. |
|---|---|---|---|---|
| | PA | # 9624 | 100ppm | 04/01/00 |

# HPLC ANALYSIS LOGBOOK

Instrument ID: LC # B

| | |
|---|---|
| Method File: H:\Lcdata\lcb\method | Data File Path: H:\Lcdata\lcb\08[illegible] |
| Detector(s): UV | Mobile Phase: Buffer |
| Pump(s): Waters - 501 | Flow Rate: 1.5 ml/min |
| Autosampler: -712 | Detector Wavelength: 305 nm |
| Column: C18 | Injection Volume: 50 µl. |

ICAL Date: PA-2400 Analyst: MW Reviewed by: _____ Date: _____

| File | Lab ID | Date | Time | Dilution | Matrix | Comments |
|---|---|---|---|---|---|---|
| LCB 6087-d | Picric Acid Std | 08/02/00 | 17:56 | 1 | Std | Cont. cal-OK |
| LCB 088 | NBLK-3312 | | | | soil | |
| LCB 089 | -3312MS | | | | | OK |
| LCB 090 | 6140-001 | | | | | |
| LCB 091 | -001 MS | | | | | |
| LCB 092 | -001 MSD | | | | | |
| LCB 093 | -002 | | | | | |
| LCB 094 | -003 | | | | | |
| LCB 095 | -004 | | | | | |
| LCB 096 | -005 | | | | | |
| LCB 097 | -006 | | | | | |
| LCB 098 | Picric Acid Std | | | | Std | Cont. cal-OK |
| LCB 099 | 6140-007 | | | | soil | OK |
| LCB 6100 | -008 | | | | | |
| LCB 101 | -009 | | | | | |
| LCB 102 | -010 | | | | | |
| LCB 103 | NBLK-3308 | | | | water | |
| LCB 104 | -3308MS | | | | | |
| LCB 105 | 7149-001 | | | | | |
| LCB 106 | -002 | | | | | NEEDS TO BE DILUT |
| LCB 6107 | Picric Acid Std | | | | Std | Cont. Cal-OK |
| LCB | | | | | | |
| LCB | MW 08/03/00 | | | | | |
| LCB | | | | | | |

| Remarks | Standard | Solution ID | Conc. | Date Prep. |
|---|---|---|---|---|
| | Picric Acid Std | #9624 | 100ppm | 01/01/00 |

Response Factor Report LCB_LINEA

Method : H:\LCDATA\LCB\METHODS\PA2400.M (Chemstation Integrator)
Ti : PICRIC ACID - 5 POINT IC
Last Update : Thu Aug 03 08:08:05 2000

Calibration Files
LEV1 =LCB5786.D LEV2 =LCB5787.D LEV3 =LCB5788.D
LEV4 =LCB5789.D LEV5 =LCB5791.D

| Compound | LEV1 | LEV2 | LEV3 | LEV4 | LEV5 | Avg | %RSD |
|---|---|---|---|---|---|---|---|
| 1) TM PICRIC ACID | 1.082 | 0.950 | 1.104 | 1.026 | 1.103 | 1.053 E8 | 6.22 |

#) = Out of Range

Continuing Calibration Report LCB_LINEA

Method : H:\LCDATA\LCB\METHODS\PA2400.M (Chemstation Integrator)
Title : PICRIC ACID - 5 POINT IC
Last Update : Fri Aug 18 14:28:08 2000
Response via : Initial Calibration

Continuing Calibration File: LCB6087.D

Min. RRF : 0.000 Min. Rel. Area : 50%
Max. RRF Dev : 25% Max. Rel. Area : 150%

| | Compound | AvgRF | CCRF | | %Dev | Area% | |
|---|---|---|---|---|---|---|---|
| 1 TM | PICRIC ACID | 105.018 | 84.617 | E6 | 19.4 | 77 | JUJ |

LIA 028
029
030

UP_EAST-SS-01
02
03

(#) = Out of Range SPCC's out = 0 CCC's out = 0
LCB6087.D PA2400.M Fri Aug 18 14:28:10 2000

# Continuing Calibration Report LCB_LINEA

Method : H:\LCDATA\LCB\METHODS\PA2400.M (Chemstation Integrator)
Title : PICRIC ACID - 5 POINT IC
Last Update : Fri Aug 18 14:28:18 2000
Response via : Initial Calibration

Continuing Calibration File: LCB6098.D

Min. RRF : 0.000 Min. Rel. Area : 50%
Max. RRF Dev : 25% Max. Rel. Area : 150%

| | Compound | AvgRF | CCRF | | %Dev | Area% |
|---|---|---|---|---|---|---|
| 1 TM | PICRIC ACID | 105.018 | 108.761 | E6 | -3.6 | 99 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0
LCB6098.D PA2400.M Fri Aug 18 14:28:20 2000

# Continuing Calibration Report LCB_LINEA

Method : H:\LCDATA\LCB\METHODS\PA2400.M (Chemstation Integrator)
Title : PICRIC ACID - 5 POINT IC
Last Update : Fri Aug 18 14:28:29 2000
Response via : Initial Calibration

Continuing Calibration File: LCB6107.D

Min. RRF : 0.000 Min. Rel. Area : 50%
Max. RRF Dev : 25% Max. Rel. Area : 150%

| | Compound | AvgRF | CCRF | | %Dev | Area% |
|---|---|---|---|---|---|---|
| 1 TM | PICRIC ACID | 105.018 | 93.909 | E6 | 10.6 | 85 |

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

YES NO N/A

criteria for some analytes the reviewer might reject

those values. In any case, if the 24 hour sequence is exceeded it should be noted in the data assessment under contract non-compliance.

13.0 Method Blanks

13.1 Is the Method Blank Summary (Form IV) present for each of the following matrices?
a. water [ ] ___ ✓
b. soil ☑ ___ ___

13.2 Frequency of Analysis:

Has a Method/Prep blank been analyzed at the same time for each batch of samples extracted. ☑ ___ ___

ACTION: If any method blank data are missing, call lab for explanation/resubmittal. If method blank data are not available, reject "R" all associated positive data.

13.3 Are the positive hits present in the blank less than detection limit? no + ☑ ___ ___

ACTION: If hits are ≥ detection limits, analysis should be discontinued. All associated samples must be re-prepared and re-analyzed with a new blank.
If lab did not follow this action, note in data assessment. Follow guidelines under contamination section.

13.4 Chromatography: review the method blank raw data chromatograms, quant reports or data system printouts.

Is the chromatographic performance (baseline stability) for each instrument acceptable? ☑ ___ ___

ACTION: Use professional judgement to determine the effect on the data.

YES NO N/A

14.0 Contamination

NOTE: "Water blanks", "drill blanks", and distilled water blanks" are validated like any other sample, and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

14.1 Did the lab run an instrument blank following a sample analysis which contained an analyte(s) at high concentration(s) to evaluate possible sample cross-contamination? [ ] ___ ✓

ACTION: Sample analysis results after the high concentration sample must be evaluated for carryover. Sample cross-contamination should be noted for TPO action if an effect on the data is suspected. An Instrument Blank is not required in the methodology.

14.2 Do any Method Blanks have positive results (TCL)? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample dilution factor. ___ ✓ ___

14.3 Are there field/rinse/equipment blanks associated with every sample? [ ] ✓ ___

ACTION: Note in data assessment that there is no associated field/rinse/equipment blank.

14.4 Do any field/rinse blanks have positive results (TCL)? ___ [ ] ✓

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.) no QC BlKs

NOTE: All field blank results associated with a particular group of samples (may exceed one per case) must be used to qualify data. Blanks may not be qualified because of contamination in another blank.. Field blanks must be qualified for surrogate recovery, instrument performance criteria, or calibration QC problems.

4B

SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

NBLKA

ıb Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Lab File ID: LCB6088.D Lab Sample ID: NBLK-3312

Instrument ID: LCB Date Extracted: 07/27/00

Matrix: (soil/water) SOIL Date Analyzed: 08/02/00

Level: (low/med) LOW Time Analyzed: 18:07

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

| | Client SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED |
|---|---|---|---|---|
| 01 | NLCSA | NBLK-3312 MS | LCB6089.D | 08/02/00 |
| 02 | LIA028 | 6140-001 | LCB6090.D | 08/02/00 |
| 03 | LIA028 MS | 6140-001 MS | LCB6091.D | 08/02/00 |
| 04 | LIA028 MSD | 6140-001 MSD | LCB6092.D | 08/02/00 |
| 05 | LIA029 | 6140-002 | LCB6093.D | 08/02/00 |
| 06 | LIA030 | 6140-003 | LCB6094.D | 08/02/00 |
| 07 | UP_EAST-SS-01 | 6140-004 | LCB6095.D | 08/02/00 |
| 08 | UP_EAST-SS-02 | 6140-005 | LCB6096.D | 08/02/00 |
| 09 | UP_EAST-SS-03 | 6140-006 | LCB6097.D | 08/02/00 |
| 10 | UP_EAST-SS-04 | 6140-007 | LCB6099.D | 08/02/00 |
| 11 | LIA011D | 6140-008 | LCB6100.D | 08/02/00 |
| 12 | LIA016D | 6140-009 | LCB6101.D | 08/02/00 |
| 13 | LIA029D | 6140-010 | LCB6102.D | 08/02/00 |

COMMENTS: No Contamination

YES NO N/A

ACTION: Follow the directions in **Table 3** below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If any blanks are grossly contaminated, all associated data should be qualified as unusable (R) (see item # 12.3).

| Sample conc > CRQL but < 5x blank | Sample conc < CRQL & is < 5x blank value | Sample conc > CRQL & > 5x blank value |
|---|---|---|
| Flag sample result with a "U" | Report CRQL & qualify "U" | No qualification is needed |

NOTE: Analytes qualified "U" for blank contamination are still considered as "hits" when qualifying for calibration or other QC criteria.

15.0 Target Compound List (TCL) Analytes (Form I)

15.1 Are the Organic Analysis Data Sheets (Form I) present with required header information on each page, for each of the following:

a. Samples ? [X] ___ ___

b. Laboratory Control Samples? [X] ___ ___

c. Blanks? [X] ___ ___

d. Matrix spikes and matrix spike duplicates? [X] ___ ___

e. Lab duplicate? [ ] ___ ✓

| | YES | NO | N/A |
|---|---|---|---|
| 15.2 Are the Chromatograms, and the data system printouts (Quant Reports) included in the sample package for each of the following: | | | |
| a. Samples? | ✓ | | |
| b. Laboratory Control Samples? | ✓ | | |
| c. Blanks? | ✓ | | |
| d. Matrix spikes and Matrix spike duplicates? | ✓ | | |
| e. Lab duplicate? | | | ✓ |
| ACTION: If any data are missing, Contact Lab for resubmittals. | | | |
| 15.3 Are the response factors shown in the Quant Report? | | ✓ | |
| 15.4 Is chromatographic performance acceptable with respect to: | | | |
| Baseline stability? | ✓ | | |
| Resolution? | ✓ | | |
| Peak shape? | ✓ | | |
| Full-scale graph (attenuation)? | ✓ | | |
| Other: _____ | | | |
| ACTION: Use professional judgement to determine the acceptability of the data. | | | |

16.0 Compound Identification

| | YES | NO | N/A |
|---|---|---|---|
| 16.1 Is Form X completed for every sample in which an analyte was detected? | | | ✓ |
| ACTION: If no, contact lab for resubmittals. | | | |

YES NO N/A

16.2 Are there any transcription/calculation errors between raw data and Forms? ___ [ ] ✓

ACTION: If large errors exist, call lab for explanation/resubmittals. Make any necessary corrections and note effect in data assessment. Check at least 2-3 values from each calibration standard and more if errors are found.

16.3 Are retention times (RT) of sample analytes within the established RT windows for both analyses? [ ] ___ ✓

ACTION: Qualify as unusable "R" all positive results which were not confirmed by second HPLC column analysis. Also qualify as unusable "R" all positive results not meeting RT window unless associated standard compounds are similarly biased. The reviewer should use professional judgement to assign an appropriate quantitation limit.

16.4 Is the percent difference (%D) calculated for the positive sample results on the two HPLC columns <25%? [ ] ___ ✓

ACTION: If the reviewer finds neither column shows interference for the positive hits, the data should be flagged as follows:

| % Difference | Qualifier |
|---|---|
| 25-90% | J |
| >90% | R |

NOTE: The lower of the two values is reported on Form I. If using professional judgement, the reviewer determines that the higher result was more acceptable, the reviewer should replace the value and indicate the reason for the change in the data assessment.

YES NO N/A

16.5 Check chromatograms for false negatives, interferences and degradation. Tetryl decomposes rapidly in methanol/water solutions as well as with heat. All samples expected to contain tetryl should not be exposed to temperatures above room temperature. Degradation products of tetryl appear as a shoulder on the TNT peak. Peak heights rather than peak areas should be used when tetryl is present in concentrations that are significant relative to the concentration of TNT.

ACTION: Use professional judgement to determine qualification of analytes.

17.0 Compound Quantitation and Reported Detection Limits

17.1 Are there any transcription/calculation errors in Form I results? Check at least two positive values. Verify that the calculations were adjusted for percent moisture. Were any errors found? — ✓ —

NOTE: Single peak analyte results can be checked for rough agreement between quantitative results obtained on the two HPLC columns. The reviewer should use professional judgement to decide whether a much larger concentration obtained on one column versus the other indicates the presence of an interfering compound. If an interfering compound is indicated, the lower of the two values should be reported and qualified as presumptively present at an approximated quantity "JN". This necessitates a determination of an estimated concentration on the confirmation column. The narrative should indicate that the presence of interferences has interfered with the evaluation of the second column confirmation.

17.2 Are the CRQLs adjusted to reflect sample dilutions for each Form I?

no DLs ✓ — —

YES NO N/A

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note in data assessment.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" and its associated value on the original Form I and substituting the data from the analysis of the diluted sample. Specify which Form I is to be used, then draw a red "X" with a red pencil across the entire page of all Form I's that should not be used, including any in the summary package.

18.0 Lab Duplicates

18.1 Were any lab duplicates submitted for for each extraction batch?
a. waters [ ] ___ ✓
b. soils [ ] ___ ✓

18.2 Are the Relative Percent Difference (RPD) values for the analytes reported in the duplicate samples <20%? (depending on the SAS-request; the criteria might be <40%). [ ] ___ ✓

ACTION: Compare the reported results for lab duplicates and calculate the relative percent difference.

ACTION: Any gross variation between duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of lab duplicates should be confirmed by contacting the lab.

ACTION: Flag all associated data with an * for "out of control" duplicate.

19.0 Matrix Spikes

19.1 Is the Matrix Spike/Matrix Spike Duplicate recovery Form present? [✓] ___ ___

| | YES | NO | N/A |
|---|---|---|---|
| 19.2 Were the matrix spikes analyzed at the required frequency? (one per matrix and per SDG). | ~~X~~ | | |

ACTION: If any matrix spike data are missing, contact the lab for resubmittals.

| | | | |
|---|---|---|---|
| 19.3 The matrix spike consists of all target analytes at concentrations 5-10 times the estimated quantitation limits listed in Table 1/Method 8330. Were the correct analytes and were the concentrations within range? >5-10X (~50X) | ~~X~~ | | |

NOTE: Field blanks cannot be used for Matrix spike analysis. If field/rinse blanks were MS/MSD, then make note under Contract non-compliance.

19.4 How many spike recoveries are outside the QC limits of 50-140%?

| Water | Soil |
|---|---|
| ____ out of ___ | 0 out of 2 |

19.5 How many RPD's for Matrix Spike and Matrix Spike duplicate recoveries are outside QC limits of 20% (depending what is stated in the SAS-request)?

| Water | Soil |
|---|---|
| ____ out of ___ | 0 out of 1 |

ACTION: Flag all associated data "N" for "out of control" matrix spike for the field sample used for the MS/MSD.

ACTION: No additional action is taken on MS/MSD data alone. However using informed professional judgement, the data reviewer may use the matrix spike data results in conjunction with other QC criteria and determine the need for some qualification of the data.

Field Dups:

| LIA011/LIA011D | | LIA016/LIA016D | | LIA029/LIA029D | |
|---|---|---|---|---|---|
| * not | not | * not | not | not | not |



* in SDG 6139

05

3D

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

) Name: GPL LABORATORIES, LLLP. Contract: CH2M HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix Spike - EPA Sample No.: LIA028 Level: (low/med) LOW

| COMPOUND | SPIKE ADDED (ug/Kg) | SAMPLE CONCENTRATION (ug/Kg) | MS CONCENTRATION (ug/Kg) | MS % REC # | QC LIMITS REC. |
|---|---|---|---|---|---|
| PICRIC ACID | 48000 | 0.0 | 24000 | 50 | 50 - 125 |

| COMPOUND | SPIKE ADDED (ug/Kg) | MSD CONCENTRATION (ug/Kg) | MSD % REC # | % RPD # | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| PICRIC ACID | 48000 | 24000 | 50 | 0 | 25 | 50 - 125 |

# Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 1 outside limits

Spike Recovery: 0 out of 2 outside limits

COMMENTS: _____

FORM III SV-2

3F

SOIL PICRIC ACID LABORATORY CONTROL SPIKE RECOVERY

Lab Name: GPL LABORATORIES, LLLP Client: URS Greiner Woodwar

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

EPA Sample No.: NLCSA GP ID: NBLK 3312 MS

| COMPOUND | SPIKE ADDED (ug/Kg) | LCS CONCENTRATION (ug/Kg) | LCS % REC | QC LIMITS |
|---|---|---|---|---|
| PICRIC ACID | 50000 | 28,150 | 56 | 50-125 |

* OUTSIDE QC LIMIT

COMMENTS:

FORM III PA

# Method Report - 000510-Perchlorate

## Method Information : Select Module(s)

System Name : DX 500
System Number : 1
Method Type : Ion Chromatography
Column :
Analyst :
Comment : (null)

## CD20 Timed Events

Module Name : CD20
Module Serial Number :
SRS Current : 300 mA
Temperature Compensation : 1.7 (% / °C)
Cell Temperature : 35 °C

| Time | Range (µS) | Offset | Mark | TTL1 | TTL2 | Relay1 | Relay2 | Collect |
|---|---|---|---|---|---|---|---|---|
| Init | 10.000 | | | Low | Low | Open | Open | |
| 0.00 | 10.000 | | | Low | Low | Open | Open | |
| 2.40 | 10.000 | * | | Low | Low | Open | Open | |
| 2.50 | 10.000 | | | Low | Low | Open | Open | Begin |

## CD20 Detector Parameters

Detector Type : CD20
Data collection time (minutes) : 15.00
Data Collection Rate : 5.00
Real time plot scale maximum (µS) : 10.000
Real time plot scale minimum (µS) : -1.000

## CD20 Integration Parameters

Peak detection algorithm : Standard
Starting peak width (seconds) : 10.00
Peak threshold : 0.50
Peak area reject (area counts) : 1000.00
Reference peak area reject (area counts) : 1000.00

## CD20 Smoothing Parameters

Filter Type : No filter



2017061

## CD20 Report Data

Report Format File : C:\PeakNet\method\DEFAULT.RPT
Print Sample Analysis : No
Print Calibration Update : No
Print Check Standard : No
System Suitability Tests :
No system suitability tests selected.

## CD20 Integration Data Events

## CD20 Calibration Parameters

External or internal calibration : EXTERNAL
Number of replicates for calibration : 1
Rejection : Manual
Level Weighting : Equal
Calibration standard volume : 1.00
Default sample volume : 1.00
Amount units :
Replace retention time : Yes
Update response : Yes
Default dilution factor : 1.00
Default response factor for unknown peaks : 0.00
Calculate unknowns by area or height : Area

## CD20 Component Identification Table

| Component | Retention | Tolerance | Reference |
|---|---|---|---|
| Ammonium Perchlor | 9.97 min | 0.50 min | |

## CD20 Component Quantitation Table

| Component | Retention | Low Limit | High Limit |
|---|---|---|---|
| Ammonium Perchlor | 9.97 min | 0 | 0 |

## CD20 Component Calibration Table

| Component | Retention Time | Curve Fit | Origin | Cal. by | Response Component | Relative Factor |
|---|---|---|---|---|---|---|
| Ammonium Perchlor | 9.97 min | Linear | Ignore | Area | | 0.00 |



2018 06

CD20 Component = Ammonium Perchlor Levels Table

Retention Time : 9.97 min
Amount units :
Replicate unit type : Area
Number of levels : 8
Number of replicates : 1

| Level | Amount | Replicate 1 |
|---|---|---|
| 1 | 0.00 | 6077 |
| 2 | 5.00 | 5353.2 |
| 3 | 10.00 | 8487.7 |
| 4 | 25.00 | 23173.2 |
| 5 | 50.00 | 45706.4 |
| 6 | 100.00 | 95704.3 |
| 7 | 250.00 | 252558 |
| 8 | 500.00 | 560403 |

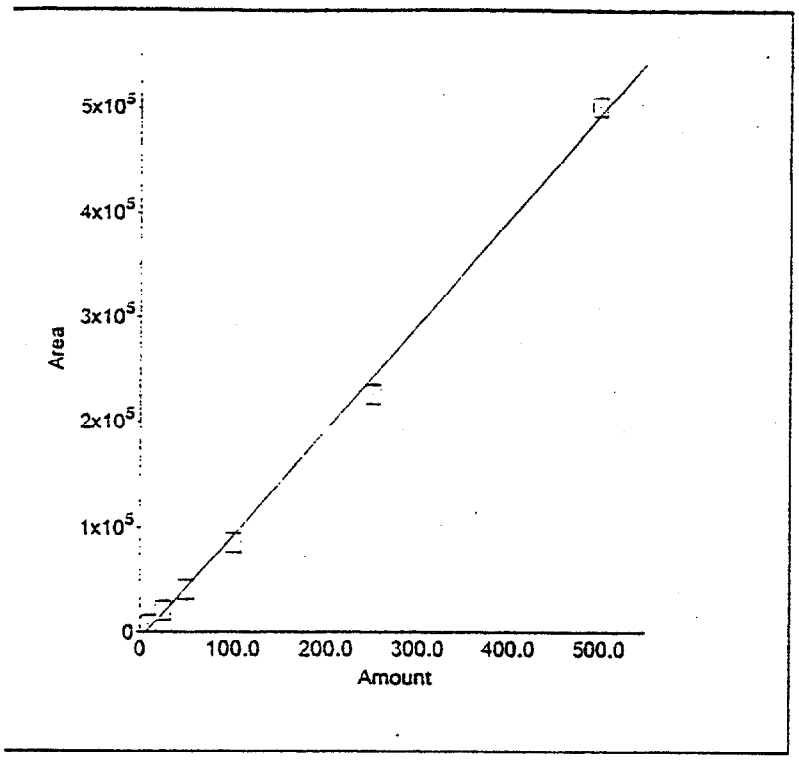
CD20 XY Data Parameters



2019 06

Method:I:\ICDATA\METHODS\AM.PERCH\000510-PERCHLORATE.MET Updated:5/11/00 12:39:

1. Component:Ammonium Perchlor
Standard:External Fit Type:Linear
Origin:Ignore Calibration:Area
$r^2$=0 7537
Amt=0 .008935*Resp+7.746






2020 0

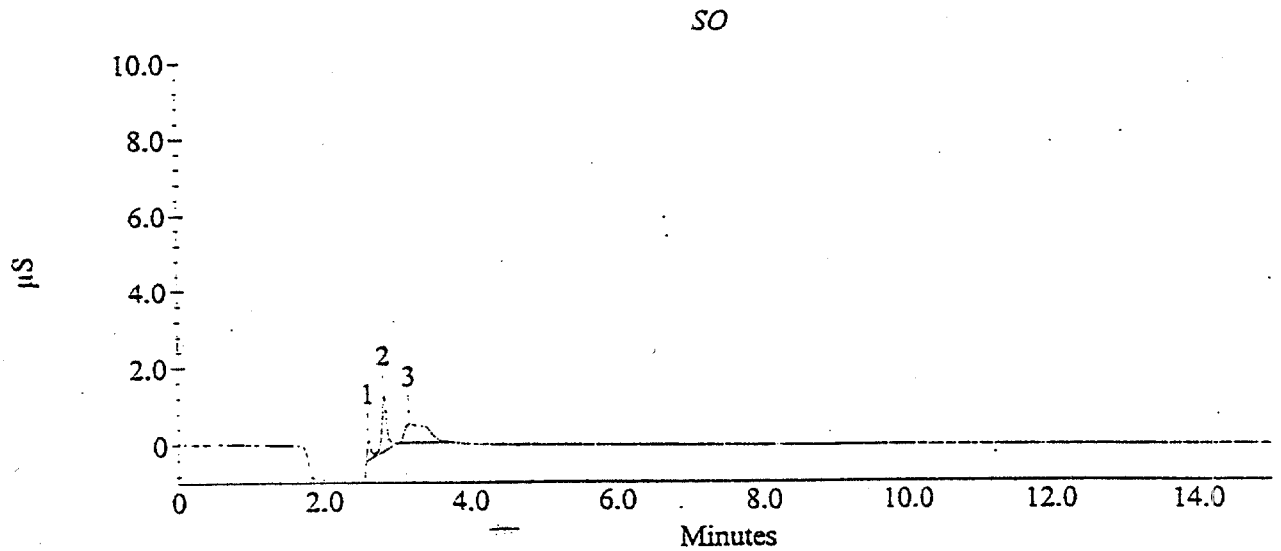
# Calibration Update Report

ample Name : SO
Data File Name : I:\ICDATA\IC500\000510\000510__001.DXD

Method File Name : I:\icdata\methods\am.perch\000510-perchlorate.met
Schedule File Name : i:\icdata\schedules\000510-per.sch
Date Time Collected : 5/10/00 5:54:45 PM
Calibration Date : 5/11/00 12:40:39 PM
System Operator : Virginia Markowitz

Peak Information : All Components

| Peak # | Component Name | Retention Time | Cal Response (Previous) | Cal Response (Measured) | Cal Response (New) |
|---|---|---|---|---|---|
| 1 | | 2.60 | | | |



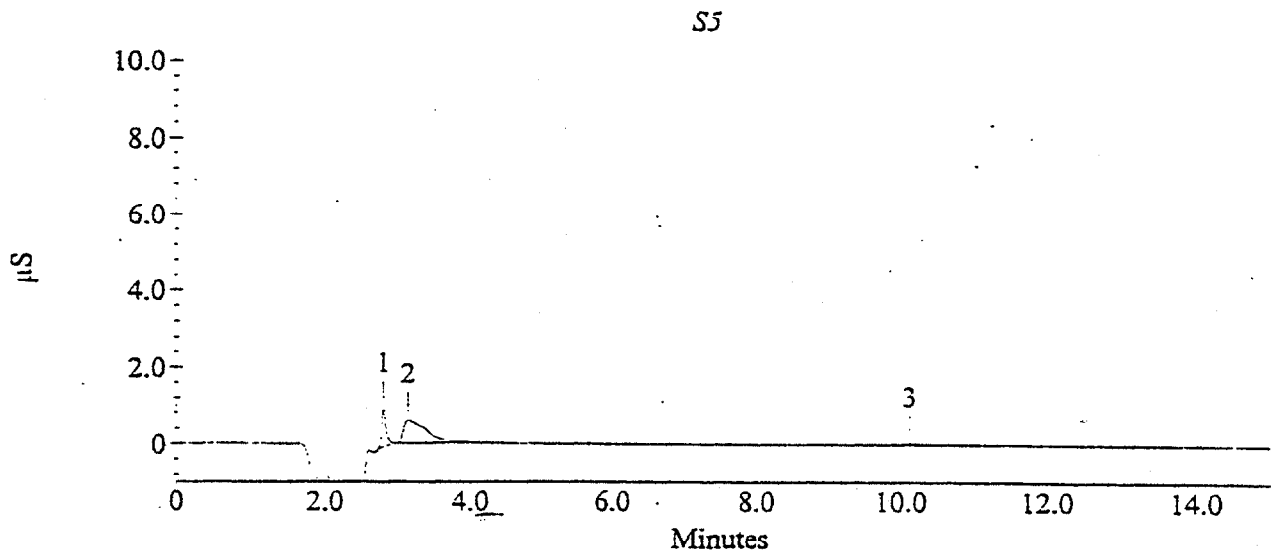
# Calibration Update Report

**Sample Name : S5**
**Data File Name : I:\ICDATA\IC500\000510\000510__002.DXD**

Method File Name : I:\icdata\methods\am.perch\000510-perchlorate.met
Schedule File Name : i:\icdata\schedules\000510-per.sch
Date Time Collected : 5/10/00 6:12:24 PM
Calibration Date : 5/11/00 12:40:39 PM
System Operator : Virginia Markowitz

Peak Information : All Components

| Peak # | Component Name | Retention Time | Cal Response (Previous) | Cal Response (Measured) | Cal Response (New) |
|---|---|---|---|---|---|
| 3 | Ammonium Perchlor | 10.12 | 5353 | 5353 | 5353 |



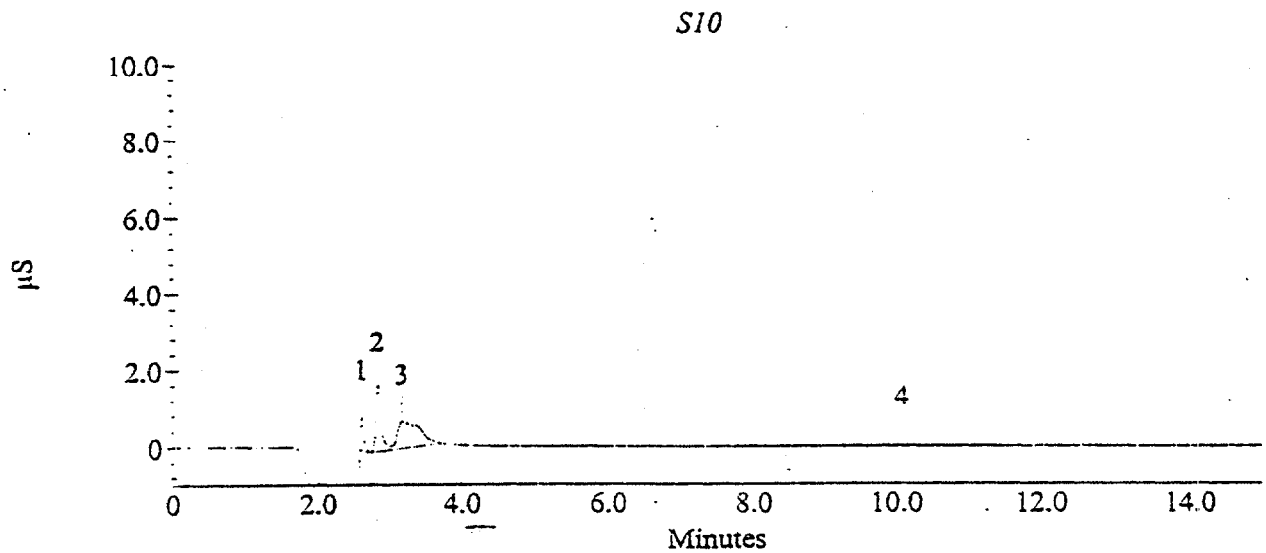
# Calibration Update Report

Sample Name : S10
Data File Name : I:\ICDATA\IC500\000510\000510__003.DXD

Method File Name : I:\icdata\methods\am.perch\000510-perchlorate.met
Schedule File Name : i:\icdata\schedules\000510-per.sch
Date Time Collected : 5/10/00 6:30:03 PM
Calibration Date : 5/11/00 12:40:39 PM
System Operator : Virginia Markowitz

Peak Information : All Components

| Peak # | Component Name | Retention Time | Cal Response (Previous) | Cal Response (Measured) | Cal Response (New) |
|---|---|---|---|---|---|
| 4 | Ammonium Perchlor | 10.08 | 8488 | 8488 | 8488 |






2020 06

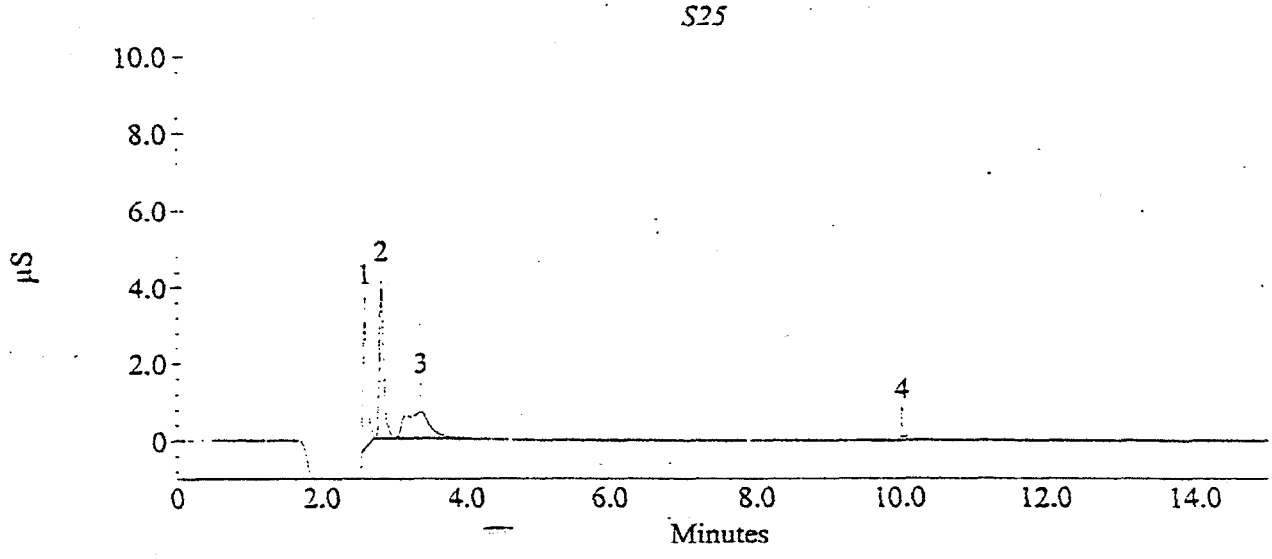
# Calibration Update Report

**Sample Name : S25**
**Data File Name : I:\ICDATA\IC500\000510\000510__004.DXD**

Method File Name : I:\icdata\methods\am.perch\000510-perchlorate.met
Schedule File Name : i:\icdata\schedules\000510-per.sch
Date Time Collected : 5/10/00 6:47:42 PM
Calibration Date : 5/11/00 12:40:39 PM
System Operator : Virginia Markowitz

Peak Information : All Components

| Peak # | Component Name | Retention Time | Cal Response (Previous) | Cal Response (Measured) | Cal Response (New) |
|---|---|---|---|---|---|
| 4 | Ammonium Perchlor | 10.05 | 23173 | 23173 | 23173 |



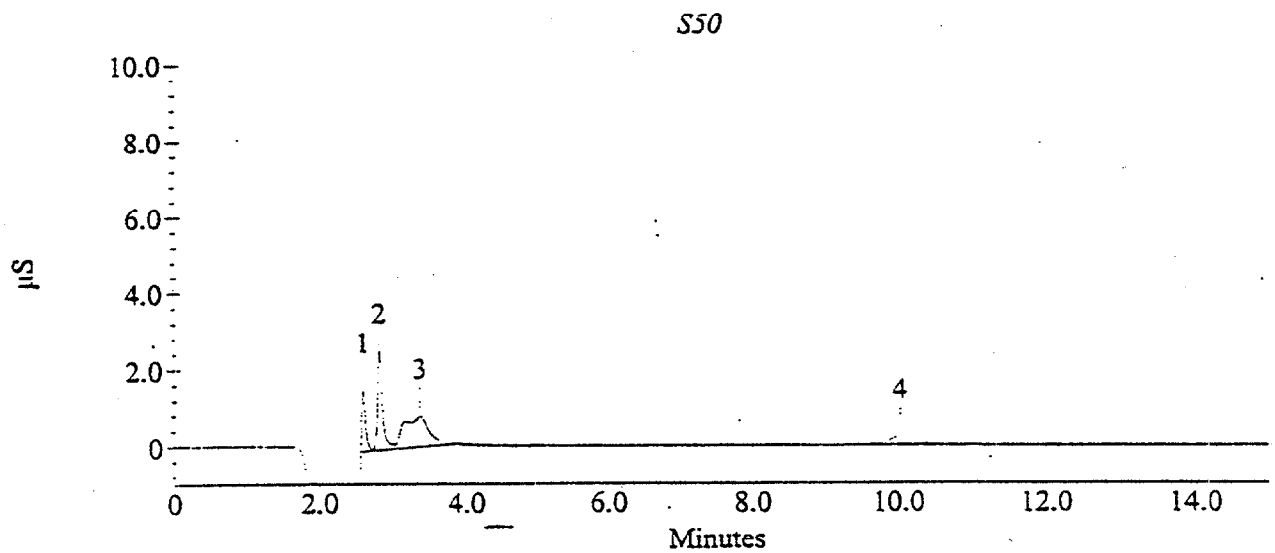
# Calibration Update Report

Sample Name : S50
Data File Name : I:\ICDATA\IC500\000510\000510__005.DXD

Method File Name : I:\icdata\methods\am.perch\000510-perchlorate.met
Schedule File Name : i:\icdata\schedules\000510-per.sch
Date Time Collected : 5/10/00 7:05:19 PM
Calibration Date : 5/11/00 12:40:39 PM
System Operator : Virginia Markowitz

Peak Information : All Components

| Peak # | Component Name | Retention Time | Cal Response (Previous) | Cal Response (Measured) | Cal Response (New) |
|---|---|---|---|---|---|
| 4 | Ammonium Perchlor | 10.03 | 45706 | 45706 | 45706 |



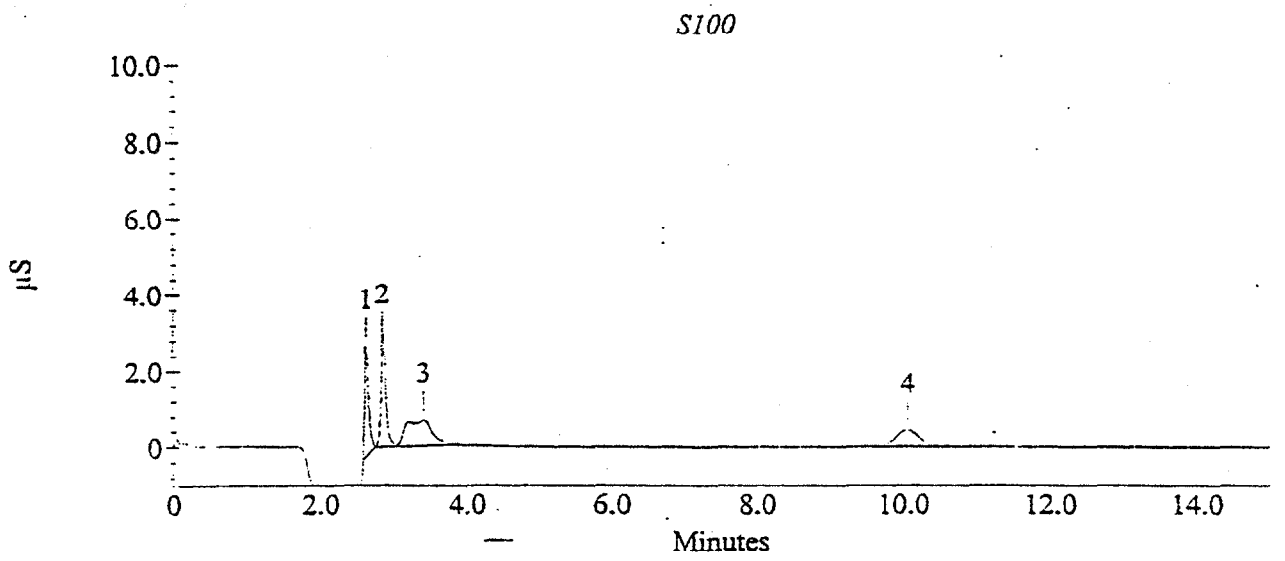
# Calibration Update Report

**Sample Name : S100**
**Data File Name : I:\ICDATA\IC500\000510\000510__006.DXD**

Method File Name : I:\icdata\methods\am.perch\000510-perchlorate.met
Schedule File Name : i:\icdata\schedules\000510-per.sch
Date Time Collected : 5/10/00 7:22:58 PM
Calibration Date : 5/11/00 12:40:39 PM
System Operator : Virginia Markowitz

Peak Information : All Components

| Peak # | Component Name | Retention Time | Cal Response (Previous) | Cal Response (Measured) | Cal Response (New) |
|---|---|---|---|---|---|
| 4 | Ammonium Perchlor | 10.07 | 95704 | 95704 | 95704 |





2026 07

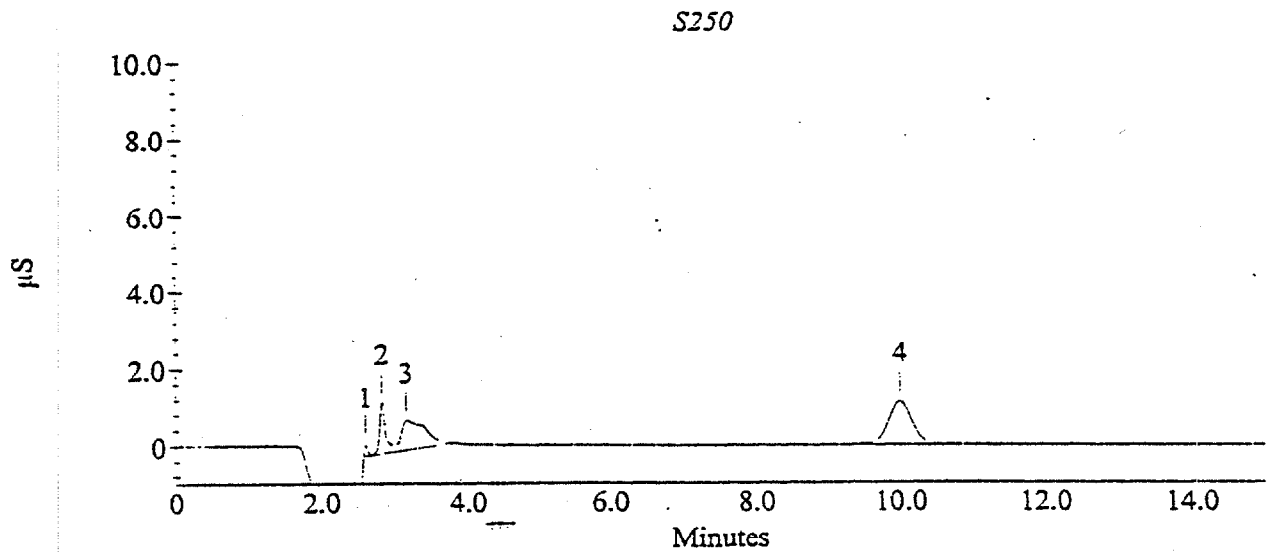
# Calibration Update Report

**Sample Name : S250**
**Data File Name : I:\ICDATA\IC500\000510\000510__007.DXD**

Method File Name : I:\icdata\methods\am.perch\000510-perchlorate.met
Schedule File Name : i:\icdata\schedules\000510-per.sch
Date Time Collected : 5/10/00 7:40:36 PM
Calibration Date : 5/11/00 12:40:39 PM
System Operator : Virginia Markowitz

Peak Information : All Components

| Peak # | Component Name | Retention Time | Cal Response (Previous) | Cal Response (Measured) | Cal Response (New) |
|---|---|---|---|---|---|
| 4 | Ammonium Perchlor | 10.00 | 252558 | 252558 | 252558 |



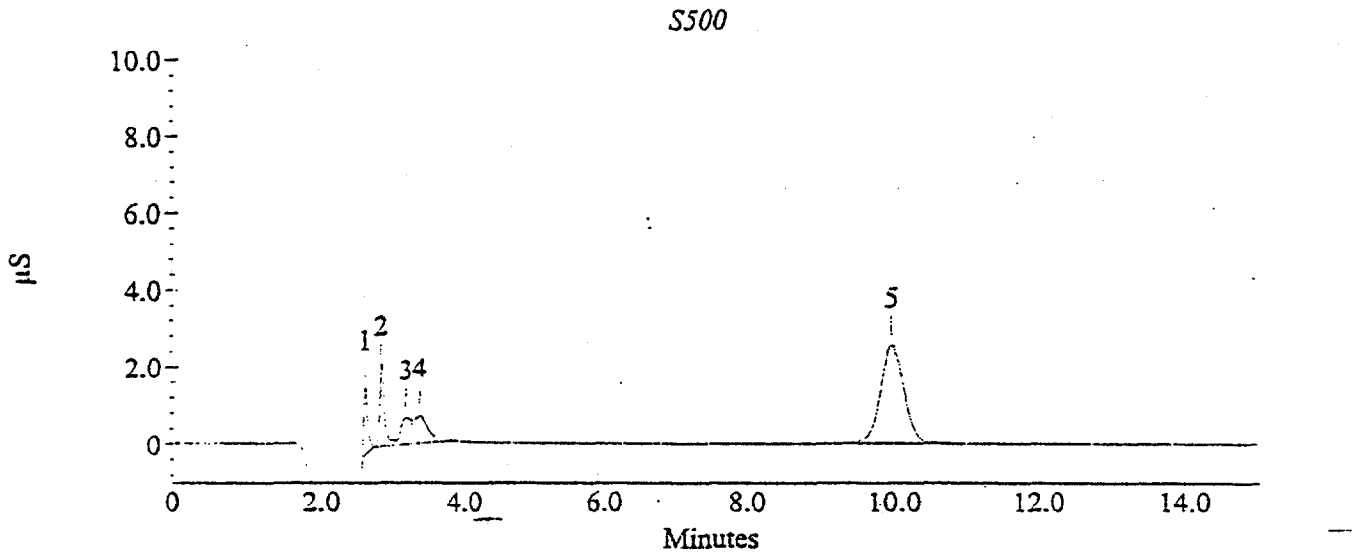
# Calibration Update Report

Sample Name : S500
Data File Name : I:\ICDATA\IC500\000510\000510__008.DXD

Method File Name : I:\icdata\methods\am.perch\000510-perchlorate.met
Schedule File Name : i:\icdata\schedules\000510-per.sch
Date Time Collected : 5/10/00 7:58:14 PM
Calibration Date : 5/11/00 12:40:39 PM
System Operator : Virginia Markowitz

Peak Information : All Components

| Peak # | Component Name | Retention Time | Cal Response (Previous) | Cal Response (Measured) | Cal Response (New) |
|---|---|---|---|---|---|
| 5 | Ammonium Perchlor | 9.97 | 560403 | 560403 | 560403 |



# Sample Analysis Report

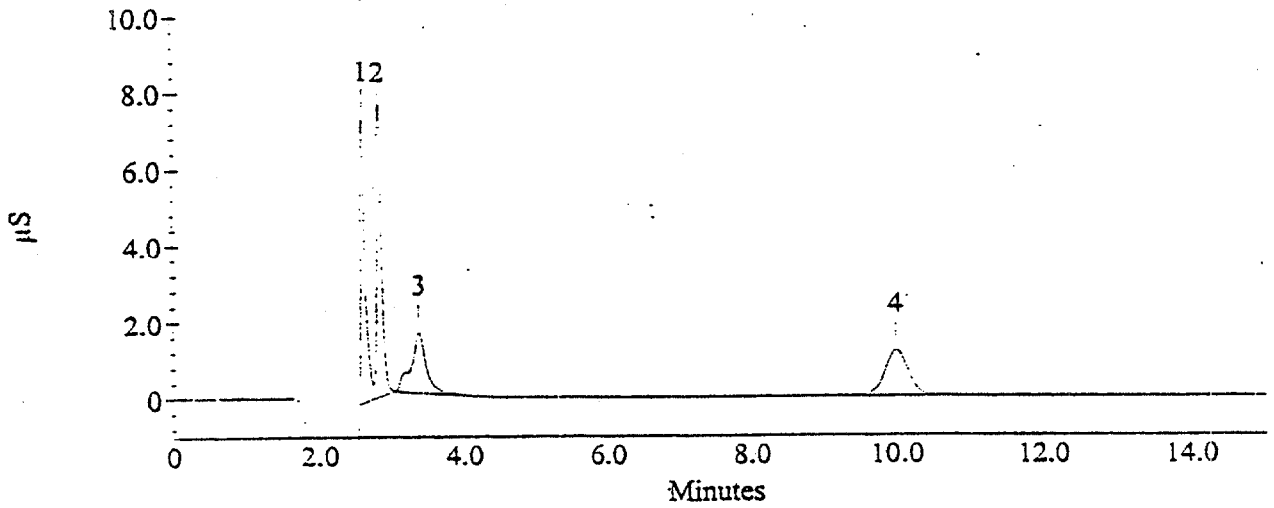
ımple Name : SECOND SOURCE CONFIRM
Data File Name : I:\ICDATA\IC500\000510\000510__009.DXD

Method File Name : i:\icdata\methods\am.perch\000510-perchlorate.met
Date Time Collected : 5/10/00 8:15:53 PM
System Operator : Virginia Markowitz

Peak Information : All Peaks

| Peak # | Component Name | Retention Time | Amount | Peak Area | Peak Height |
|---|---|---|---|---|---|
| 1 | | 2.60 | 0.00 | 330756 | 74204 |
| 2 | | 2.82 | 0.00 | 341378 | 72374 |
| 3 | | 3.37 | 0.00 | 242839 | 15744 |
| 4 | Ammonium Perchlor | 10.00 | 245.05 | 265593 | 11978 |

*SECOND SOURCE CONFIRM*




073

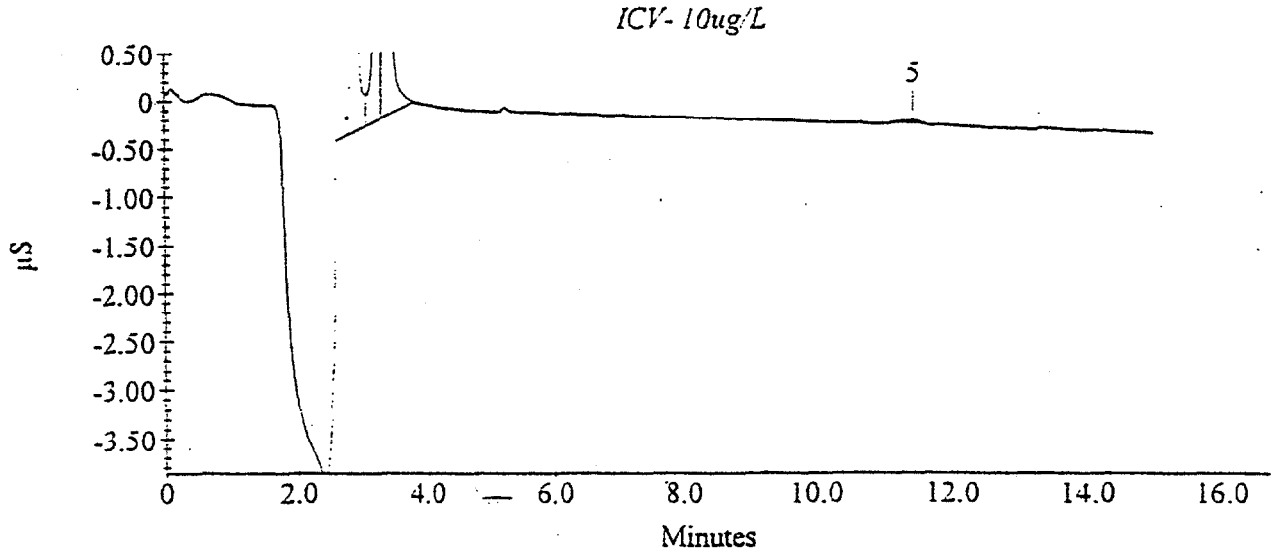
# Sample Analysis Report

Sample Name : ICV- 10ug/L
Data File Name : I:\ICDATA\IC500\000718\000718__003.DXD

Method File Name : i:\icdata\methods\am.perch\000510-perchlorate.met
Date Time Collected : 7/18/00 2:33:40 PM
System Operator : VHM

Peak Information : All Peaks

| Peak # | Component Name | Retention Time | Amount | Peak Area | Peak Height |
|---|---|---|---|---|---|
| 1 | | 2.62 | 0.00 | 124076 | 28147 |
| 2 | | 2.87 | 0.00 | 397440 | 78392 |
| 3 | | 3.23 | 0.00 | 117837 | 14104 |
| 4 | | 3.38 | 0.00 | 171682 | 17529 |
| 5 | Ammonium Perchlor | 11.47 | 11.84 | 4581 | 320 |



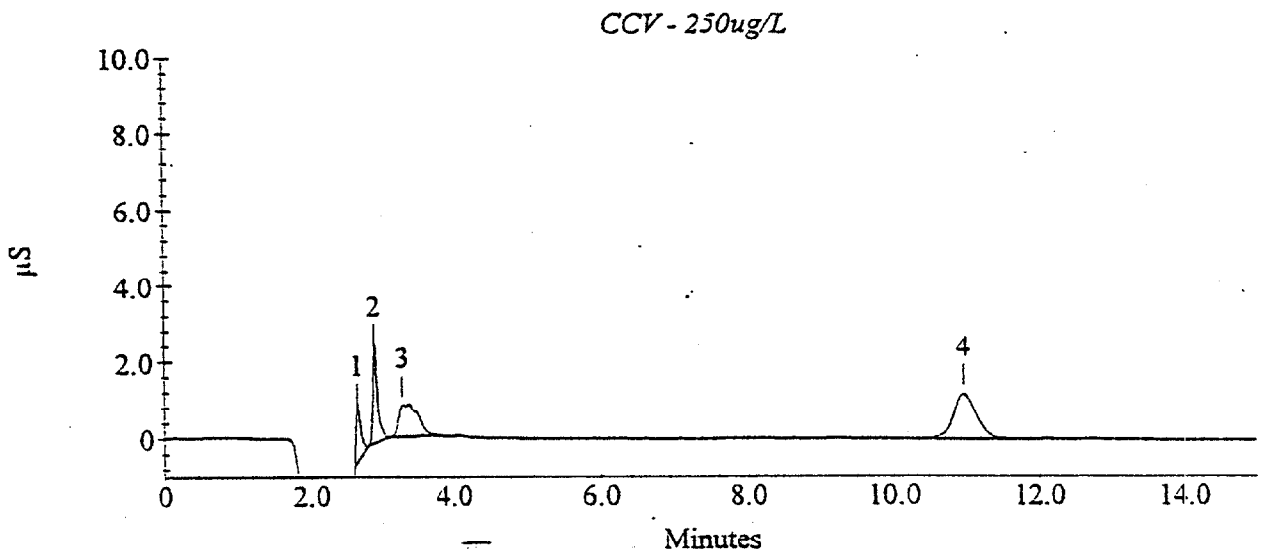
# Sample Analysis Report

Sample Name : CCV - 250ug/L
Data File Name : I:\ICDATA\IC500\000718\000718__017.DXD

Method File Name : i:\icdata\methods\am.perch\000510-perchlorate.met
Date Time Collected : 7/18/00 6:40:26 PM
System Operator : VHM

Peak Information : All Peaks

| Peak # | Component Name | Retention Time | Amount | Peak Area | Peak Height |
|---|---|---|---|---|---|
| 1 | | 2.63 | 0.00 | 68800 | 13225 |
| 2 | | 2.88 | 0.00 | 120836 | 23449 |
| 3 | | 3.28 | 0.00 | 153224 | 8272 |
| 4 | Ammonium Perchlor | 10.95 | 241.40 | 261510 | 11779 |



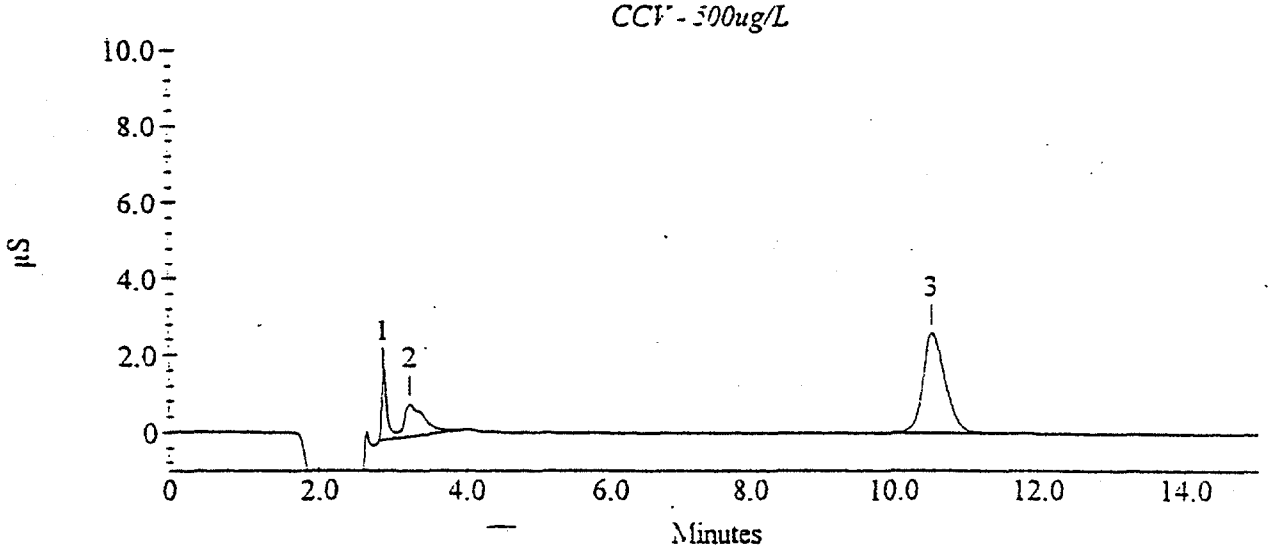
# Sample Analysis Report

Sample Name : CCV - 500ug/L
Data File Name : I:\ICDATA\IC500\000718\000718__031.DXD

Method File Name : i:\icdata\methods\am.perch\000510-perchlorate.met
Date Time Collected : 7/18/00 10:47:19 PM
System Operator : VHM

Peak Information : All Peaks

| Peak # | Component Name | Retention Time | Amount | Peak Area | Peak Height |
|---|---|---|---|---|---|
| 1 | | 2.87 | 0.00 | 85357 | 16169 |
| 2 | | 3.23 | 0.00 | 154118 | 8195 |
| 3 | Ammonium Perchlor | 10.55 | 499.42 | 550287 | 25893 |



## RUN SUMMARY SHEET
### Perchlorate

INSTRUMENT: IC-500

ANALYZED: 7/18/00 VHM
PREPARED:7/17/00 VHM

| Lab ID | Client ID | Raw Conc. | Result | MDL | Units | %Recovery | %RPD |
|---|---|---|---|---|---|---|---|
| ICP | ICP-25ug/L | 24.97 | 25.0 | 5.0 | ug/L | 100 | |
| LRB | LRB | 0 | BQL | 5.0 | ug/L | | |
| ICV | ICV-10ug/L(10737) | 11.84 | 11.8 | 5.0 | ug/L | 118 | |
| LCSW | LCS-25ug/L(10714) | 25.34 | 25.3 | 5.0 | ug/L | 101 | |
| PBS | SOIL EXT. BLANK | 0 | BQL | 5.0 | ug/L | | |
| LCSS | SOIL LCS-50ug/L | 48.56 | 48.6 | 5.0 | ug/L | 97.2 | |
| 6140-001 | LIA028 | 0 | BQL | 5.0 | ug/L | | |
| 6140-001MS | LIA028(+50ug/L) | 49.54 | 49.5 | 5.0 | ug/L | 99.0 | |
| 6140-001MSD | LIA028(+50ug/L) | 54.46 | 54.5 | 5.0 | ug/L | 109 | |
| 6140-002 | LIA029 | 0 | BQL | 5.0 | ug/L | | |
| 6140-003 | LIA030 | 0 | BQL | 5.0 | ug/L | | |
| 6140-004 | UP_EAST_SS_01 | 10.62 | 10.6 | 5.0 | ug/L | | |
| 6140-005 | UP_EAST_SS_02 | 0 | BQL | 5.0 | ug/L | | |
| 6140-006 | UP_EAST_SS_03 | 0 | BQL | 5.0 | ug/L | | |
| 6140-007 | UP_EAST_SS_04 | 0 | BQL | 5.0 | ug/L | | |
| 6140-008 | LIA011D | 0 | BQL | 5.0 | ug/L | | |
| CCV(MID) | CCV - 2500ug/L(10737) | 241.4 | 241 | 5.0 | ug/L | 96.4 | |
| 6140-009 | LIA016D | 0 | BQL | 5.0 | ug/L | | |
| 6140-010 | LIA029D | 0 | BQL | 5.0 | ug/L | | |
| CCV(HIGH) | CCV - 500ug/L(10737) | 499.42 | 499 | 5.0 | ug/L | 99.8 | |

8-3-00
Analyst/Date

Reviewed by/Date

**BENCH SHEET**
**E314.0**

| Lab ID | Client ID | Dilution | Size | Volume | % Solids | Analyzed Date/Time |
|---|---|---|---|---|---|---|
| ICP | ICP-25ug/L | 1 | 1 | 1 | n/a | 7/18/00 13:58 |
| LRB | LRB | 1 | 1 | 1 | n/a | 7/18/00 14:16 |
| ICV | ICV-10ug/L(10737) | 1 | 1 | 1 | n/a | 7/18/00 14:34 |
| LCSW | LCS-25ug/L(10714) | 1 | 1 | 1 | n/a | 7/18/00 14:51 |
| PBS | SOIL EXT. BLANK | 1 | 5.00 | 50 | 100 | 7/18/00 15:09 |
| LCSS | SOIL LCS-50ug/L | 1 | 5.00 | 50 | 100 | 7/18/00 15:27 |
| 6140-001 | LIA028 | 1 | 5.69 | 50 | 90.7 | 7/18/00 15:44 |
| 6140-001M | LIA028(+50ug/L) | 1 | 5.05 | 50 | 90.7 | 7/18/00 16:02 |
| 6140-001M | LIA028(+50ug/L) | 1 | 5.28 | 50 | 90.7 | 7/18/00 16:19 |
| 6140-002 | LIA029 | 1 | 5.31 | 50 | 95.1 | 7/18/00 16:37 |
| 6140-003 | LIA030 | 1 | 5.59 | 50 | 92.6 | 7/18/00 16:54 |
| 6140-004 | UP_EAST_SS_01 | 1 | 5.48 | 50 | 78.6 | 7/18/00 17:12 |
| 6140-005 | UP_EAST_SS_02 | 1 | 4.71 | 50 | 81.9 | 7/18/00 17:30 |
| 6140-006 | UP_EAST_SS_03 | 1 | 5.59 | 50 | 86.2 | 7/18/00 17:48 |
| 6140-007 | UP_EAST_SS_04 | 1 | 5.09 | 50 | 80.1 | 7/18/00 18:05 |
| 6140-008 | LIA011D | 1 | 5.42 | 50 | 93.2 | 7/18/00 18:23 |
| CCV(MID) | CCV - 2500ug/L(10737) | 1 | 1 | 1 | n/a | 7/18/00 18:40 |
| 6140-009 | LIA016D | 1 | 5.22 | 50 | 95.5 | 7/18/00 18:58 |
| 6140-010 | LIA029D | 1 | 5.28 | 50 | 94.5 | 7/18/00 19:16 |
| CCV(HIGH) | CCV - 500ug/L(10737) | 1 | 1 | 1 | n/a | 7/18/00 22:47 |

8-3-00
Analyst/Date

Reviewed by/Date

GPL

Laboratories

# CASE NARRATIVE

| | |
|---|---|
| CLIENT: | CH2M HILL |
| PROJECT/SITE: | CAMP GARCIA LIA |
| WORK ORDER(S): | 6140 |
| REVIEW DATE: | 06/28/00 |

The Case Narrative, Chain of Custody, Sample Receipt Checklist, Methods of Analysis Checklist and the cover page of the Sample Analysis Report, are integral parts of GPL Laboratories' report package. If you did not receive all of these documents, please contact GPL immediately.

## Sample Receipt

Ten soil samples were received on 06/22/2000. The samples were delivered by Federal Express. The samples were received intact. Sample receipt conditions and temperatures are documented on the Sample Receipt Checklist.

## Sample Analysis

Samples were prepared and analyzed by GPL using the analytical methodologies indicated on the Methods of Analysis Checklist.

### Explosives/HPLC

1. Ten soil samples were extracted and analyzed for Picric Acid using SW846 method 8330.

2. The samples were extracted past the 14 day holding time. The samples were extracted past the 14 day, internally imposed, holding time. The method does not address a holding time for picric acid, and holding time should have no impact in the quality of the data. GPL uses a holding time of 14 days, in order to be consistent in the way the LIMS is set up.

3. Matrix spike and matrix spike duplicate analyses were performed on sample LIA028. All recoveries were within control limits.

4. A laboratory control sample was extracted and analyzed along with the sample batch. Percent recovery was within control limits.

5. Manual integration was performed on some data files, when automatic integration provided by the software was inappropriate. Some forms were "hand" corrected due to software limitations.

### Miscellaneous Analyses

1. Ten samples were extracted and analyzed for ammonium perchlorate by EPA method 314.0.

2. Matrix spike and matrix spike duplicate analyses were performed on sample LIA028. All recoveries were within control limits.

GPL

Laboratories

## CASE NARRATIVE

3. A laboratory control sample was extracted and analyzed along with the sample batch. Percent recovery was within control limits.

Project Manager

Lab Director

# Camp Garcia LIA

LIVE IMPACT AREA SAMPLING

CH2M HILL

Chain of Custody Form

Generated on: 06/21/2000 1:47:17 PM

COC Number: LIA | Project: Camp Garcia Live Impact Area | Kit Request ID:

Project #: 139322.PP.WP | Laboratory Coordinator: Ellen Patterson / USA 954.426.6112 x233 | Lab: GP LABS

| Sample ID | Station ID | Date & Time Collected | Matrix | Number of Containers | Analysis Requested | Comments |
|---|---|---|---|---|---|---|
| LIA007 | LIA-SS-07 | 6/21/00 11:40 | SS | 1 | PER_S, PICRIC_S | |
| LIA008 | LIA-SS-08 | 6/21/00 11:20 | SS | 1 | PER_S, PICRIC_S | |
| LIA014 | LIA-SS-14 | 6/21/00 10:55 | SS | 1 | PER_S, PICRIC_S | |
| LIA014D | LIA-SS-14D | 6/21/00 10:55 | SS | 1 | PER_S, PICRIC_S | Field Duplicate |
| LIA017 | LIA-SS-17 | 6/21/00 08:00 | SS | 1 | PER_S, PICRIC_S | |
| LIA018 | LIA-SS-18 | 6/21/00 08:30 | SS | 1 | PER_S, PICRIC_S | |
| LIA021 | LIA-SS-21 | 6/21/00 08:40 | SS | 1 | PER_S, PICRIC_S | |
| LIA022 | LIA-SS-22 | 6/21/00 09:05 | SS | 1 | PER_S, PICRIC_S | |
| LIA023 | LIA-SS-23 | 6/21/00 10:10 | SS | 1 | PER_S, PICRIC_S | |
| LIA023D | LIA-SS-23D | 6/21/00 10:10 | SS | 1 | PER_S, PICRIC_S | Field Duplicate |
| LIA024 | LIA-SS-24 | 6/21/00 09:40 | SS | 1 | PER_S, PICRIC_S | |
| LIA025 | LIA-SS-25 | 6/21/00 09:20 | SS | 1 | PER_S, PICRIC_S | |
| LIA026 | LIA-SS-26 | 6/21/00 09:55 | SS | 1 | PER_S, PICRIC_S | |

| | | | | | |
|---|---|---|---|---|---|
| Sampled By: | Date / Time: | | Custody Seal: Y / N | Relinquished By: | Date / Time: |
| Shipped Via: UPS FedEx Hand Other (please specify): | | | | | |
| Received By: | Date / Time: | Cooler Temp: | Custody Seal: Y / N | Relinquished By: | Date / Time: |
| Received By: | Date / Time: | Cooler Temp: | Custody Seal: Y / N | Relinquished By: | Date / Time: |

Remarks:

1 COOLER

3608

# Camp Garcia LIA

LIVE IMPACT AREA SAMPLING

CH2M HILL
Chain of Custody Form

Generated on: 06/21/2000 1:35:07 PM

COC Number: LIA | Project: Camp Garcia Live Impact Area | Kit Request ID:
Project #: 139322.PP.WP | Laboratory Coordinator: Ellen Patterson / USA 954.426.6112 x233 | Lab: GP LABS

| Sample ID | Station ID | Date & Time Collected | Matrix | Number of Containers | Analysis Requested | Comments |
|---|---|---|---|---|---|---|
| LIA009 | LIA-SS-09 | 6/20/00 12:55 | SS | 1 | PER_S, PICRIC_S | |
| LIA010 | LIA-SS-10 | 6/20/00 14:35 | SS | 1 | PER_S, PICRIC_S | |
| LIA011 | LIA-SS-11 | 6/20/00 14:10 | SS | 1 | PER_S, PICRIC_S | |
| LIA012 | LIA-SS-12 | 6/20/00 12:30 | SS | 1 | PER_S, PICRIC_S | |
| LIA013 MS/MSD | LIA-SS-13 | 6/20/00 15:20 | SS | 3 | PER_S, PICRIC_S | Use Extra Samples for MS/MSD. |
| LIA016 | LIA-SS-16 | 6/20/00 11:05 | SS | 1 | PER_S, PICRIC_S | |
| LIA027 | LIA-SS-27 | 6/20/00 15:05 | SS | 1 | PER_S, PICRIC_S | |
| LIA028 | LIA-SS-28 | 6/20/00 10:40 | SS | 1 | PER_S, PICRIC_S | |
| LIA029 | LIA-SS-29 | 6/20/00 10:20 | SS | 1 | PER_S, PICRIC_S | |
| LIA030 | LIA-SS-30 | 6/20/00 11:30 | SS | 1 | PER_S, PICRIC_S | |
| UP_EAST-SS-01 | UP_EAST-SS-01 | 6/20/00 09:00 | SS | 1 | PER_S, PICRIC_S | |
| UP_EAST-SS-02 | UP_EAST-SS-02 | 6/20/00 08:45 | SS | 1 | PER_S, PICRIC_S | |
| UP_EAST-SS-03 | UP_EAST-SS-03 | 6/20/00 09:20 | SS | 1 | PER_S, PICRIC_S | |
| UP_EAST-SS-04 | UP_EAST-SS-04 | 6/20/00 09:35 | SS | 1 | PER_S, PICRIC_S | |
| LIA011D | LIA-SS-11D | 6/20/00 14:10 | SS | 1 | PER_S, PICRIC_S | |
| LIA016D | LIA-SS-16D | 6/20/00 11:05 | SS | 2 | PER_W, PICRIC_W | |
| LIA029D | LIA-SS-29D | 6/20/00 10:20 | SS | 2 | PER_W, PICRIC_W | |

| | | | | |
|---|---|---|---|---|
| Sampled By: | Date / Time: | | Custody Seal: Y / N | Relinquished By: Date / Time: |
| Shipped Via: UPS FedEx Hand Other (please specify): | | | | |
| Received By: | Date / Time: | Cooler Temp: | Custody Seal: Y / N | Relinquished By: Date / Time: |
| Received By: | Date / Time: | Cooler Temp: | Custody Seal: Y / N | Relinquished By: Date / Time: |

Remarks:



37 082

**HEARTLAND**
**ENVIRONMENTAL SERVICES, INC.**

# Data Validation Report

| | |
|---|---|
| SDG#: | 6148 |
| Date: | September 6, 2000 |
| Client Name: | CH2M Hill |
| Project/Site Name: | Vieques |
| Date Sampled: | June 21 - 22, 2000 |
| Number of Samples: | 15 Non-Aqueous Sample(s) with 0 MS/MSD(s) |
| Laboratory: | GPL Laboratories, LLLP |
| Validation Guidance: | National Functional Guidelines for Organic and Inorganic Data, February, 1994, Region II Modifications |
| QA/QC Level: | DQO Level IV |
| Method(s) Utilized: | SW846 Third Edition |
| Analytical Fractions: | Picric Acid and Perchlorate |

Analytical data in this report were screened to determine usability of results and also to determine contractual compliance relative to these requirements and deliverables. This screening assumes analytical results are correct as reported and merely provides an interpretation of the reported quality control results. A minimum of 10% of all laboratory calculations have been verified as part of this validation. All instrument output, i.e. spectra, chromatograms, etc., for each sample have been carefully reviewed. The end-user is urged to review the Specific Findings and associated Data Qualifications presented in this report. Annotated Form 1s or spreadsheets for all samples reviewed are included after the Data Assessment Narratives. Form 1s for MS/MSD samples or spreadsheets are not annotated.

The release of this Data Validation Report is authorized by the following signature:

Lisa R. Juneau
for Eugene M. Watson, Vice President

9-6-00
Date

**SDG# 6148**

**Samples and Fractions Reviewed**

Sample Identifications Analytical Fractions

| CH2M HILL ID | MATRIX | PA | | PERC | |
|---|---|---|---|---|---|
| LIA001 | SOIL | | X | | X |
| LIA002 | SOIL | | X | | X |
| LIA003 | SOIL | | X | | X |
| LIA004 | SOIL | | X | | X |
| LIA005 | SOIL | | X | | X |
| LIA006 | SOIL | | X | | X |
| LIA015 | SOIL | | X | | X |
| LIA019 | SOIL | | X | | X |
| LIA020 | SOIL | | X | | X |
| DOWN-WEST-SS-01 | SOIL | | X | | X |
| DOWN-WEST-SS-02 | SOIL | | X | | X |
| DOWN-WEST-SS-03 | SOIL | | X | | X |
| DOWN-WEST-SS-03D | SOIL | | X | | X |
| LIA001D | SOIL | | X | | X |
| DOWN-WEST-SS-01D | SOIL | | X | | X |
| Total Billable Samples (Water/Soil) | | 0 | 15 | 0 | 15 |

PA= Picric Acid
PERC= Perchlorate

# DATA ASSESSMENT NARRATIVES

# DATA ASSESSMENT NARRATIVE

# PICRIC ACID

## General

The organic findings offered in this screening report assumes that all analytical results are correct as reported and is based upon the examination of the reported holding times, blank analysis results, surrogate and matrix spike recoveries, HPLC performance, and calibration results. This report was prepared in compliance relative to the analytical and deliverable requirements specified in the SW-846 Method 8330; Region II Data Validation Guidelines, Revision 1.3, September, 1994; and DQO Level IV requirements. All comments made within this report should be considered when examining the analytical results. Please refer the specific findings found in each category to the Summary of Data Qualifications table.

## SDG# 6148

A validation was performed on the Picric Acid data from SDG 6148. The data was evaluated based on the following parameters.

| | | |
|---|---|---|
| * | • | Data Completeness |
| | • | Holding Times |
| * | • | HPLC Performance |
| | • | Calibrations |
| * | • | Blanks |
| * | • | Surrogate Recoveries |
| * | • | Matrix Spike/Matrix Spike Duplicates |
| * | • | Field Duplicates |
| * | • | Compound Identification |
| * | • | Compound Quantitation |

* - All criteria were met for this parameter.

## Holding Times

The Region II extraction holding time of fourteen (14) days was exceeded by twenty-one (21) to twenty-two (22) days for all samples. For the following samples, the positive results are qualified as estimated, J HT, and the non-detect results are rejected, R HT.

All Samples

## Initial Calibration

The samples were analyzed more than twenty-four hours after the analysis of the initial calibration. Several associated continuing calibrations exhibited one (1) compound with a non-compliant %D. Based on the Region II validation guidelines, for the following samples and compound, the positive results are qualified as estimated, J IC, and the non-detect results are qualified as estimated, UJ IC.

| | |
|---|---|
| LIA001 | Picric Acid |
| LIA002 | |
| LIA003 | |
| LIA004 | |
| DOWN_WEST-SS-03D | |
| LIA001D | |
| DOWN_WEST-SS-01 | |

## Continuing Calibration

The continuing calibration LCB6060.D exhibited one (1) compound with a %D greater than 15%. For the following samples and non-compliant compound, the positive results are qualified as estimated, J CC, and the non-detect results are qualified as estimated, UJ CC.

| | |
|---|---|
| LIA001 | Picric Acid |
| LIA002 | |
| LIA003 | |
| LIA004 | |

**Continuing Calibration, Continued**

The continuing calibration LCB6082.D exhibited one (1) compound with a %D greater than 15%. For the following samples and non-compliant compound, the positive results are qualified as estimated, J CC, and the non-detect results are qualified as estimated, UJ CC.

| | |
|---|---|
| DOWN_WEST-SS-03D | Picric Acid |
| LIA001D | |
| DOWN_WEST-SS-01 | |

**System Performance and Overall Assessment**

The data required qualifications.

# GLOSSARY OF DATA QUALIFIERS

## QUALIFICATION CODES

**U** = Not detected

**J** = Estimated value

**UJ** = Reported quantitation limit is qualified as estimated

**NJ** = Result is considered presumptively present at an estimated concentration

**R** = Result is rejected and unusable

**D** = Result value is based on dilution analysis

## METHOD BLANK QUALIFICATION CODES

**CRQL =** The sample result for the blank contaminant is less than the sample CRQL and is less than 5X the method blank value. The sample result for the blank contaminant is rejected and the CRQL for that compound is reported.

**U =** The sample result for the blank contaminant is greater than the sample CRQL and is less than 5X the method blank value. The sample result for the blank contaminant is qualified as non detected at the compound value reported.

**No Action =** The sample result for the blank contaminant is greater than the sample CRQL and is greater than 5X the method blank value. The sample result for the blank contaminant is not qualified with any blank qualifiers.

## Two Digit Code Definitions for Comment Field

| Code | Definition |
|---|---|
| TN | Tune |
| BS | Blank Spike/LCS |
| IS | Internal Standard |
| MS | Matrix Spike and/or Matrix Spike Duplicate Recovery |
| MD | Matrix Spike/Matrix Spike Duplicate Precision |
| 2S | Second Source |
| SD | Serial Dilution |
| SS | Spiked Surrogate |
| LR | Analyte present above linear (or calibration) range |
| IC | Initial Calibration |
| CC | Continuing Calibration Verification |
| PD | Pesticide Degradation |
| LD | Lab Duplicate |
| 2C | Second Column (Confirmation) |
| HT | Holding Time |
| PS | Post Spike |
| BL | Blank |
| RE | Re-extraction |
| DL | Dilution |
| IB | In Between |
| FD | Field Duplicate |
| OT | Other |

# SUMMARY OF DATA QUALIFICATIONS

| SAMPLE ID | COMPOUND ID | DL | QL | CODE |
|---|---|---|---|---|
| All Samples | ALL | +/- | J/R | HT |
| LIA001<br>LIA002<br>LIA003<br>LIA004<br>DOWN_WEST-SS-03D<br>LIA001D<br>DOWN_WEST-SS-01 | Picric Acid | +/- | J/UJ | IC |
| LIA001<br>LIA002<br>LIA003<br>LIA004 | Picric Acid | +/- | J/UJ | CC |
| DOWN_WEST-SS-03D<br>LIA001D<br>DOWN_WEST-SS-01 | Picric Acid | +/- | J/UJ | CC |

* DL denotes the Form I qualifier supplied by the laboratory
QL denotes the qualifier used by the data validation firm
+ in the DL column denotes a positive result
- in the DL column denotes a non detect result

# DATA ASSESSMENT NARRATIVE
# PERCHLORATE

General

The inorganic findings offered in this screening report assumes that all analytical results are correct as reported and is based upon the examination of the reported holding times, blank analysis results, matrix spike and LCS recoveries, matrix duplicates and calibration results. This report was prepared in compliance relative to the analytical and deliverable requirements specified in the Method 314.0 for Perchlorate in SW 846; the Functional Guidelines for Inorganic Data Validation, February 1994 with Region II modifications, and DQO Level IV requirements. All comments made within this report should be considered when examining the analytical results. Please refer the specific findings found in each category to the Summary of Data Qualification table.

## SDGs # 6148

A validation was performed on the perchlorate Data from SDG 6148. The data was evaluated based on the following parameters.

| | | |
|---|---|---|
| * | ● | Data Completeness |
| * | ● | Holding Times |
| * | ● | Calibrations |
| * | ● | Blanks |
| * | ● | Matrix Spike Recovery |
| * | ● | Matrix Duplicates |
| * | ● | Field Duplicates |
| * | ● | Laboratory Control Samples |

* - All criteria were met for this parameter.

# SUMMARY OF DATA QUALIFICATIONS

| Sample ID | Analyte | DL | QL |
|---|---|---|---|

Data stands as reported without qualification.

# ANNOTATED FORM 1s

1B

EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA001

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M_HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6148-001

Sample wt/vol: 2.1 (g/ml) G Lab File ID: LCB6067.D

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/02/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CONCENTRATION UNITS:

| CAS NO. | COMPOUND | (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 950 | ~~U~~ R HT |

EAC
9/1/00

1B

EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA002

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M_HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6148-002

Sample wt/vol: 2.1 (g/ml) G Lab File ID: LCB6068.D

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/02/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 950 | ~~U~~ R HT |

EXK
9/1/00

1B

EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA003

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M_HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6148-003

Sample wt/vol: 2.6 (g/ml) G Lab File ID: LCB6069.D

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/02/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 770 | ~~U~~ R HT |

EXL
9/1/00

1B

EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA004

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M_HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6148-004

Sample wt/vol: 2 (g/ml) G Lab File ID: LCB6070.D

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/02/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q | |
|---|---|---|---|---|
| 88-89-1 | PICRIC ACID | 1000 | ~~U~~ R | HT |

EXL
9/1/00

1B

EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA005

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M_HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6148-005

Sample wt/vol: 2.1 (g/ml) G Lab File ID: LCB6072.D

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/02/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CONCENTRATION UNITS:

| CAS NO. | COMPOUND | (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 950 | ~~U~~ R HT |

EWL
9/1/00

FORM I SV-1

1B
EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA006

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M_HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6148-008

Sample wt/vol: 2 (g/ml) G Lab File ID: LCB6075.D

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/02/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CONCENTRATION UNITS:

| CAS NO. | COMPOUND | (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 1000 | ~~U~~ R HT |

EK
9/1/00

1B

EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA015

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M_HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6148-009

Sample wt/vol: 2.3 (g/ml) G Lab File ID: LCB6076.D

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/02/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 870 | ~~U~~ R HT |

EAK
9/1/00

1B

EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA019

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M_HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6148-010

Sample wt/vol: 2.3 (g/ml) G Lab File ID: LCB6077.D

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/02/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q | |
|---|---|---|---|---|
| 88-89-1 | PICRIC ACID | 870 | ~~U~~ R | HT |

EKK
9/1/00

1B

EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA020

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M_HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6148-011

Sample wt/vol: 2.3 (g/ml) G Lab File ID: LCB6078.D

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/02/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CONCENTRATION UNITS:

| CAS NO. | COMPOUND | (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 870 | ~~U~~ R HT |

EXK
9/1/00

1B

EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

DOWN_WEST-SS-01

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M_HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6148-012

Sample wt/vol: 2 (g/ml) G Lab File ID: LCB6079.D

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/02/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CONCENTRATION UNITS:

| CAS NO. | COMPOUND | (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 1000 | ~~U~~ R |

HT

EXL
9/1/00

1B

EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

DOWN_WEST-SS-02

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M_HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6148-013

Sample wt/vol: 2.8 (g/ml) G Lab File ID: LCB6080.D

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/02/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q | |
|---|---|---|---|---|
| 88-89-1 | PICRIC ACID | 710 | ~~U~~ R | HT |

EXC
9/1/00

--1B

EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

DOWN_WEST-SS-03

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M_HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6148-014

Sample wt/vol: 2.1 (g/ml) G Lab File ID: LCB6081.D

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/02/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CONCENTRATION UNITS:

| CAS NO. | COMPOUND | (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 950 | ~~U~~ R HT |

CKK
9/1/00

1B

EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

DOWN_WEST-SS-03D

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M_HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6148-015

Sample wt/vol: 2 (g/ml) G Lab File ID: LCB6083.D

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/02/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | .1000 | ~~U~~ R HT |

EXK
9/1/00

1B
EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA001D

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M_HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6148-016

Sample wt/vol: 2.4 (g/ml) G Lab File ID: LCB6084.D

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/02/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

| CAS NO. | COMPOUND | | Q | |
|---|---|---|---|---|
| 88-89-1 | PICRIC ACID | 830 | ~~U~~ R | HT |

EKK
9/1/00

FORM I SV-1

PA

0 1046
024

1B

EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

DOWN_WEST-SS-01D

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M_HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6148-017

Sample wt/vol: 2.6 (g/ml) G Lab File ID: LCB6085.D

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/02/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q | |
|---|---|---|---|---|
| 88-89-1 | PICRIC ACID | 770 | ~~U~~ R | HT |

EAK
9/1/00

0-1049

FORM I SV-1

PA

025

1B
EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA005 MS

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M_HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6148-005 MS

Sample wt/vol: 2.2 (g/ml) G Lab File ID: LCB6073.D

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/02/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 22000 | E |

EXL
9/5/00

1B

EXPLOSIVES ANALYSIS DATA SHEET

EPA SAMPLE NO.

LIA005 MSD

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M_HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: 6148-005 MSD

Sample wt/vol: 2.5 (g/ml) G Lab File ID: LCB6074.D

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: 0 decanted:(Y/N) N Date Extracted: 07/27/00

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 08/02/00

Injection Volume: 50.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CONCENTRATION UNITS:

| CAS NO. | COMPOUND | (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 88-89-1 | PICRIC ACID | 20000 | E |

EXX
915700

# GPL LABORATORIES, LLLP

## Summary of Analytical Results

Client ID LIA001
GPL ID: 6148-001-01-1
Matrix: Soil
Date Collected: Jun-22-2000
Date Received: Jun-23-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-19-2000
Time Analyzed 08:29
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 33.6 | ug/kg | U | 1 |

PB# 9/8/00

# GPL LABORATORIES, LLLP

## Summary of Analytical Results

Client ID LIA002
GPL ID: 6148-002-01-1
Matrix: Soil
Date Collected: Jun-22-2000
Date Received: Jun-23-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-19-2000
Time Analyzed 08:47
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 50.6 | ug/kg | U | 1 |

VB 9/5/00



8 029

# GPL LABORATORIES, LLLP

## Summary of Analytical Results

Client ID LIA003
GPL ID: 6148-003-01-1
Matrix: Soil
Date Collected: Jun-22-2000
Date Received: Jun-23-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-19-2000
Time Analyzed 09:05
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 50.4 | ug/kg | U | 1 |

9/5/00

# GPL LABORATORIES, LLLP

## Summary of Analytical Results

Client ID LIA004
GPL ID: 6148-004-01-1
Matrix: Soil
Date Collected: Jun-21-2000
Date Received: Jun-23-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-19-2000
Time Analyzed 09:22
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 52.3 | ug/kg | U | 1 |

1/5/00



0 14

03

# *GPL LABORATORIES, LLLP*

## Summary of Analytical Results

**Client ID LIA005**
**GPL ID: 6148-005-01-1**
**Matrix: Soil**
**Date Collected: Jun-21-2000**
**Date Received: Jun-23-2000**

**Prep Method:**
**Prep Date:**
**Prep Time:**
**Prep Chemist:**

**Analytical Method: E314.0**
**Date Analyzed: Jul-19-2000**
**Time Analyzed 09:40**
**Analyst: Virginia Markowitz**

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 51.1 | ug/kg | U | 1 |

9/5/06

# GPL LABORATORIES, LLLP

## Summary of Analytical Results

Client ID LIA006
GPL ID: 6148-008-01-1
Matrix: Soil
Date Collected: Jun-21-2000
Date Received: Jun-23-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-19-2000
Time Analyzed 10:33
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 59.3 | ug/kg | U | 1 |

9/1/00



0 20

# GPL LABORATORIES, LLLP

## Summary of Analytical Results

Client ID LIA015
GPL ID: 6148-009-01-1
Matrix: Soil
Date Collected: Jun-21-2000
Date Received: Jun-23-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-19-2000
Time Analyzed 11:08
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 49.1 | ug/kg | U | 1 |

PBW 7/5/00

# GPL LABORATORIES, LLLP

## Summary of Analytical Results

Client ID LIA019
GPL ID: 6148-010-01-1
Matrix: Soil
Date Collected: Jun-22-2000
Date Received: Jun-23-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-19-2000
Time Analyzed 11:26
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 52.3 | ug/kg | U | 1 |

7/5/00



0 026

035

# GPL LABORATORIES, LLLP

## Summary of Analytical Results

Client ID LIA020
GPL ID: 6148-011-01-1
Matrix: Soil
Date Collected: Jun-21-2000
Date Received: Jun-23-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-19-2000
Time Analyzed 11:43
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 56.5 | ug/kg | U | 1 |

9/15/00

# GPL LABORATORIES, LLLP

## Summary of Analytical Results

Client ID DOWN_WEST-SS-01
GPL ID: 6148-012-01-1
Matrix: Soil
Date Collected: Jun-22-2000
Date Received: Jun-23-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-19-2000
Time Analyzed 12:01
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 51.1 | ug/kg | U | 1 |

PBK 9/5/00

# *GPL LABORATORIES, LLLP*

## Summary of Analytical Results

**Client ID DOWN_WEST-SS-02**
**GPL ID: 6148-013-01-1**
**Matrix: Soil**
**Date Collected: Jun-22-2000**
**Date Received: Jun-23-2000**

**Prep Method:**
**Prep Date:**
**Prep Time:**
**Prep Chemist:**

**Analytical Method: E314.0**
**Date Analyzed: Jul-19-2000**
**Time Analyzed 12:18**
**Analyst: Virginia Markowitz**

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 50.9 | ug/kg | U | 1 |

9/8/00

# GPL LABORATORIES, LLLP

## Summary of Analytical Results

Client ID DOWN_WEST-SS-03
GPL ID: 6148-014-01-1
Matrix: Soil
Date Collected: Jun-22-2000
Date Received: Jun-23-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-19-2000
Time Analyzed 12:36
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 64.2 | ug/kg | U | 1 |

9/5/01

# GPL LABORATORIES, LLLP

## Summary of Analytical Results

Client ID DOWN_WEST-SS-03D
GPL ID: 6148-015-01-1
Matrix: Soil
Date Collected: Jun-22-2000
Date Received: Jun-23-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-19-2000
Time Analyzed 12:54
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 64.9 | ug/kg | U | 1 |

9/5/0

# GPL LABORATORIES, LLLP

## Summary of Analytical Results

Client ID LIA001D
GPL ID: 6148-016-01-1
Matrix: Soil
Date Collected: Jun-22-2000
Date Received: Jun-23-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-19-2000
Time Analyzed 13:12
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 50.8 | ug/kg | U | 1 |

7/5/00

# GPL LABORATORIES, LLLP

## Summary of Analytical Results

Client ID DOWN_WEST-SS-O1D
GPL ID: 6148-017-01-1
Matrix: Soil
Date Collected: Jun-22-2000
Date Received: Jun-23-2000

Prep Method:
Prep Date:
Prep Time:
Prep Chemist:

Analytical Method: E314.0
Date Analyzed: Jul-19-2000
Time Analyzed 13:29
Analyst: Virginia Markowitz

| Parameter | Result | Rep Limit | Units | Qualifier | D.F. |
|---|---|---|---|---|---|
| Ammonium Perchlorate | BQL | 53.4 | ug/kg | U | 1 |

9/8/00

# DATA VALIDATION WORKSHEETS

DPO: [ ]ACTION [ ]FYI REGION II

# ORGANIC REGIONAL DATA ASSESSMENT SUMMARY

CASE/SAS NO.: _____ LABORATORY: GPL Laboratories, LLLP

SDG NO.: 6148 DATA USER: EPA Region II

SOW: ~~OLM03.2~~ SW846 REVIEW COMPLETION DATE: 9/5/00

NO. OF SAMPLES: ____ WATER 15 SOIL ____ OTHER

REVIEWER: [ ] ESD [ ] ESAT [✓] OTHER, CONTRACTOR HESI

| QC ITEM | VOA | BNA | PES | Picric acid | |
|---|---|---|---|---|---|
| HOLDING TIMES | | | | Z | |
| GC-MS PERFORMANCE | | | | O | |
| INITIAL CALIBRATIONS | | | | M | |
| CONTINUING CAL | | | | M | |
| FIELD BLANKS(F = | | | | — | |
| LABORATORY BLANKS | | | | O | |
| SURROGATES | | | | — | |
| MATRIX MS/MSD | | | | O | |
| QC SAMPLES(LCS, PVS) | | | | O | |
| INTERNAL STANDARDS | | | | — | |
| COMPOUND ID | | | | O | |
| COMPOUND Quant | | | | O | |
| SYSTEM PERFORMANCE | | | | O | |
| OVERALL ASSESSMENT | | | | O | |

O = No problems or minor problems that do not affect data usability.
X = No more than about 5% of the data points are qualified as either estimated or unusable.
M = More than about 5% of the data points are qualified as either estimated or unusable.
Z = More than about 5% of the data points are qualified as unusable.

DPO ACTION ITEMS: _____

YES NO N/A

CASE NUMBER: 6148 LAB: GPL Laboratories, LLLP

SITE: CH2M Hill Vieques (Camp Garcia Live Impact Area)

1.0 Introduction

1.1 The attached Standard Operating Procedure (SOP) is applicable to nitro substituted aromatics and nitro substituted amines by High Performance Liquid Chromatography (HPLC) data. Its scope is not only to facilitate the data validation process of the data reported by the contracting laboratory but also to ensure that the data is being reviewed in a uniform manner.

1.2 The SOP is based upon the quality control and quality assurance requirement specified in the analytical **Method 8330, November 1992 (Revision 0).**

2.0 Responsibilities

2.1 The reviewer must be knowledgeable of the analytical method and its QC criteria.

2.2 The reviewer must complete and/or file the following:

**Data Assessment Checklist**- The data reviewer evaluates each criterion carefully and checks if data is in compliance, non-compliance or not applicable.

**Data Assessment Narrative**- The data reviewer must present professional judgement, address areas of concern and comment on the validity of the overall data package. The reviewer must explain the reasons for rejecting and/or qualifying the data.

**Rejection Summary Form**-The reviewer must submit a completed form using a ratio format.

**Organic Regional Data Assessment Summary**- A completed form must be submitted.

**Telephone Record Log**-All phone conversations must be transcribed by the reviewer. Upon completion of the data review, the original telephone logis attached to the data assessment narrative.

| | YES | NO | N/A |
|---|---|---|---|
| **3.0 Data Completeness and Deliverables** | | | |
| 3.1 Have any missing deliverables been received and added to the data package? | [ ] | | ✓ |
| ACTION: Call lab for explanation/resubmittal of any missing deliverables. If lab cannot provide them, note the effect on review of the package under the "Contract Problems/Non-Compliance" section of reviewer narrative. | | | |
| 3.2 Was SAS-request included with package? | [ ] | ✓ | |
| If no, a SAS-request can be retrieved from RSCC. | | | |
| **4.0 Cover Letter SDG Narrative** | | | |
| 4.1 Is the Narrative or Cover Letter Present? | ✓ | | |
| 4.2 Are Case Number and/or SAS number contained in the Narrative or Cover letter? work order # | ✓ | | |
| **5.0 Traffic Reports and Laboratory Narrative** | | | |
| 5.1 Are Traffic Report Forms present for all samples? | ✓ | | |
| ACTION: If no, contact lab for replacement of missing or illegible copies. | | | |
| 5.2 Do Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data? | | ✓ | |
| NOTE: Samples are not preserved. | | | |
| ACTION: If samples were not iced upon receipt at the laboratory, flag all positive results "J" and all non-detects "UJ". | | | |

YES NO N/A

NOTE: Samples must be kept below 4°C from the time of collection through analysis. Degradation of some compounds occurs with heat. Samples should not be exposed to sunlight or temperatures above room temperature.

6.0 Special QC

6.1 Prior to preparation of stock solutions, acetonitrile, methanol, and water should be analyzed to determine possible interferences with analyte peaks. A different batch of solvent should be used if contamination is present.

6.2 Chromatograms are to be submitted showing that there are no interferences with analyte peaks.

Are these chromatograms present in package? [ ] ___ ✓

Are the chromatograms free of interferences? [ ] ___ ✓

ACTION: Ask lab for resubmittals. If deliverables are unavailable, judge the effect on the validity of the data. If questionable, contact SMO and note in data assessment.

7.0 Holding Times

7.1 Have any technical holding times, determined from date of collection to date of analysis, been exceeded?

EKK 9/1/00

A. For aqueous samples 7 days from sample collection to extraction ___ [ ] ✓

B. For soil/sediment samples 14 days from sample collection to extraction ~~29~~ 21-22 ✓ [ ] ___
S - 6/21, 6/22 e - 7/27

C. For all samples extracts 40 days from time of extraction to time of analysis ___ [ ] ___
a - 3/2

days out

YES NO N/A

Holding Time Violations
Table 1

(See Traffic Report)

| Sample ID | Date Sampled | Date Received | Date Lab Extracted | Date Analyzed | |
|---|---|---|---|---|---|
| all | 6/21, 6/22 | 6/23 | 7/27 (21-22) | 8/2 | J/R |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

CTION: If technical holding times are exceeded, flag all positive results as estimated ("J") and sample quantitation limits as estimated ("UJ"), and document in the narrative that holding times were exceeded. The reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results must be qualified "J", but the reviewer may determine that non-detect data are unusable (R).

8.0 Surrogate Recovery

8.1 Are the Organic Analysis Data Sheets (Form I) present and complete with surrogate recoveries for each of the following matrices:

a. Water? [ ] ___ ✓

b. Soil/Solid? [ ] ___ ✓

ACTION: Call lab for explanation/resubmittals. If missing deliverables or information are unavailable document the effect in the data assessment.

no surrogate used

YES NO N/A

8.2 Was the surrogate % recovery out of specifications for any field sample, method blank or QC sample? ___ [ ] ✓

8.3 Were surrogate retention times (RT) within ± 1.0% of the mean surrogate RT calculated from the initial calibration? [ ] ___ ✓

ACTION: Circle outliers in red.

ACTION: If the retention time shift (RTS) or % recovery of the surrogate in the field or QC samples is out of specification, then all associated sample data should be qualified. Use **Table 2** below as a guide.

**Surrogate Recovery**

**TABLE 2**

**The following table summarizes the surrogate recovery criteria and the data qualificat. guidelines for all associated field samples.**

| SURROGATE | NOT QUALIFIED | J | R | N |
|---|---|---|---|---|
| % RECOVERY - FIELD SAMPLES | | | | |
| Detects | 50 - 125% | < 50%; > 125% | | |
| Non-detects | ≥ 10% | < 10%* | < 10%* | |
| % RECOVERY - BLANKS AND QC SAMPLES ** | | | | |
| Detects | 50 - 125% | < 50%; > 125% | | |
| Non-detects | ≥ 20% | 10 - 19% | < 10% | |
| RTS - field samples | ± 1.0% | | > 1.5%; < -1.5% * | ± 1.1 - 1.5% * |
| RTS - QC samples | ± 1.0% | | > 1.5%; < -1.5% * | ± 1.1 - 1.5% * |

* Use professional judgement.
** If the surrogate recovery in a QC sample or blank was less than 50 percent or greater than 125 percent, then the field sample data should be qualified if the surrogate in the field sample is outside 50 - 125 percent recovery.

YES NO N/A

8.4 Are there any transcription/calculation errors between raw data and surrogate recoveries on Forms: __ [ ] ✓

ACTION: If large errors exist, call lab for explanation/ resubmittal, make necessary corrections and note errors in the data assessment.

9.0 QC Check Reference Sample

9.1 Is the QC Check Reference Sample Recovery Form present? (Created by Lab) [ ] __ ✓

9.2 Was the QC Check Reference Sample analyzed at the required frequency (once per SDG or every 20 samples, for each matrix? [ ] __ ✓

NOTE: The QC Check Form has to be created by the Lab. Concentration of the spiking solution is 5-10 times the estimated quantitation limits for all analytes listed in section 12 of the SAS.

NOTE: QC Check Reference Sample information is important, data is used to judge extraction efficiency.

ACTION: If any QC Check data are missing, call the lab for explanation/resubmittal. If the lab cannot provide missing deliverables, document the effect on the validity of the data in the data assessment. Positive hits should be flagged "J" and non-detects should be flagged "R".

9.3 How many QC check recoveries are outside QC limits of 70-125%?

| Water | Soil |
|---|---|
| NA out of ___ | NA out of ___ |

ACTION: If any recovery is greater than 125%, positive results should be flagged "J" for the affected compound.

YES NO N/A

When two or more analytes have recoveries above 10% but below 70% all associated data should be flagged "J" (positive and non-detects).

When one or more analytes have recoveries below 10% qualify all associated data "R".

Note in data assessment. If further assistance is required, contact SMO for instructions.

It should be noted for TPO action, if a laboratory fails to analyze a QC Check Reference Sample or if a laboratory consistently fails to generate acceptable recoveries.

10.0 Calibration Data

10.1 Initial Calibration

The initial calibration standards must be analyzed daily prior to any sample analysis. The lab may have to create two sets of initial standard solutions if several analytes coelute.

The initial calibration curve must be injected in triplicate for each of the 5 levels.

triplicate not required

10.2 Are the chromatograms and data system printouts (Quant reports) present for initial and triplicate calibrations? ~~X~~ ___ ___

10.3 Are the modified Initial Calibration Forms (Pest VI-1, VI-2 Forms) present? ~~X~~ ___ ___

10.4 Are modified Forms present and completed for each analytical sequence and each column? ~~X~~ ___ ___

ACTION: If any Calibration Standard chromatograms and forms are missing, contact the lab for resubmittals.

10.5 Are there any transcription/calculation errors between raw data and Forms? ___ ~~X~~ ___

YES NO N/A

ACTION: If large errors exist, call lab for explanation/resubmittal. Make necessary corrections and document effect in data assessment. Check at least 2-3 values from each calibration standard and more if errors are found.

10.6 Do all standard retention times, including each compound in each level, fall within the windows established during the initial calibration analytical sequence? ✓ ___ ___

NOTE: All injections are taken into account: A total of 15 injections (three injections for each of the five levels). If the lab had to run two sets of standards there would be a total of 30 injections.

ACTION: The average retention time (RT) for each analyte is determined from the mean of the triplicate injection for each 5 point level of the initial calibration. The RT window for each analyte is equal to the average RT ± three (3) times the standard deviation. If the standard deviation comes out to equal zero, the window will be ±0.08. The (Pest form VI-1) Form should be modified to include the average of the three injections for each of the 5 levels.

10.7 Are the linearity criteria for the initial analyses within limits for both columns? (%RSD must be ≤20%) ✓ ___ ___

ACTION: If no, qualify all associated positive results generated during the sequence "J" and all non-detects "UJ". When %RSD >90%, flag all non-detects results for that analyte as unusable "R".

10.8 Do the standards show degradation products of tetryl? ___ ✓ ___

NOTE: Degradation products of tetryl appear as a shoulder on the TNT peak. Peak heights rather than peak areas should be used when tetryl is present in concentrations that are significant relative to the concentration of TNT.

EXC
9/1/00

YES NO N/A

ACTION: If degradation is detected or suspected, qualify positive hits for tetryl and TNT as "J". If degradation is suspected, and tetryl is reported as non-detected, qualify the analyte as "UJ". Note in data assessment.

11.0 Continuing Calibration

11.1 Are Forms (Modified Pest VII-2) present for each continuing calibration? ✓ ___ ___

11.2 Are there any transcription/calculation errors between raw data and forms? ___ ✓ ___

ACTION: If large errors exist, call lab for explanation/resubmittals. Make any necessary corrections, and document effect in data assessment. Check at least 2-3 values from each calibration standard and more if errors are found.

11.3 Were continuing calibrations analyzed at the required frequency? (standard should bracket every 10 samples). ✓ ___ ___

ACTION: Criteria must be met. Determine effect on data. At a minimum, all data should be qualified "J", but the reviewer may determine that data are unusable "R". Document the data qualifications in data assessment.

11.4 Do all standard retention times for each continuing calibration fall within the windows established by the initial calibration? ✓ ___ ___

ACTION: If no, beginning with the samples which followed the last in-control standard, check to see if the chromatograms contain interfering peaks. If peaks are present, qualify positive results and non-detects for analytes outside their respective windows as unusable "R".

11.5 Are the RPD values for all continuing calibration standards ≤15%? [ ] ✓ ___

YES NO N/A

ACTION: If the %RPD is >15% for the analyte being quantitated, qualify all associated positive results "J" and non-detects "UJ". The "associated samples" are those which followed the last in-control standard up to the next passing standard. If the %RPD is >90%, flag all non-detects for that analyte unusable "R".

11.6 Compare the peak heights of continuing calibration checks obtained during the day with peak heights obtained from first calibration check of the sequence.

Is the percent RPD for peak heights less than 20% for each of the analytes of each of the Continuing Calibration Checks? [1] ___ ✓

ACTION: Use professional judgement to verify the reliability of the data.

12.0 Analytical Sequence

12.1 Is Form VIII present and completed for each column and each period of analyses? ✓ ___ ___

ACTION: If no, contact lab for resubmittals.

12.2 Was the proper analytical sequence followed for each initial calibration and subsequent analyses? ✓ ___ ___

NOTE: Sequence is as follows: 5 point Initial Calibration, Method Blank, Laboratory Control Sample (LCS), Continuing Calibration, 10 sample extracts, Continuing Calibration, 10 sample extracts and so on. The sequence must always end with a Continuing Calibration. All sample extracts, Method Blanks, LCS, and continuing calibrations must be analyzed within 24 hours after the analysis of the Initial Calibration Standards and the calculation of the RT windows.

ACTION: Flag "J" all data generated outside an acceptable twenty-four hour sequence starting after the calculation of the RT windows resulting from the initial calibration unless the daily calibration meets the calibration criteria for all target analytes. If the daily calibration standard does not meet the

LIA001 2 3 4 DOWN_WEST-SS-030 01 ~~all samples~~ LIA001D J/UJ picric acid



7/5/00

# HPLC ANALYSIS LOGBOOK

Instrument ID: LC # B

| | |
|---|---|
| Method File: H:\Lcdata\lcb\methods | Data File Path: H:\Lcdata\lcb\ |
| Detector(s): UV | Mobile Phase: Buffer |
| Pump(s): Waters 501 | Flow Rate: 1.0 ml/min |
| Autosampler: 712 | Detector Wavelength: 365 nm |
| Column: C18 | Injection Volume: 50 µL |

ICAL Date: PA 2/4/00 Analyst: MW Reviewed by: [illegible] Date: 7/3/00

| File | Lab ID | Date | Time | Dilution | Matrix | Comments |
|---|---|---|---|---|---|---|
| LCB 785.d | BLNK | 07/24/00 | 11:15 | 1 | BLNK | |
| LCB 786 | PICRIC ACID STD-1 | | | | STD | INITIAL CAL. PASSED |
| LCB 787 | STD-2 | | | | | |
| LCB 788 | STD-3 | | | | | |
| LCB 789 | STD-4 | | | | | |
| LCB 790 | STD-5 | | | | | For Check |
| LCB 791 | STD-5 | | | | | Initial cal-ok |
| LCB 792 | PICRICACID STD | | | | | cont-cal-OK |
| LCB 793 | NBLK-3267 | | | | soil | OK |
| LCB 794 | -3267 MS2 | | | | | |
| LCB 795 | 6173-001 | | | | | |
| LCB 796 | -002 | | | | | |
| LCB 797 | -003 | | | | | |
| LCB 798 | -004 | | | | | |
| LCB 799 | -005 | | | | | |
| LCB 5800 | -005 MS2 | | | | | |
| LCB 801 | -005 MSD2 | | | | | |
| LCB 802 | NBLK-3264 | | | | $H_2O$ | |
| LCB 803 | Picric Acid Std. | | | | Std | Cont. cal-OK |
| LCB 804 | NBLK-3264 MS2 | | | | $H_2O$ | OK |
| LCB 805 | -3264 MSD2 | | | | | |
| LCB 806 | 6173-006 | | | | | |
| LCB 807 | 6173-003 RT | | | | soil | |
| LCB 808 | PICRIC ACID STD | | | | Std | cont-cal-OK |

| Remarks | Standard | Solution ID | Conc. | Date Prep. |
|---|---|---|---|---|
| | PA | # 9624 | 100ppm | 04/04/00 |

## HPLC ANALYSIS LOGBOOK

Instrument ID: LC # B

| | |
|---|---|
| Method File: H:/Lcdata/lcb/methods | Data File Path: H:/Lcdata/lcb/05 |
| Detector(s): UV | Mobile Phase: Buffer |
| Pump(s): waters - 501 | Flow Rate: [illegible] |
| Autosampler: -712 | Detector Wavelength: 365nm |
| Column: C18 | Injection Volume: 50ul |

ICAL Date: ~~NR-M~~ PA 2400-M MW 08/02/00 Analyst: MW Reviewed by: _____ Date: _____

| File | Lab ID | Date | Time | Dilution | Matrix | Comments |
|---|---|---|---|---|---|---|
| LCB 6038d | Picric Acid STD | ~~08/01/00~~ | 19:34 | 1 | Std | Cont-cal-OK |
| LCB 039 | NBLK-3310 | 08/01/00 | | | Soil | |
| LCB 040 | -3310MS | MW 8-02-00 | | | | OK |
| LCB 041 | 6139-001 | | | | | |
| LCB 042 | -002 | | | | | |
| LCB 043 | -003 | | | | | |
| LCB 044 | -004 | | | | | |
| LCB 045 | -005 | | | | | |
| LCB 046 | -006 | | | | | |
| LCB 047 | -007 | | | | | |
| LCB 048 | -008 | | | | | |
| LCB 049 | Picric Acid Std. | | | | Std | Cont-cal-OK |
| LCB 050 | 6139-009 | | | | Soil | |
| LCB 051 | -010 | | | | | OK |
| LCB 052 | -011 | | | | | |
| LCB 053 | -012 | | | | | |
| LCB 054 | -013 | | | | | |
| LCB 055 | -014 | | | | | |
| LCB 056 | -015 | | | | | |
| LCB 057 | -016 | | | | | |
| LCB 058 | -017 | | | | | |
| LCB 059 | -018 | | | | | |
| LCB 060 | Picric Acid Std. | | | | Std. | Cont cal-OK |
| LCB 061 | 6139-018MS | | | | Soil | |

| Remarks | Standard | Solution ID | Conc. | Date Prep. |
|---|---|---|---|---|
| | Picric Acid | #9624 | 100ppm | 04/04/00 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |



0 1092

# HPLC ANALYSIS LOGBOOK

Instrument ID: LC # B

| | |
|---|---|
| Method File: H:\Lcdata\lcb\methods | |
| Detector(s): UV | |
| Pump(s): waters - 501 | |
| Autosampler: - 712 | |
| Column: C18 | |

| | |
|---|---|
| Data File Path: H:\Lcdata\lcb\0 | |
| Mobile Phase: Buffer | |
| Flow Rate: 1-5 ml/min | |
| Detector Wavelength: 365 nm | |
| Injection Volume: 50 µl. | |

ICAL Date: PA-2400-M Analyst: MW Reviewed by: _____ Date: _____

| File | Lab ID | Date | Time | Dilution | Matrix | Comments |
|---|---|---|---|---|---|---|
| LCB 0062.d | 6139-018 MSD | 08/01/00 | 23:59 | 1 | soil | |
| LCB 063 | -019 | | | | | OK |
| LCB 064 | -020 | | | | | |
| LCB 065 | NBLK-3311 | | | | | |
| LCB 066 | -3311 MS | | | | | |
| LCB 067 | 6148-001 | | | | | |
| LCB 068 | -002 | | | | | |
| LCB 069 | -003 | | | | | |
| LCB 070 | -004 | | | | | |
| LCB 071 | Picric Acid Std | | | | Std | cont cal-ok |
| LCB 072 | 6148-005 | | | | soil | |
| LCB 073 | -005 MS | | | | | OK |
| LCB 074 | -005MSD | | | | | |
| LCB 075 | -008 | | | | | |
| LCB 076 | -009 | | | | | |
| LCB 077 | -010 | | | | | |
| LCB 078 | -011 | | | | | |
| LCB 079 | -012 | | | | | |
| LCB 080 | -013 | | | | | |
| LCB 081 | -014 | | | | | |
| LCB 082 | Picric Acid Std | | | | Std | Cont-cal-ok |
| LCB 083 | 6148-015 | | | | soil | OK |
| LCB 084 | -016 | | | | | |
| LCB 085 | -017 | | | | | |

| Remarks | Standard | Solution ID | Conc. | Date Prep. |
|---|---|---|---|---|
| | Picric Acid Std | #9624 | 100ppm | 04/04/00 |



0 1093

# HPLC ANALYSIS LOGBOOK

Instrument ID: LC # B

| | |
|---|---|
| Method File: H:\Lcdata\Lcb\methods | Data File Path: H:\Lcdata\lcb\logi |
| Detector(s): UV | Mobile Phase: Buffer |
| Pump(s): waters-501 | Flow Rate: 1.2 ml/min |
| Autosampler: -712 | Detector Wavelength: 365 nm |
| Column: C18 | Injection Volume: 50 µl |

ICAL Date: PA-2400 Analyst: MW Reviewed by: _____ Date: _____

| File | Lab ID | Date | Time | Dilution | Matrix | Comments |
|---|---|---|---|---|---|---|
| LCB 6086-d | Picric Acid Std | 08/01/00 | | 1 | Std | Conv. cal-ok |
| LCB | | | | | | |
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| LCB | | | | | | |
| LCB | | | | | | |
| LCB | | | | | | |
| LCB | | | | | | |
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| LCB | | MW | | | | |
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| Remarks | Standard | Solution ID | Conc. | Date Prep. |
|---|---|---|---|---|
| | Picric Acid Std | #9624 | 100ppm | 04/01/00 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

**8330 RETENTION TIME WINDOW ESTABLISHMENT**

INTRUMENT TYPE: LCB
COLUMN: C-18 ANALYST MW
DATE: 8/1/00 - 8/2/00

| COMPOUND | Retent Time 1 | Retent Time 2 | Retent Time 3 | AVG | Stand Dev | 3X Stnd Dev | Average Peak Width | RT WINDOW |
|---|---|---|---|---|---|---|---|---|
| Picric Acid | 4.880 | 4.910 | 4.800 | 4.863 | 0.057 | 0.171 | 0.20 | 0.17 |

Advisory Retention Time Windows are based on three daily calibration check standards run within a 72 hour window

Windows are the greater of 1/2 the average peak width, or +/- 3 times the retention time standard deviation

059
0 1095

Response Factor Report LCB_LINEA

M od : H:\LCDATA\LCB\METHODS\PA2400.M (Chemstation Integrator)
T e : PICRIC ACID - 5 POINT IC
st Update : Thu Aug 03 08:08:05 2000

Calibration Files
LEV1 =LCB5786.D LEV2 =LCB5787.D LEV3 =LCB5788.D
LEV4 =LCB5789.D LEV5 =LCB5791.D

| Compound | LEV1 | LEV2 | LEV3 | LEV4 | LEV5 | Avg | %RSD |
|---|---|---|---|---|---|---|---|
| 1) TM PICRIC ACID | 1.082 | 0.950 | 1.104 | 1.026 | 1.103 | 1.053 E8 | 6.22 |

(#) = Out of Range

Continuing Calibration Report LCB_LINEA

Method : H:\LCDATA\LCB\METHODS\PA2400.M (Chemstation Integrator)
Title : PICRIC ACID - 5 POINT IC
Last Update : Fri Mar 19 10:18:26 1999
Response via : Initial Calibration

Continuing Calibration File: LCB6060.D

Min. RRF : 0.000 Min. Rel. Area : 50%
Max. RRF Dev : 25% Max. Rel. Area : 150%

| | Compound | AvgRF | CCRF | | %Dev | Area% | |
|---|---|---|---|---|---|---|---|
| 1 TM | PICRIC ACID | 105.018 | 81.410 | E6 | 22.5 | 74 | J/UJ |

LIA001
2
3
4

(#) = Out of Range SPCC's out = 0 CCC's out = 0
LCB6060.D PA2400.M Fri Aug 18 14:27:07 2000



081

# Continuing Calibration Report LCB_LINEA

Method : H:\LCDATA\LCB\METHODS\PA2400.M (Chemstation Integrator)
Title : PICRIC ACID - 5 POINT IC
Last Update : Fri Mar 19 10:18:26 1999
Response via : Initial Calibration

Continuing Calibration File: LCB6071.D

Min. RRF : 0.000 Min. Rel. Area : 50%
Max. RRF Dev : 25% Max. Rel. Area : 150%

| | Compound | AvgRF | CCRF | | %Dev | Area% |
|---|---|---|---|---|---|---|
| 1 TM | PICRIC ACID | 105.018 | 91.464 | E6 | 12.9 | 83 |

LIA005
6
15
19
20

DOWN-WEST-SS-01
02
03

(#) = Out of Range SPCC's out = 0 CCC's out = 0
LCB6071.D PA2400.M Fri Aug 18 14:27:24 2000

Continuing Calibration Report LCB_LINEA

Method : H:\LCDATA\LCB\METHODS\PA2400.M (Chemstation Integrator)
Title : PICRIC ACID - 5 POINT IC
Last Update : Fri Aug 18 14:27:35 2000
Response via : Initial Calibration

Continuing Calibration File: LCB6082.D

Min. RRF : 0.000 Min. Rel. Area : 50%
Max. RRF Dev : 25% Max. Rel. Area : 150%

| | Compound | AvgRF | CCRF | | %Dev | Area% | |
|---|---|---|---|---|---|---|---|
| 1 TM | PICRIC ACID | 105.018 | 87.685 | E6 | 16.5 | 80 | J/UJ |

DOWN_WEST-SS-03D
LIA001D
DOWN_WEST-SS-01

(#) = Out of Range SPCC's out = 0 CCC's out = 0
LCB6082.D PA2400.M Fri Aug 18 14:27:37 2000

# Continuing Calibration Report LCB_LINEA

Method : H:\LCDATA\LCB\METHODS\PA2400.M (Chemstation Integrator)
Title : PICRIC ACID - 5 POINT IC
Last Update : Fri Aug 18 14:27:45 2000
Response via : Initial Calibration

Continuing Calibration File: LCB6086.D

Min. RRF : 0.000 Min. Rel. Area : 50%
Max. RRF Dev : 25% Max. Rel. Area : 150%

| | Compound | AvgRF | CCRF | | %Dev | Area% | |
|---|---|---|---|---|---|---|---|
| 1 TM | PICRIC ACID | 105.018 | 86.138 | E6 | 18.0 | 78 | NA |

(#) = Out of Range SPCC's out = 0 CCC's out = 0
LCB6086.D PA2400.M Fri Aug 18 14:27:47 2000

YES NO N/A

criteria for some analytes the reviewer might reject

those values. In any case, if the 24 hour sequence is exceeded it should be noted in the data assessment under contract non-compliance.

13.0 Method Blanks

13.1 Is the Method Blank Summary (Form IV) present for each of the following matrices?
a. water ~~[X]~~ ___ ~~[ ]~~

b. soil ~~[X]~~ ___ ___

EKK 9/1/00

13.2 Frequency of Analysis:

Has a Method/Prep blank been analyzed at the same time for each batch of samples extracted. ~~[X]~~ ___ ___

ACTION: If any method blank data are missing, call lab for explanation/resubmittal. If method blank data are not available, reject "R" all associated positive data.

13.3 Are the positive hits present in the blank less than detection limit? not ~~[X]~~ ___ ___

ACTION: If hits are ≥ detection limits, analysis should be discontinued. All associated samples must be re-prepared and re-analyzed with a new blank. If lab did not follow this action, note in data assessment. Follow guidelines under contamination section.

13.4 Chromatography: review the method blank raw data chromatograms, quant reports or data system printouts.

Is the chromatographic performance (baseline stability) for each instrument acceptable? ~~[X]~~ ___ ___

ACTION: Use professional judgement to determine the effect on the data.

YES NO N/A

14.0 Contamination

NOTE: "Water blanks", "drill blanks", and distilled water blanks" are validated like any other sample, and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

14.1 Did the lab run an instrument blank following a sample analysis which contained an analyte(s) at high concentration(s) to evaluate possible sample cross-contamination? [ ] ___ ✓

ACTION: Sample analysis results after the high concentration sample must be evaluated for carryover. Sample cross-contamination should be noted for TPO action if an effect on the data is suspected. An Instrument Blank is not required in the methodology.

14.2 Do any Method Blanks have positive results (TCL)? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample dilution factor. ___ ✓ ___

14.3 Are there field/rinse/equipment blanks associated with every sample? [ ] ✓ ___

ACTION: Note in data assessment that there is no associated field/rinse/equipment blank.

14.4 Do any field/rinse blanks have positive results (TCL)? ___ [ ] ✓

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.) no QC Blks

NOTE: All field blank results associated with a particular group of samples (may exceed one per case) must be used to qualify data. Blanks may not be qualified because of contamination in another blank. Field blanks must be qualified for surrogate recovery, instrument performance criteria, or calibration QC problems.

4B

# SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

NBLKA

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M_HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Lab File ID: LCB6065.D Lab Sample ID: NBLK-3311

Instrument ID: LCB Date Extracted: 07/27/00

Matrix: (soil/water) SOIL Date Analyzed: 08/02/00

Level: (low/med) LOW Time Analyzed: 00:32

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

| | Client SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED |
|---|---|---|---|---|
| 01 | NLCSA | NBLK-3311 MS | LCB6066.D | 08/02/00 |
| 02 | LIA001 | 6148-001 | LCB6067.D | 08/02/00 |
| 03 | LIA002 | 6148-002 | LCB6068.D | 08/02/00 |
| 04 | LIA003 | 6148-003 | LCB6069.D | 08/02/00 |
| 05 | LIA004 | 6148-004 | LCB6070.D | 08/02/00 |
| 06 | LIA005 | 6148-005 | LCB6072.D | 08/02/00 |
| 07 | LIA005 MS | 6148-005 MS | LCB6073.D | 08/02/00 |
| 08 | LIA005 MSD | 6148-005 MSD | LCB6074.D | 08/02/00 |
| 09 | LIA006 | 6148-008 | LCB6075.D | 08/02/00 |
| 10 | LIA015 | 6148-009 | LCB6076.D | 08/02/00 |
| 11 | LIA019 | 6148-010 | LCB6077.D | 08/02/00 |
| 12 | LIA020 | 6148-011 | LCB6078.D | 08/02/00 |
| 13 | DOWN_WEST-SS-01 | 6148-012 | LCB6079.D | 08/02/00 |
| 14 | DOWN_WEST-SS-02 | 6148-013 | LCB6080.D | 08/02/00 |
| 15 | DOWN_WEST-SS-03 | 6148-014 | LCB6081.D | 08/02/00 |
| 16 | DOWN_WEST-SS-03D | 6148-015 | LCB6083.D | 08/02/00 |
| 17 | LIA001D | 6148-016 | LCB6084.D | 08/02/00 |
| 18 | DOWN_WEST-SS-O1 | 6148-017 | LCB6085.D | 08/02/00 |

COMMENTS: No Contamination

YES NO N/A

ACTION: Follow the directions in **Table 3** below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If any blanks are grossly contaminated, all associated data should be qualified as unusable (R) (see item # 12.3).

| Sample conc > CRQL but < 5x blank | Sample conc < CRQL & is < 5x blank value | Sample conc > CRQL & > 5x blank value |
|---|---|---|
| Flag sample result with a "U" | Report CRQL & qualify "U" | No qualification is needed |

NOTE: Analytes qualified "U" for blank contamination are still considered as "hits" when qualifying for calibration or other QC criteria.

15.0 Target Compound List (TCL) Analytes (Form I)

15.1 Are the Organic Analysis Data Sheets (Form I) present with required header information on each page, for each of the following:

a. Samples ? [X] ___ ___

b. Laboratory Control Samples? [X] ___ ___

c. Blanks? [X] ___ ___

d. Matrix spikes and matrix spike duplicates? [X] ___ ___

e. Lab duplicate? [ ] ___ [X]

| | YES | NO | N/A |
|---|---|---|---|
| 15.2 Are the Chromatograms, and the data system printouts (Quant Reports) included in the sample package for each of the following: | | | |
| a. Samples? | [✓] | ___ | ___ |
| b. Laboratory Control Samples? | [✓] | ___ | ___ |
| c. Blanks? | [✓] | ___ | ___ |
| d. Matrix spikes and Matrix spike duplicates? | [✓] | ___ | ___ |
| e. Lab duplicate? | [ ] | ___ | ✓ |

ACTION: If any data are missing, Contact Lab for resubmittals.

| | | | |
|---|---|---|---|
| 15.3 Are the response factors shown in the Quant Report? | [ ] | ✓ | ___ |
| 15.4 Is chromatographic performance acceptable with respect to: | | | |
| Baseline stability? | [✓] | ___ | ___ |
| Resolution? | [✓] | ___ | ___ |
| Peak shape? | [✓] | ___ | ___ |
| Full-scale graph (attenuation)? | [✓] | ___ | ___ |
| Other: _____ | [ ] | ___ | ___ |

ACTION: Use professional judgement to determine the acceptability of the data.

## 16.0 Compound Identification

| | | | |
|---|---|---|---|
| 16.1 Is Form X completed for every sample in which an analyte was detected? | [ ] | ___ | ✓ |

ACTION: If no, contact lab for resubmittals. no +

YES NO N/A

16.2 Are there any transcription/calculation errors between raw data and Forms? ___ [ ] ✓

ACTION: If large errors exist, call lab for explanation/resubmittals. Make any necessary corrections and note effect in data assessment. Check at least 2-3 values from each calibration standard and more if errors are found.

16.3 Are retention times (RT) of sample analytes within the established RT windows for both analyses? [ ] ___ ✓

ACTION: Qualify as unusable "R" all positive results which were not confirmed by second HPLC column analysis. Also qualify as unusable "R" all positive results not meeting RT window unless associated standard compounds are similarly biased. The reviewer should use professional judgement to assign an appropriate quantitation limit.

16.4 Is the percent difference (%D) calculated for the positive sample results on the two HPLC columns <25%? [ ] ___ ✓

ACTION: If the reviewer finds neither column shows interference for the positive hits, the data should be flagged as follows:

| % Difference | Qualifier |
|---|---|
| 25-90% | J |
| >90% | R |

NOTE: The lower of the two values is reported on Form I. If using professional judgement, the reviewer determines that the higher result was more acceptable, the reviewer should replace the value and indicate the reason for the change in the data assessment.

YES NO N/A

16.5 Check chromatograms for false negatives, interferences and degradation. Tetryl decomposes rapidly in methanol/water solutions as well as with heat. All samples expected to contain tetryl should not be exposed to temperatures above room temperature. Degradation products of tetryl appear as a shoulder on the TNT peak. Peak heights rather than peak areas should be used when tetryl is present in concentrations that are significant relative to the concentration of TNT.

ACTION: Use professional judgement to determine qualification of analytes.

17.0 Compound Quantitation and Reported Detection Limits

17.1 Are there any transcription/calculation errors in Form I results? Check at least two positive values. Verify that the calculations were adjusted for percent moisture. Were any errors found? — ✓ —

NOTE: Single peak analyte results can be checked for rough agreement between quantitative results obtained on the two HPLC columns. The reviewer should use professional judgement to decide whether a much larger concentration obtained on one column versus the other indicates the presence of an interfering compound. If an interfering compound is indicated, the lower of the two values should be reported and qualified as presumptively present at an approximated quantity "JN". This necessitates a determination of an estimated concentration on the confirmation column. The narrative should indicate that the presence of interferences has interfered with the evaluation of the second column confirmation.

17.2 Are the CRQLs adjusted to reflect sample dilutions for each Form I? no DLs ✓ — —

YES NO N/A

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note in data assessment.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" and its associated value on the original Form I and substituting the data from the analysis of the diluted sample. Specify which Form I is to be used, then draw a red "X" with a red pencil across the entire page of all Form I's that should not be used, including any in the summary package.

18.0 Lab Duplicates

18.1 Were any lab duplicates submitted for for each extraction batch?
a. waters [ ] ___ ___
b. soils [ ] ___ ___

18.2 Are the Relative Percent Difference (RPD) values for the analytes reported in the duplicate samples <20%? (depending on the SAS-request; the criteria might be <40%). [ ] ___ ___

ACTION: Compare the reported results for lab duplicates and calculate the relative percent difference.

ACTION: Any gross variation between duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of lab duplicates should be confirmed by contacting the lab.

ACTION: Flag all associated data with an * for "out of control" duplicate.

19.0 Matrix Spikes

19.1 Is the Matrix Spike/Matrix Spike Duplicate recovery Form present? [X] ___ ___

| | YES | NO | N/A |
|---|---|---|---|
| 19.2 Were the matrix spikes analyzed at the required frequency? (one per matrix and per SDG). | ✓ | | |

ACTION: If any matrix spike data are missing, contact the lab for resubmittals.

| | | | |
|---|---|---|---|
| 19.3 The matrix spike consists of all target analytes at concentrations 5-10 times the estimated quantitation limits listed in Table 1/Method 8330. Were the correct analytes and were the concentrations within range? >5-10x OK | ✓ | | |

NOTE: Field blanks cannot be used for Matrix spike analysis. If field/rinse blanks were MS/MSD, then make note under Contract non-compliance.

19.4 How many spike recoveries are outside the QC limits of 50-140%?

| Water | Soil |
|---|---|
| _____ out of ___ | 1 out of 2 |

19.5 How many RPD's for Matrix Spike and Matrix Spike duplicate recoveries are outside QC limits of 20% (depending what is stated in the SAS-request)?

| Water | Soil |
|---|---|
| _____ out of ___ | 0 out of 1 |

ACTION: Flag all associated data "N" for "out of control" matrix spike for the field sample used for the MS/MSD.

ACTION: No additional action is taken on MS/MSD data alone. However using informed professional judgement, the data reviewer may use the matrix spike data results in conjunction with other QC criteria and determine the need for some qualification of the data.

Field Dups:

L1A001 / L1A001D
no + no +

DOWN-WEST-SS-03 / DOWN-WEST-SS-03D
no + no +

DOWN-WEST-SS-01 / DOWN-WEST-SS-01
no + no +

3D

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: GPL LABORATORIES, LLLP. Contract: CH2M_HILL

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

Matrix Spike - EPA Sample No.: LIA005 Level: (low/med) LOW

| COMPOUND | SPIKE ADDED (ug/Kg) | SAMPLE CONCENTRATION (ug/Kg) | MS CONCENTRATION (ug/Kg) | MS % REC # | QC LIMITS REC. |
|---|---|---|---|---|---|
| PICRIC ACID | 45000 | 0.0 | 22000 | 49 * | 50 - 125 |

NA

| COMPOUND | SPIKE ADDED (ug/Kg) | MSD CONCENTRATION (ug/Kg) | MSD % REC # | % RPD # | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| PICRIC ACID | 40000 | 20000 | 50 | 2 | 25 | 50 - 125 |

# Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 1 outside limits

Spike Recovery: 1 out of 2 outside limits

COMMENTS:

3F

SOIL PICRIC ACID LABORATORY CONTROL SPIKE RECOVERY

Lab Name: GPL LABORATORIES, LLLP Client: URS Greiner Woodwar

Lab Code: GPLL Case No.: N/A SAS No.: N/A SDG No.: N/A

EPA Sample No.: NLCSA GP ID: NBLK 3311 MS

| COMPOUND | SPIKE ADDED (ug/Kg) | LCS CONCENTRATION (ug/Kg) | LCS % REC | QC LIMITS |
|---|---|---|---|---|
| PICRIC ACID | 50000 | 27,790 | 56 | 50-125 |

* OUTSIDE QC LIMIT

COMMENTS:

FORM III PA

## RUN SUMMARY SHEET
### Perchlorate

INSTRUMENT: IC-500

ANALYZED: 7/19/00 VHM
PREPARED: 7/17/00 VHM

| Lab ID | Client ID | Raw Conc. | Result | MDL | Units | %Recovery | %RPD |
|---|---|---|---|---|---|---|---|
| ICP | ICP-25ug/L | 25.67 | 25.7 | 5.0 | ug/L | 103 | |
| LRB | LRB | 0 | BQL | 5.0 | ug/L | | |
| ICV | ICV-10ug/L(10737) | 11.28 | 11.3 | 5.0 | ug/L | 113 | |
| LCSW | LCS-25ug/L(10714) | 25.27 | 25.3 | 5.0 | ug/L | 101 | |
| PBS | SOIL EXT. BLANK | 0 | BQL | 5.0 | ug/L | | |
| LCSS | SOIL LCS-50ug/L | 49.00 | 49.0 | 5.0 | ug/L | 98.0 | |
| 6148-001 | LIA001 | 0 | BQL | 5.0 | ug/L | | |
| 6148-002 | LIA002 | 0 | BQL | 5.0 | ug/L | | |
| 6148-003 | LIA003 | 0 | BQL | 5.0 | ug/L | | |
| 6148-004 | LIA004 | 0 | BQL | 5.0 | ug/L | | |
| 6148-005 | LIA005 | 0 | BQL | 5.0 | ug/L | | |
| 6148-005M | LIA005(+50ug/L) | 43.17 | 43.2 | 5.0 | ug/L | 86.4 | |
| 6148-005M | LIA005(+50ug/L) | 50.13 | 50.1 | 5.0 | ug/L | 100 | 14.8 |
| 6148-008 | LIA006 | 0 | BQL | 5.0 | ug/L | | |
| CCV(MID) | CCV - 2500ug/L(10737) | 256.89 | 257 | 5.0 | ug/L | 103 | |
| 6148-009 | LIA015 | 0 | BQL | 5.0 | ug/L | | |
| 6148-010 | LIA019 | 0 | BQL | 5.0 | ug/L | | |
| 6148-011 | LIA020 | 0 | BQL | 5.0 | ug/L | | |
| 6148-012 | DOWN_WEST_SS_01 | 0 | BQL | 5.0 | ug/L | | |
| 6148-013 | DOWN_WEST_SS_02 | 0 | BQL | 5.0 | ug/L | 99.8 | |
| 6148-014 | DOWN_WEST_SS_03 | 0 | BQL | 5.0 | ug/L | | |
| 6148-015 | DOWN_WEST_SS_03D | 0 | BQL | 5.0 | ug/L | | |
| 6148-016 | LIA001D | 0 | BQL | 5.0 | ug/L | | |
| 6148-017 | DOWN_WEST_SS_01D | 0 | BQL | 5.0 | ug/L | | |
| CCV(HIGH) | CCV - 500ug/L(10737) | 527.15 | 527 | 5.0 | ug/L | 105 | |

8-3-00
Analyst/Date

Reviewed by/Date

**BENCH SHEET**
**E314.0**

| Lab ID | Client ID | Dilution | Size | Volume | % Solids | Analyzed Date/Time |
|---|---|---|---|---|---|---|
| ICP | ICP-25ug/L | 1 | 1 | 1 | n/a | 7/19/00 6:43 |
| LRB | LRB | 1 | 1 | 1 | n/a | 7/19/00 7:01 |
| ICV | ICV-10ug/L(10737) | 1 | 1 | 1 | n/a | 7/19/00 7:19 |
| LCSW | LCS-25ug/L(10714) | 1 | 1 | 1 | n/a | 7/19/00 7:37 |
| PBS | SOIL EXT. BLANK | 1 | 5.00 | 50 | 100 | 7/19/00 7:54 |
| LCSS | SOIL LCS-50ug/L | 1 | 5.00 | 50 | 100 | 7/19/00 8:12 |
| 6148-001 | LIA001 | 1 | 9.85 | 50 | 75.6 | 7/19/00 8:29 |
| 6148-002 | LIA002 | 1 | 5.48 | 50 | 90.2 | 7/19/00 8:47 |
| 6148-003 | LIA003 | 1 | 5.64 | 50 | 87.9 | 7/19/00 9:05 |
| 6148-004 | LIA004 | 1 | 5.43 | 50 | 88.0 | 7/19/00 9:22 |
| 6148-005 | LIA005 | 1 | 5.43 | 50 | 90.1 | 7/19/00 9:40 |
| 6148-005M | LIA005(+50ug/L) | 1 | 5.20 | 50 | 90.1 | 7/19/00 9:58 |
| 6148-005M | LIA005(+50ug/L) | 1 | 5.69 | 50 | 90.1 | 7/19/00 10:15 |
| 6148-008 | LIA006 | 1 | 6.31 | 50 | 66.9 | 7/19/00 10:33 |
| CCV(MID) | CCV - 2500ug/L(10737) | 1 | 1.00 | 1 | n/a | 7/19/00 10:50 |
| 6148-009 | LIA015 | 1 | 5.56 | 50 | 91.7 | 7/19/00 11:08 |
| 6148-010 | LIA019 | 1 | 5.43 | 50 | 88.1 | 7/19/00 11:26 |
| 6148-011 | LIA020 | 1 | 5.07 | 50 | 87.3 | 7/19/00 11:43 |
| 6148-012 | DOWN_WEST_SS_01 | 1 | 5.60 | 50 | 87.4 | 7/19/00 12:01 |
| 6148-013 | DOWN_WEST_SS_02 | 1 | 5.69 | 50 | 86.4 | 7/19/00 12:19 |
| 6148-014 | DOWN_WEST_SS_03 | 1 | 5.15 | 50 | 75.6 | 7/19/00 12:36 |
| 6148-015 | DOWN_WEST_SS_03D | 1 | 5.08 | 50 | 75.8 | 7/19/00 12:54 |
| 6148-016 | LIA001D | 1 | 5.69 | 50 | 86.6 | 7/19/00 13:12 |
| 6148-017 | DOWN_WEST_SS_01D | 1 | 5.35 | 50 | 87.6 | 7/19/00 13:29 |
| CCV(HIGH) | CCV - 500ug/L(10737) | 1 | 1 | 1 | n/a | 7/19/00 13:47 |

8-300
Analyst/Date

Reviewed by/Date

APPENDIX E

# Physical Analysis Of Soil Samples

GPL

Laboratories

# CASE NARRATIVE

**CLIENT:** CH2M HILL
**PROJECT/SITE:** CAMP GARCIA LIA
**WORK ORDER(S):** 6148
**REVIEW DATE:** 06/29/00

The Case Narrative, Chain of Custody, Sample Receipt Checklist, Methods of Analysis Checklist and the cover page of the Sample Analysis Report, are integral parts of GPL Laboratories' report package. If you did not receive all of these documents, please contact GPL immediately.

## Sample Receipt

Seventeen soil samples were received on 06/23/2000. The samples were delivered by FEDERAL EXPRESS. The samples were received intact. Sample receipt conditions and temperatures are documented on the Sample Receipt Checklist.

## Sample Analysis

Samples were prepared and analyzed by GPL using the analytical methodologies indicated on the Methods of Analysis Checklist.

### Explosives/HPLC

1. Fifteen soil samples were extracted and analyzed for Picric Acid using SW846 method 8330.

2. The samples were extracted past the 14 day, internally imposed, holding time. The method does not address a holding time for picric acid, and holding time should have no impact in the quality of the data. GPL uses a holding time of 14 days, in order to be consistent in the way the LIMS is set up.

3. Matrix spike and matrix spike duplicate analyses were performed on sample LIA005. Percent recovery in the MS was slightly below the advisory QC limits. All other recoveries were within control limits.

4. A laboratory control sample was extracted and analyzed along with the sample batch. Percent recovery was within control limits.

5. Manual integration was performed on some data files, when automatic integration provided by the software was inappropriate. Some forms were "hand" corrected due to software limitations.

### Miscellaneous Analyses

1. Fifteen samples were extracted and analyzed for ammonium perchlorate by EPA method 314.0.

GPL

*Laboratories*

## CASE NARRATIVE

2. Matrix spike and matrix spike duplicate analyses were performed on sample LIA005. All recoveries were within control limits.

3. A laboratory control sample was extracted and analyzed along with the sample batch. Percent recovery was within control limits.

Project Manager

Lab Director

# Method Report - 000510-Perchlorate

## Method Information : Select Module(s)

System Name : DX 500
System Number : 1
Method Type : Ion Chromatography
Column :
Analyst :
Comment : (null)

## CD20 Timed Events

Module Name : CD20
Module Serial Number :
SRS Current : 300 mA
Temperature Compensation : 1.7 (% / °C)
Cell Temperature : 35 °C

| Time | Range (µS) | Offset | Mark | TTL1 | TTL2 | Relay1 | Relay2 | Collect |
|---|---|---|---|---|---|---|---|---|
| Init | 10.000 | | | Low | Low | Open | Open | |
| 0.00 | 10.000 | | | Low | Low | Open | Open | |
| 2.40 | 10.000 | * | | Low | Low | Open | Open | |
| 2.50 | 10.000 | | | Low | Low | Open | Open | Begin |

## CD20 Detector Parameters

Detector Type : CD20
Data collection time (minutes) : 15.00
Data Collection Rate : 5.00
Real time plot scale maximum (µS) : 10.000
Real time plot scale minimum (µS) : -1.000

## CD20 Integration Parameters

Peak detection algorithm : Standard
Starting peak width (seconds) : 10.00
Peak threshold : 0.50
Peak area reject (area counts) : 1000.00
Reference peak area reject (area counts) : 1000.00

## CD20 Smoothing Parameters

Filter Type : No filter



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078

## CD20 Report Data

Report Format File : C:\PeakNet\method\DEFAULT.RPT
Print Sample Analysis : No
Print Calibration Update : No
Print Check Standard : No
System Suitability Tests :
No system suitability tests selected.

## CD20 Integration Data Events

## CD20 Calibration Parameters

External or internal calibration : EXTERNAL
Number of replicates for calibration : 1
Rejection : Manual
Level Weighting : Equal
Calibration standard volume : 1.00
Default sample volume : 1.00
Amount units :
Replace retention time : Yes
Update response : Yes
Default dilution factor : 1.00
Default response factor for unknown peaks : 0.00
Calculate unknowns by area or height : Area

## CD20 Component Identification Table

| Component | Retention | Tolerance | Reference |
|---|---|---|---|
| Ammonium Perchlor | 9.97 min | 0.50 min | |

## CD20 Component Quantitation Table

| Component | Retention | Low Limit | High Limit |
|---|---|---|---|
| Ammonium Perchlor | 9.97 min | 0 | 0 |

## CD20 Component Calibration Table

| Component | Retention Time | Curve Fit | Origin | Cal. by | Response Component | Relative Factor |
|---|---|---|---|---|---|---|
| Ammonium Perchlor | 9.97 min | Linear | Ignore | Area | | 0.00 |



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## CD20 Component = Ammonium Perchlor Levels Table

**Retention Time : 9.97 min**
**Amount units :**
**Replicate unit type : Area**
**Number of levels : 8**
**Number of replicates : 1**

| Level | Amount | Replicate 1 |
|---|---|---|
| 1 | 0.00 | 6077 |
| 2 | 5.00 | 5353.2 |
| 3 | 10.00 | 8487.7 |
| 4 | 25.00 | 23173.2 |
| 5 | 50.00 | 45706.4 |
| 6 | 100.00 | 95704.3 |
| 7 | 250.00 | 252558 |
| 8 | 500.00 | 560403 |

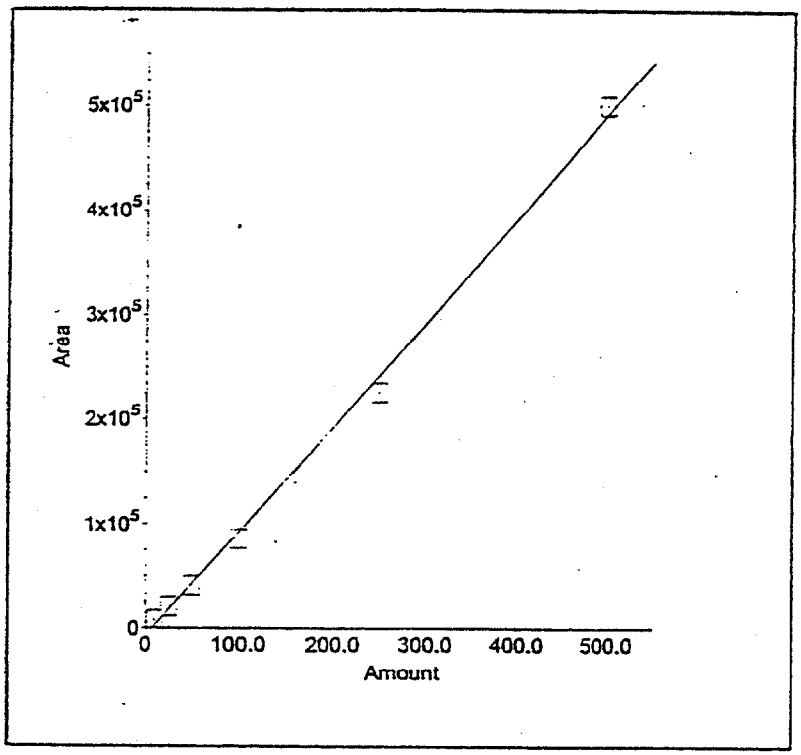
## CD20 XY Data Parameters



0 2024

Method:I:\ICDATA\METHODS\AM.PERCH\000510-PERCHLORATE.MET Updated:5/11/00 12:39:

1. Component:Ammonium Perchlor
Standard:External Fit Type:Linear
Orj n:Ignore Calibration:Area
r²= 997537
Amt=0.0008935*Resp+7.746




0 2025

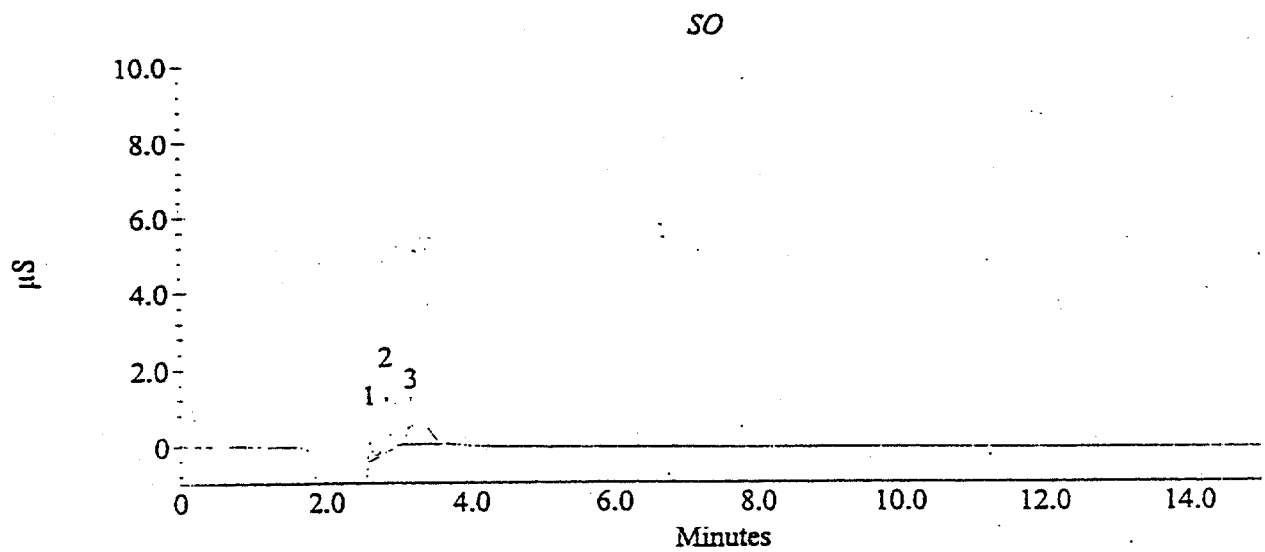
# Calibration Update Report

**Sample Name : SO**
**Data File Name : I:\ICDATA\IC500\000510\000510__001.DXD**

Method File Name : I:\icdata\methods\am.perch\000510-perchlorate.met
Schedule File Name : i:\icdata\schedules\000510-per.sch
Date Time Collected : 5/10/00 5:54:45 PM
Calibration Date : 5/11/00 12:40:39 PM
System Operator : Virginia Markowitz

Peak Information : All Components

| Peak # | Component Name | Retention Time | Cal Response (Previous) | Cal Response (Measured) | Cal Response (New) |
|---|---|---|---|---|---|
| 1 | | 2.60 | | | |



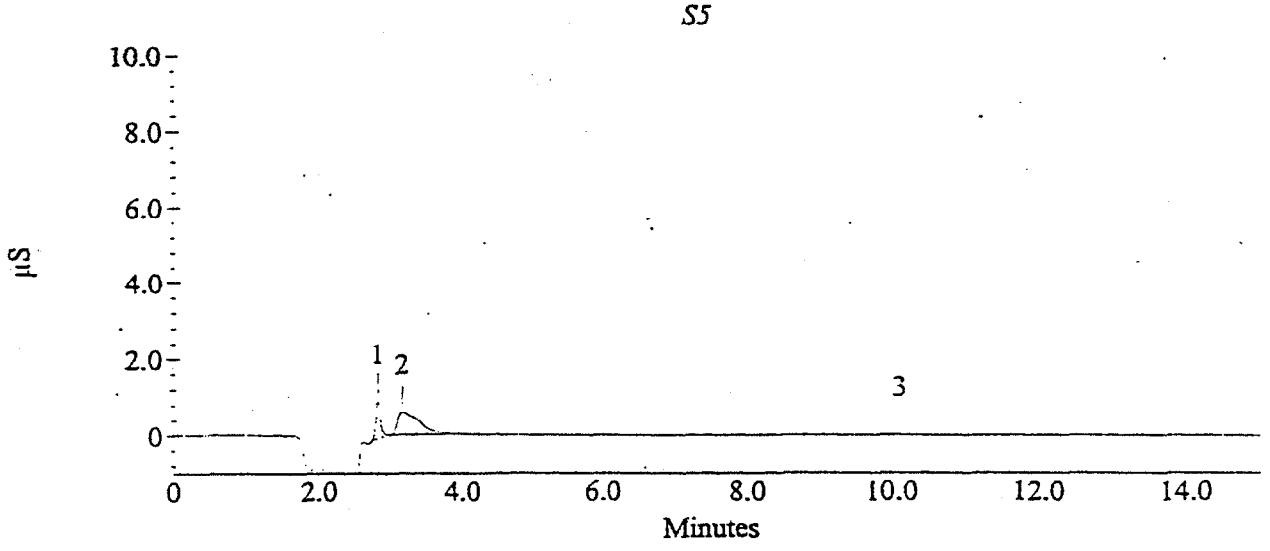
# Calibration Update Report

**Sample Name : S5**
**Data File Name : I:\ICDATA\IC500\000510\000510__002.DXD**

Method File Name : I:\icdata\methods\am.perch\000510-perchlorate.met
Schedule File Name : i:\icdata\schedules\000510-per.sch
Date Time Collected : 5/10/00 6:12:24 PM
Calibration Date : 5/11/00 12:40:39 PM
System Operator : Virginia Markowitz

Peak Information : All Components

| Peak # | Component Name | Retention Time | Cal Response (Previous) | Cal Response (Measured) | Cal Response (New) |
|---|---|---|---|---|---|
| 3 | Ammonium Perchlor | 10.12 | 5353 | 5353 | 5353 |



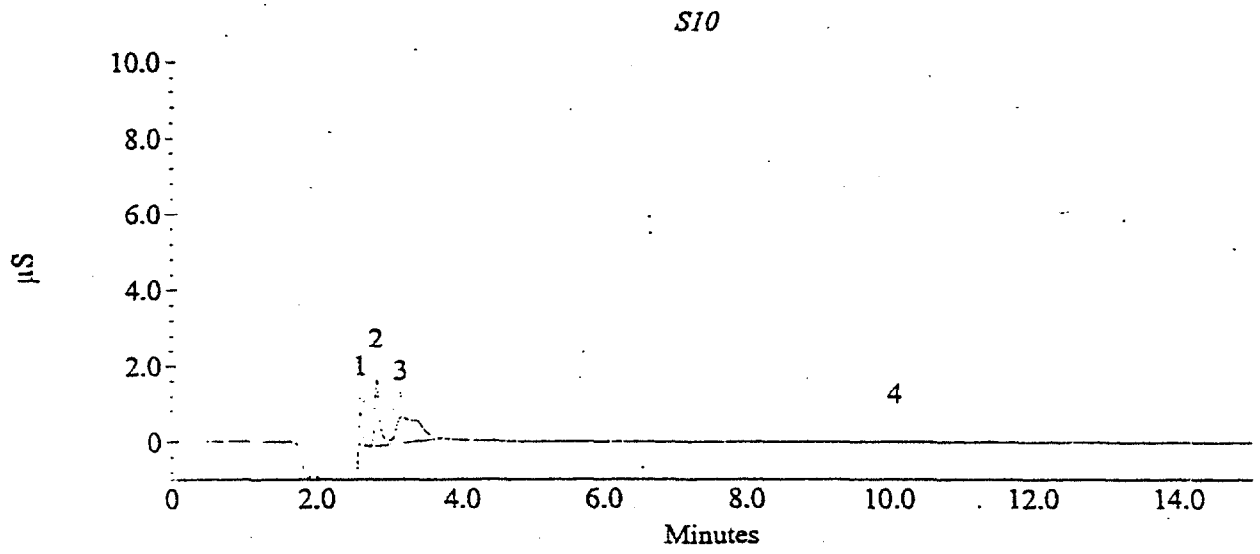
# Calibration Update Report

**Sample Name : S10**
**Data File Name : I:\ICDATA\IC500\000510\000510__003.DXD**

Method File Name : I:\icdata\methods\am.perch\000510-perchlorate.met
Schedule File Name : i:\icdata\schedules\000510-per.sch
Date Time Collected : 5/10/00 6:30:03 PM
Calibration Date : 5/11/00 12:40:39 PM
System Operator : Virginia Markowitz

Peak Information : All Components

| Peak # | Component Name | Retention Time | Cal Response (Previous) | Cal Response (Measured) | Cal Response (New) |
|---|---|---|---|---|---|
| 4 | Ammonium Perchlor | 10.08 | 8488 | 8488 | 8488 |




0 2028

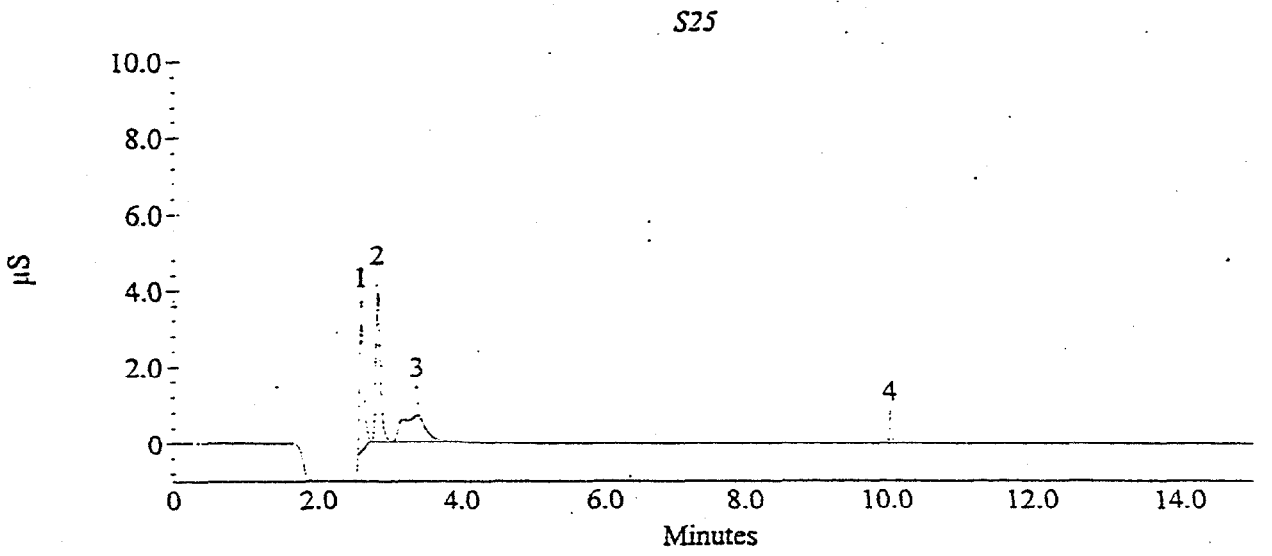
# Calibration Update Report

**Sample Name : S25**
**Data File Name : I:\ICDATA\IC500\000510\000510__004.DXD**

Method File Name : I:\icdata\methods\am.perch\000510-perchlorate.met
Schedule File Name : i:\icdata\schedules\000510-per.sch
Date Time Collected : 5/10/00 6:47:42 PM
Calibration Date : 5/11/00 12:40:39 PM
System Operator : Virginia Markowitz

Peak Information : All Components

| Peak # | Component Name | Retention Time | Cal Response (Previous) | Cal Response (Measured) | Cal Response (New) |
|---|---|---|---|---|---|
| 4 | Ammonium Perchlor | 10.05 | 23173 | 23173 | 23173 |




0 2029

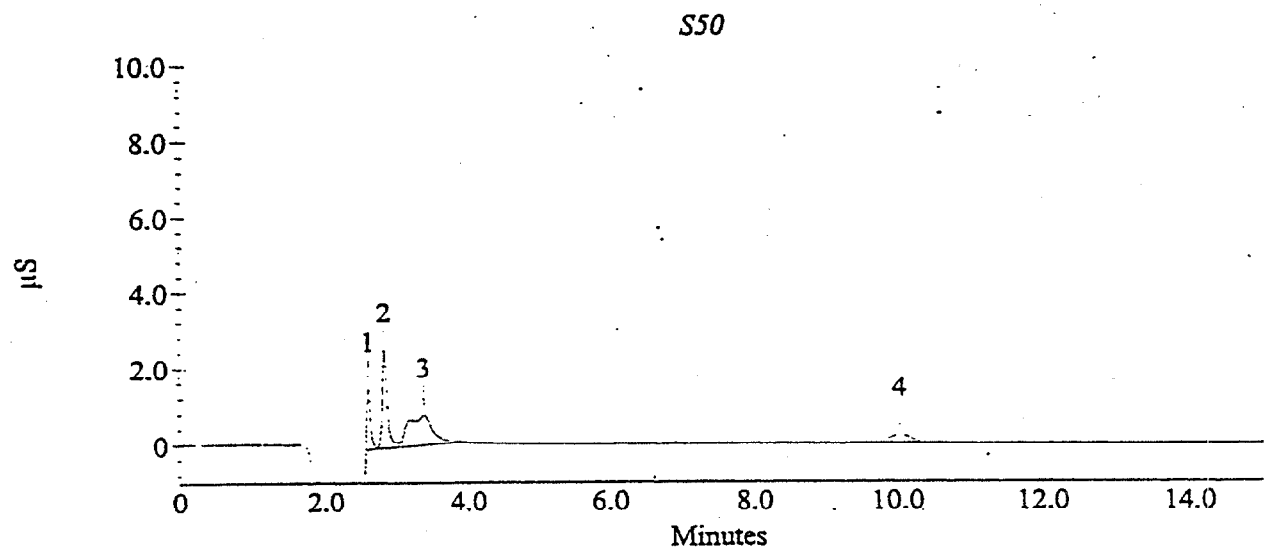
# Calibration Update Report

**Sample Name : S50**
**Data File Name : I:\ICDATA\IC500\000510\000510__005.DXD**

Method File Name : I:\icdata\methods\am.perch\000510-perchlorate.met
Schedule File Name : i:\icdata\schedules\000510-per.sch
Date Time Collected : 5/10/00 7:05:19 PM
Calibration Date : 5/11/00 12:40:39 PM
System Operator : Virginia Markowitz

Peak Information : All Components

| Peak # | Component Name | Retention Time | Cal Response (Previous) | Cal Response (Measured) | Cal Response (New) |
|---|---|---|---|---|---|
| 4 | Ammonium Perchlor | 10.03 | 45706 | 45706 | 45706 |




0 2030
Current Date : 5/11/00
Current Time : 12:44:50

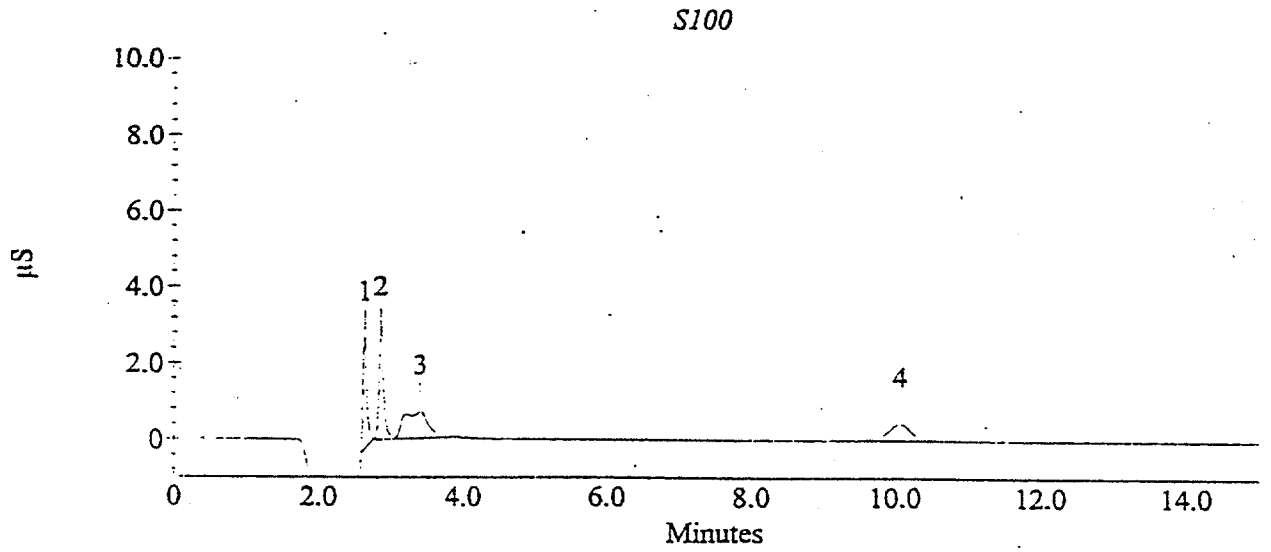
# Calibration Update Report

**Sample Name : S100**
**Data File Name : I:\ICDATA\IC500\000510\000510__006.DXD**

Method File Name : I:\icdata\methods\am.perch\000510-perchlorate.met
Schedule File Name : i:\icdata\schedules\000510-per.sch
Date Time Collected : 5/10/00 7:22:58 PM
Calibration Date : 5/11/00 12:40:39 PM
System Operator : Virginia Markowitz

Peak Information : All Components

| Peak # | Component Name | Retention Time | Cal Response (Previous) | Cal Response (Measured) | Cal Response (New) |
|---|---|---|---|---|---|
| 4 | Ammonium Perchlor | 10.07 | 95704 | 95704 | 95704 |




0 2031



08

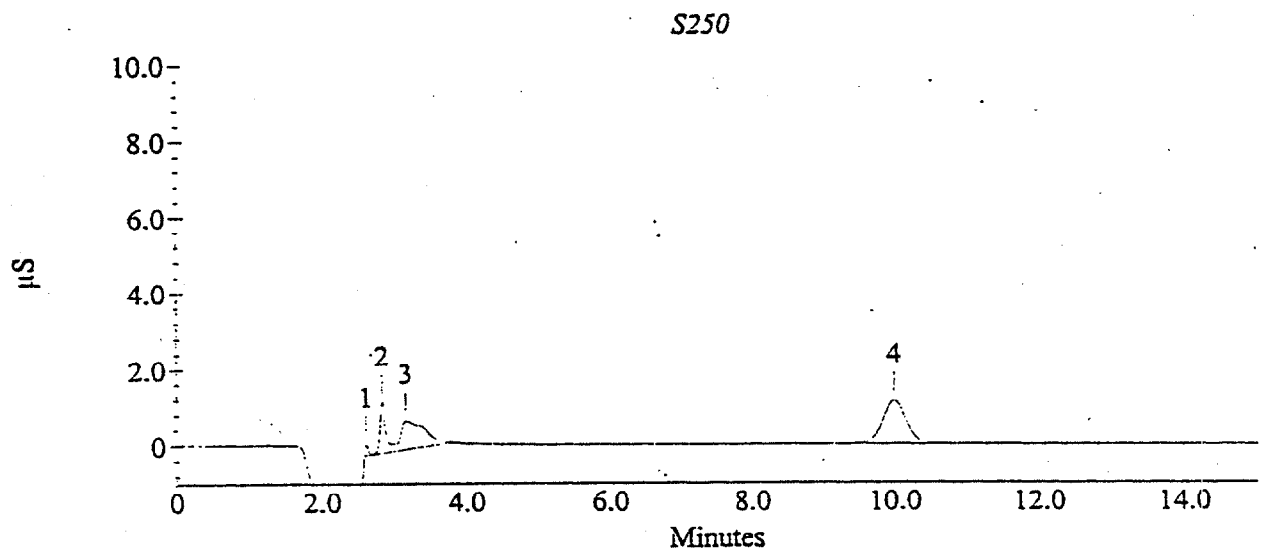
# Calibration Update Report

**Sample Name : S250**
**Data File Name : I:\ICDATA\IC500\000510\000510__007.DXD**

Method File Name : I:\icdata\methods\am.perch\000510-perchlorate.met
Schedule File Name : i:\icdata\schedules\000510-per.sch
Date Time Collected : 5/10/00 7:40:36 PM
Calibration Date : 5/11/00 12:40:39 PM
System Operator : Virginia Markowitz

Peak Information : All Components

| Peak # | Component Name | Retention Time | Cal Response (Previous) | Cal Response (Measured) | Cal Response (New) |
|---|---|---|---|---|---|
| 4 | Ammonium Perchlor | 10.00 | 252558 | 252558 | 252558 |




0 2032

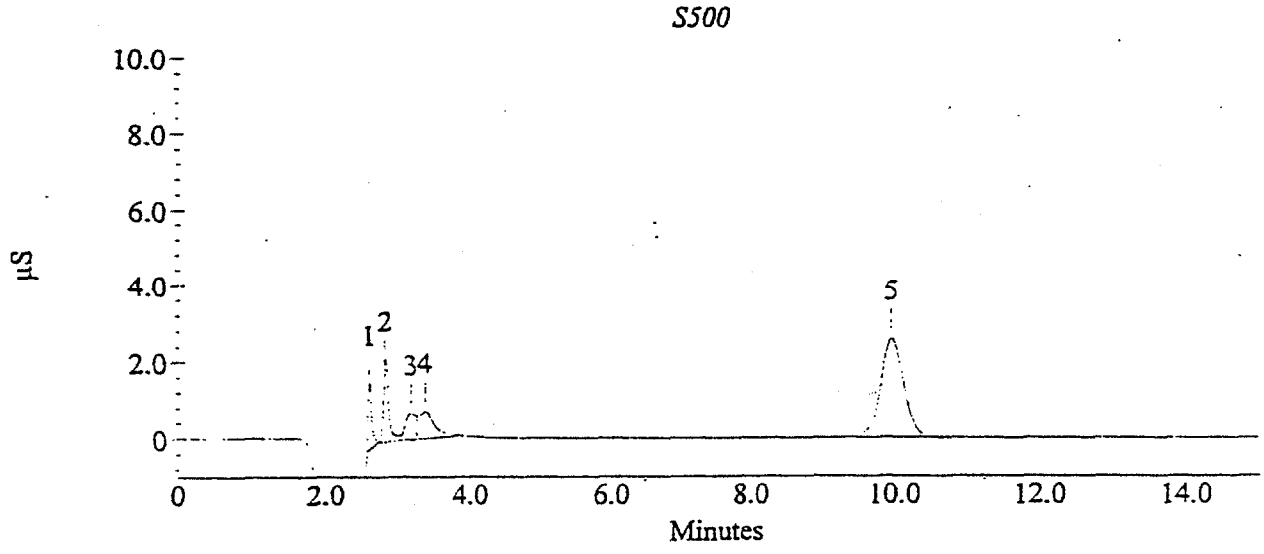
# Calibration Update Report

**Sample Name : S500**
**Data File Name : I:\ICDATA\IC500\000510\000510__008.DXD**

Method File Name : I:\icdata\methods\am.perch\000510-perchlorate.met
Schedule File Name : i:\icdata\schedules\000510-per.sch
Date Time Collected : 5/10/00 7:58:14 PM
Calibration Date : 5/11/00 12:40:39 PM
System Operator : Virginia Markowitz

Peak Information : All Components

| Peak # | Component Name | Retention Time | Cal Response (Previous) | Cal Response (Measured) | Cal Response (New) |
|---|---|---|---|---|---|
| 5 | Ammonium Perchlor | 9.97 | 560403 | 560403 | 560403 |



# Sample Analysis Report

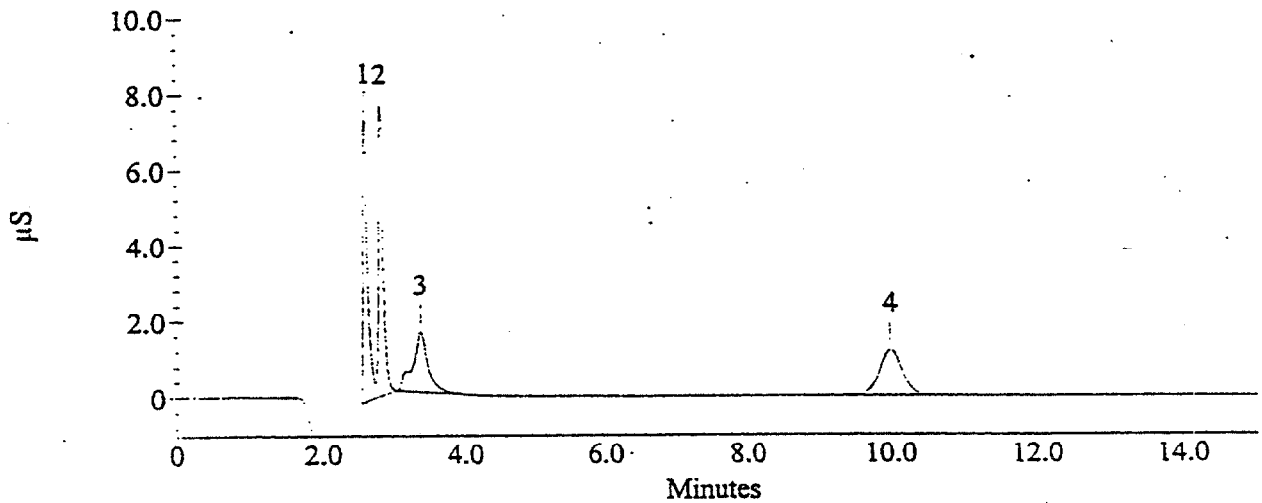
**Sample Name : SECOND SOURCE CONFIRM**
**Data File Name : I:\ICDATA\IC500\000510\000510__009.DXD**

Method File Name : i:\icdata\methods\am.perch\000510-perchlorate.met
Date Time Collected : 5/10/00 8:15:53 PM
System Operator : Virginia Markowitz

Peak Information : All Peaks

| Peak # | Component Name | Retention Time | Amount | Peak Area | Peak Height |
|---|---|---|---|---|---|
| 1 | | 2.60 | 0.00 | 330756 | 74204 |
| 2 | | 2.82 | 0.00 | 341378 | 72374 |
| 3 | | 3.37 | 0.00 | 242839 | 15744 |
| 4 | Ammonium Perchlor | 10.00 | 245.05 | 265593 | 11978 |

*SECOND SOURCE CONFIRM*




0 2034



090

# Sample Analysis Report

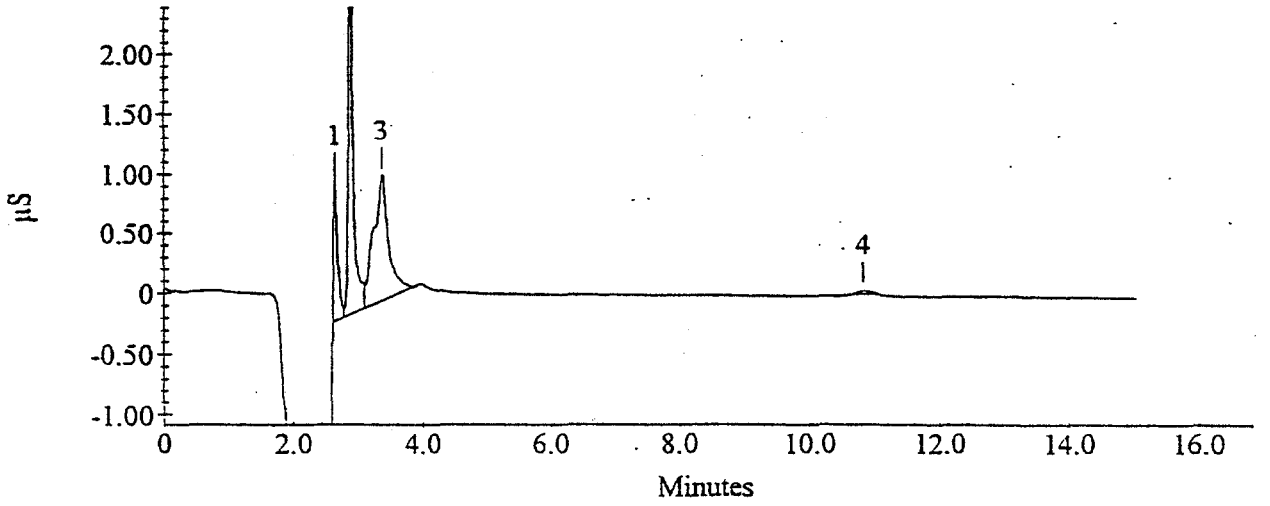
**Sample Name : ICV - 10ug/L**
**Data File Name : I:\ICDATA\IC500\000718\000718__060.DXD**

Method File Name : i:\icdata\methods\am.perch\000510-perchlorate.met
Date Time Collected : 7/19/00 7:18:50 AM
System Operator : VHM

Peak Information : All Peaks

| Peak # | Component Name | Retention Time | Amount | Peak Area | Peak Height |
|---|---|---|---|---|---|
| 1 | | 2.63 | 0.00 | 50514 | 11588 |
| 2 | | 2.87 | 0.00 | 161005 | 28596 |
| 3 | | 3.35 | 0.00 | 166880 | 10343 |
| 4 | Ammonium Perchlor | 10.82 | 11.28 | 3950 | 277 |

*ICV - 10ug/L*




0 2035

# Sample Analysis Report

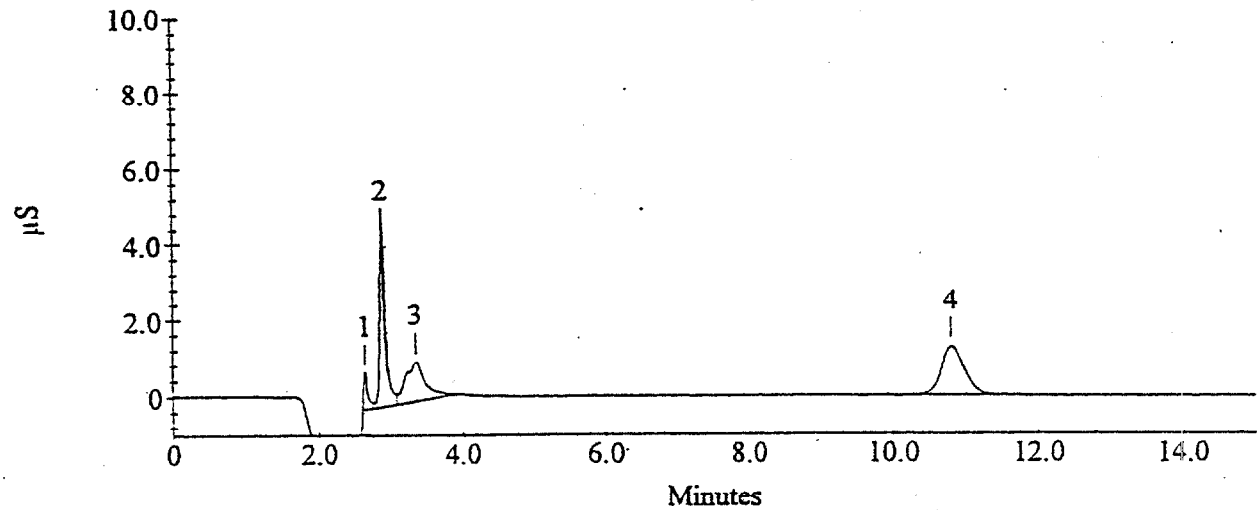
**Sample Name : CCV - 250ug/L**
**Data File Name : I:\ICDATA\IC500\000718\000718__072.DXD**

Method File Name : i:\icdata\methods\am.perch\000510-perchlorate.met
Date Time Collected : 7/19/00 10:50:26 AM
System Operator : VHM

Peak Information : All Peaks

| Peak # | Component Name | Retention Time | Amount | Peak Area | Peak Height |
|---|---|---|---|---|---|
| 1 | | 2.63 | 0.00 | 38064 | 9323 |
| 2 | | 2.87 | 0.00 | 248128 | 44719 |
| 3 | | 3.33 | 0.00 | 195171 | 10149 |
| 4 | Ammonium Perchlor | 10.80 | 256.89 | 278847 | 12646 |

*CCV - 250ug/L*




0 2036



Current Date : 7/19/0
Current Time : 14:21:5

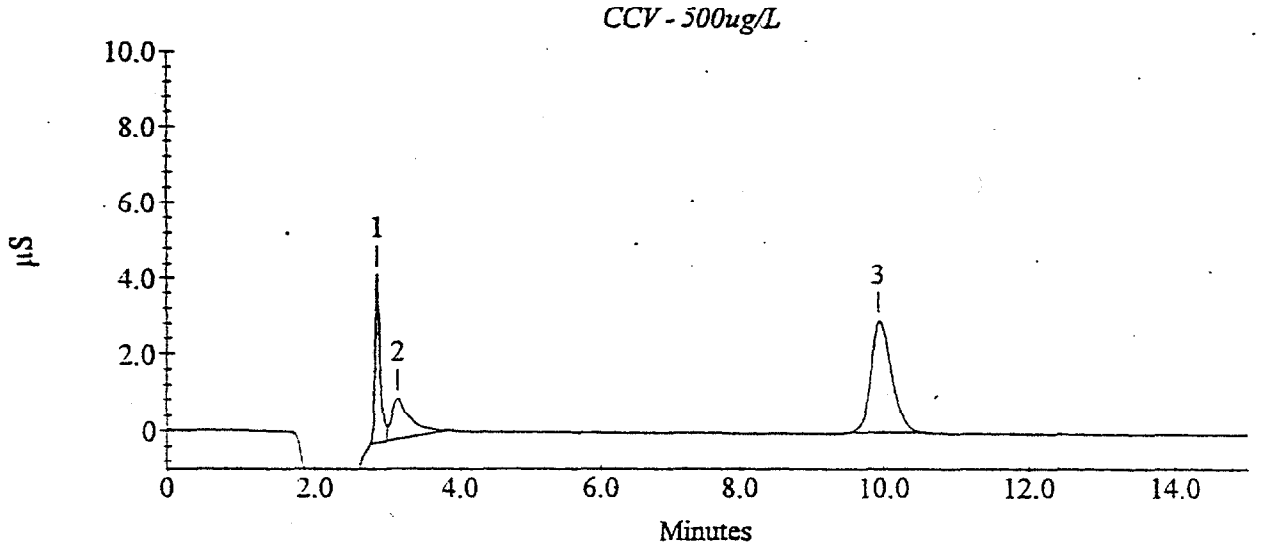
# Sample Analysis Report

**Sample Name : CCV - 500ug/L**
**Data File Name : I:\ICDATA\IC500\000718\000718__082.DXD**

Method File Name : I:\ICDATA\METHODS\AM.PERCH\000510-Perchlorate.MET
Date Time Collected : 7/19/00 1:46:48 PM
System Operator : VHM

Peak Information : All Peaks

| Peak # | Component Name | Retention Time | Amount | Peak Area | Peak Height |
|---|---|---|---|---|---|
| 1 | | 2.83 | 0.00 | 209226 | 44074 |
| 2 | | 3.12 | 0.00 | 188723 | 10351 |
| 3 | Ammonium Perchlor | 9.93 | 527.15 | 581329 | 28938 |




0 2037

# Camp Garcia LIA

LIVE IMPACT AREA SAMPLING

Generated on: 06/22/2000 2:57:08 PM

**CH2M HILL**

*Chain of Custody Form*

| | | | | | |
|---|---|---|---|---|---|
| COC Number: | LIA | Project: | Camp Garcia Live Impact Area | Kit Request ID: | |
| Project #: | 139322.PP.WP | Laboratory Coordinator: | Ellen Patterson / USA 954.426.6112 x233 | Lab: | GP LABS |

| Sample ID | Station ID | Date & Time Collected | Matrix | Number of Containers | Analysis Requested | Comments |
|---|---|---|---|---|---|---|
| LIA001 | LIA-SS-01 | 6/22/00 10:20 | SS | 1 | PER_S, PICRIC_S | |
| LIA002 | LIA-SS-02 | 6/22/00 11:00 | SS | 1 | PER_S, PICRIC_S | |
| LIA003 | LIA-SS-03 | 6/22/00 11:20 | SS | 1 | PER_S, PICRIC_S | |
| LIA004 | LIA-SS-04 | 6/21/00 13:45 | SS | 1 | PER_S, PICRIC_S | |
| LIA005 | LIA-SS-05 | 6/21/00 13:30 | SS | 3 | PER_S, PICRIC_S | Use Extra Samples for MS/MSD. |
| LIA006 | LIA-SS-06 | 6/21/00 13:00 | SS | 1 | PER_S, PICRIC_S | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | PER_S, PICRIC_S | |
| LIA015 | LIA-SS-15 | 6/21/00 14:15 | SS | 1 | PER_S, PICRIC_S | |
| LIA019 | LIA-SS-19 | 6/22/00 11:45 | SS | 1 | PER_S, PICRIC_S | |
| LIA020 | LIA-SS-20 | 6/21/00 14:00 | SS | 1 | PER_S, PICRIC_S | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | |
| DOWN_WEST-SS-01 | DOWN_WEST-SS-01 | 6/22/00 12:40 | SS | 1 | PER_S, PICRIC_S | |
| DOWN_WEST-SS-02 | DOWN_WEST-SS-02 | 6/22/00 12:50 | SS | 1 | PER_S, PICRIC_S | |
| DOWN_WEST-SS-03 | DOWN_WEST-SS-03 | 6/22/00 13:05 | SS | 1 | PER_S, PICRIC_S | |
| DOWNWEST-SS-03D | DOWNWEST-SS-03D | 6/22/00 13:05 | SS | 1 | PER_S, PICRIC_S | |
| LIA001D | LIA-SS-01D | 6/22/00 10:20 | SS | 1 | PER_S, PICRIC_S | Field Duplicate |
| DOWNWEST-SS-01D | DOWNWEST-SS-01D | 6/22/00 12:40 | SS | 1 | PER_S, PICRIC_S | Field Duplicate |

| | | | | | |
|---|---|---|---|---|---|
| Sampled By: [signature] | Date / Time: 06·22·00 1700 | | Custody Seal: Y / N | Relinquished By: [signature] | Date / Time 06·22·00 1700 |
| Shipped Via: UPS FedEx Hand Other (please specify): | | | | | |
| Received By: | Date / Time: | Cooler Temp: | Custody Seal: Y / N | Relinquished By: | Date / Time: |
| Received By: Chino | Date / Time: 6/23/00 10:AM | Cooler Temp: | Custody Seal: Y / N | Relinquished By: | Date / Time: |

Remarks: 1 - COOLER 12 / FEDEX 8202 1433 8199



0051

Savannah Laboratories
Division of Severn Trent Laboratories, Inc
5102 LaRoche Avenue · Savannah, GA 31404 · (912) 354-7858 · Fax (912) 352-0165 · www.stlsavlab.com

LOG NO: S0-04125
Received: 23 JUN 00
Reported: 11 AUG 00

Ms. Ann West
CH2M Hill
13921 Park Center Road, Suite 600
Herndon, VA 20171

Requisition: CTO-185
Contract No.: N62470-95-D-6007
CC: Mr. John Tomik
Project: 139322.PP.WP/CAMP GARCIA LIVE IMPACT AREA
Sampled By: Client
Code: 084500811

REPORT OF RESULTS



| LOG NO | SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES | DATE/ TIME SAMPLED | SDG# |
|---|---|---|---|
| 04125-16 | LIA003 | 06-22-00/11:20 | VIEQ003 |
| 04125-17 | LIA012 | 06-20-00/12:30 | VIEQ003 |
| 04125-18 | LIA027 | 06-20-00/15:05 | VIEQ003 |

| PARAMETER | 04125-16 | 04125-17 | 04125-18 |
|---|---|---|---|
| Density (EPA/CE-81-1(3-61)), g/cc | 1.7 | 1.8 | 1.7 |
| Dilution Factor | 1 | 1 | 1 |
| Prep Date | 07.11.00 | 07.11.00 | 07.11.00 |
| Analysis Date | 07.11.00 | 07.11.00 | 07.11.00 |
| Batch ID | 0711A | 0711A | 0711A |
| Grain Size | *F71 | *F71 | *F71 |
| Percent Moisture, % | 21 % | 6 % | 14 % |

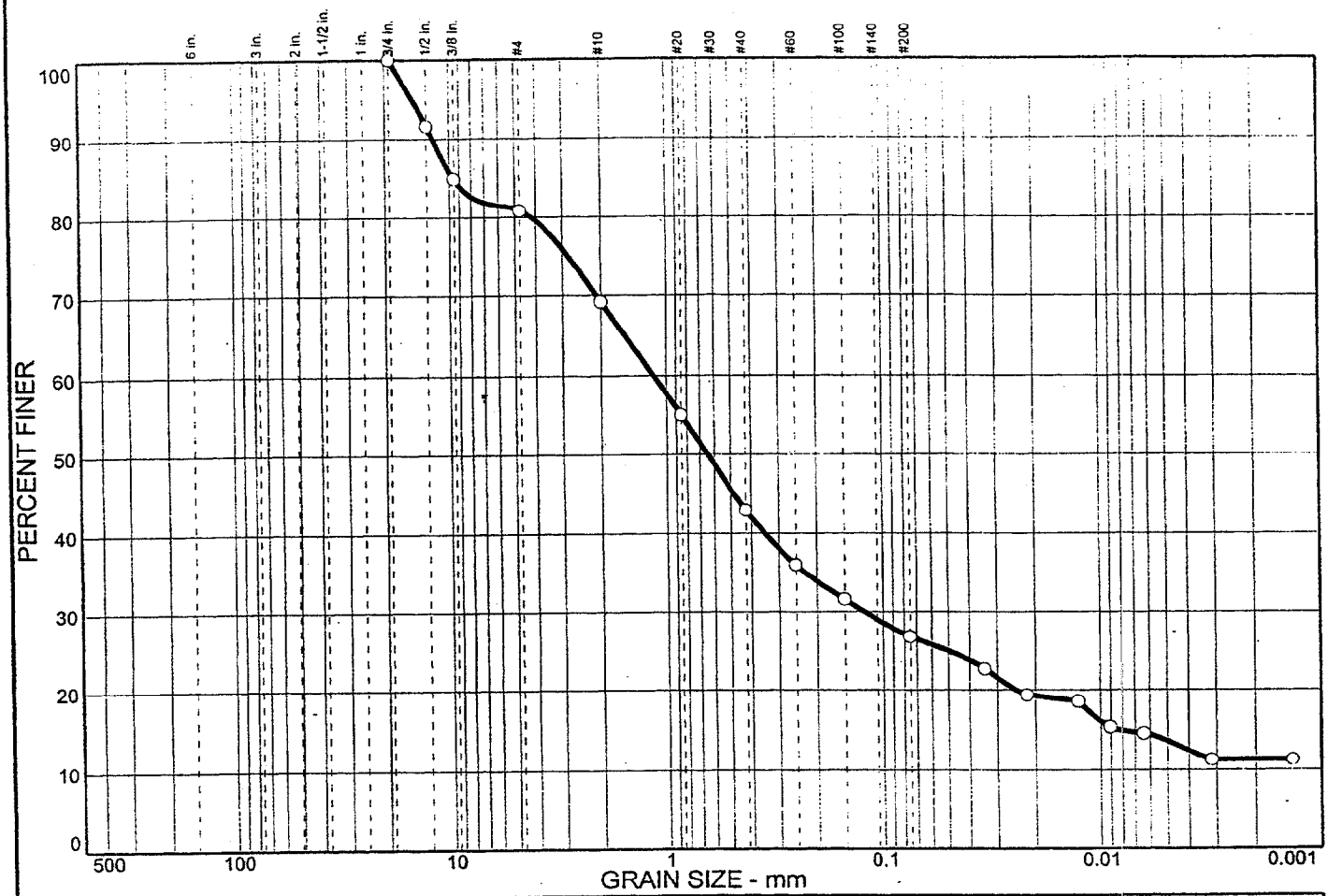
These test results meet all the requirements of NELAC. All questions regarding this test report should be directed to the STL Project Manager who signed this test report.

*F71 = Subcontracted results are attached to this report.

Angie Weimerskirk

Angie Weimerskirk, Project Manager

# Particle Size Distribution Report




| % COBBLES | % GRAVEL | % SAND | % SILT | % CLAY |
|---|---|---|---|---|
| 0.0 | 19.1 | 54.1 | 13.1 | 13.7 |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .75 in. | 100.0 | | |
| .5 in. | 91.6 | | |
| .375 in. | 84.9 | | |
| #4 | 80.9 | | |
| #10 | 69.2 | | |
| #20 | 55.0 | | |
| #40 | 43.0 | | |
| #60 | 36.0 | | |
| #100 | 31.6 | | |
| #200 | 26.8 | | |

* (no specification provided)

**Soil Description**

CLAYEY COARSE TO FINE SAND, WITH GRAVEL

**Atterberg Limits**

PL= --- LL= --- PI= ---

**Coefficients**

$D_{85}$= 9.58 $D_{60}$= 1.14 $D_{50}$= 0.641
$D_{30}$= 0.122 $D_{15}$= 0.0082 $D_{10}$=
$C_u$= $C_c$=

**Classification**

USCS= --- AASHTO= ---

**Remarks**

**Sample No.:** LIA-SS-12 **Source of Sample:** **Date:** 07/09/00
**Location:** **Elev./Depth:**

**Thompson Engineering**

**Client:** STL SAVANNAH LABORATORIES
**Project:** SAVANNAH #: S0-~~04089~~ 04125 AW 08.11.00
**Project No:** 2000-00-0595 **Plate**

## GRAIN SIZE DISTRIBUTION TEST DATA

Client: STL SAVANNAH LABORATORIES
Project: SAVANNAH #: S0-04089
Project Number: 2000-00-0595

### Sample Data

Source:
Sample No.: LIA-SS-12
Elev. or Depth: Sample Length (in./cm.):
Location:
Description: CLAYEY COARSE TO FINE SAND, WITH GRAVEL
Date: 07/09/00 PL: - - - LL: - - - PI: - - -
USCS Classification: - - - AASHTO Classification: - - -
Testing Remarks:

### Mechanical Analysis Data

| | Initial |
|---|---|
| Dry sample and tare= | 77.28 |
| Tare = | 0.00 |
| Dry sample weight = | 77.28 |

Sample split on number 10 sieve
Split sample data:
Sample and tare = 42.78 Tare = .00 Sample weight = 42.78
Cumulative weight retained tare= .00
Tare for cumulative weight retained= .00

| Sieve | Cumul. Wt. retained | Percent finer |
|---|---|---|
| .75 inch | 0.00 | 100.0 |
| .5 inch | 6.51 | 91.6 |
| .375 inch | 11.64 | 84.9 |
| # 4 | 14.77 | 80.9 |
| # 10 | 23.78 | 69.2 |
| # 20 | 8.81 | 55.0 |
| # 40 | 16.20 | 43.0 |
| # 60 | 20.55 | 36.0 |
| # 100 | 23.26 | 31.6 |
| # 200 | 26.24 | 26.8 |

### Hydrometer Analysis Data

Separation sieve is #10
Percent -#10 based upon complete sample= 69.2
Weight of hydrometer sample: 43.66
Hygroscopic moisture correction:
Moist weight & tare = 19.61
Dry weight & tare = 19.45
Tare = 11.67
Hygroscopic moisture= 2.1 %
Calculated biased weight= 61.82
Table of composite correction values:

| | | |
|---|---|---|
| Temp, deg C: | 19.0 | 22.0 |
| Comp. corr: | -8.0 | -8.0 |

Meniscus correction only= 0

Specific gravity of solids= 2.65
Specific gravity correction factor= 1.000
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

| Elapsed time, min | Temp, deg C | Actual reading | Corrected reading | K | Rm | Eff. depth | Diameter mm | Percent finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 20.5 | 22.0 | 14.0 | 0.0136 | 22.0 | 12.7 | 0.0342 | 22.7 |
| 5.00 | 20.6 | 20.0 | 12.0 | 0.0135 | 20.0 | 13.0 | 0.0219 | 19.4 |
| 15.00 | 20.6 | 19.5 | 11.5 | 0.0135 | 19.5 | 13.1 | 0.0127 | 18.6 |
| 30.00 | 20.8 | 17.5 | 9.5 | 0.0135 | 17.5 | 13.4 | 0.0090 | 15.4 |
| 60.00 | 20.9 | 17.0 | 9.0 | 0.0135 | 17.0 | 13.5 | 0.0064 | 14.6 |
| 250.00 | 21.8 | 15.0 | 7.0 | 0.0133 | 15.0 | 13.8 | 0.0031 | 11.3 |
| 1440.00 | 19.4 | 15.0 | 7.0 | 0.0137 | 15.0 | 13.8 | 0.0013 | 11.3 |

## Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL = 19.1 % SAND = 54.1
% SILT = 13.1 % CLAY = 13.7

$D_{85}$= 9.58 $D_{60}$= 1.14 $D_{50}$= 0.64
$D_{30}$= 0.12 $D_{15}$= 0.01

Leroy Bailey
MATERIALS ENGINEERING LABORATORY

# Thompson Engineering

JULY 9, 2000

CLIENT: STL SAVANNAH LABORATORIES
PROJECT: SAVANNAH #: S0-~~04089~~ 04125 08.11.00 AW

JOB #: 2000-00-0595
LAB #: 4248

**REPORT OF: LABORATORY DETERMINATION OF UNIT WEIGHTS, VOID RATIO, POROSITY, AND DEGREE SATURATION USCOE EM 1110-2-1906 APPENDIX II (VOLUMETRIC METHOD)**

**SAMPLE IDENTIFICATION: LIA-SS-12**

| DATES | TECHNICIAN |
|---|---|
| SAMPLED: 06/20/00 | SAMPLED: CLIENT |
| TESTED: 07/03/00 | TESTED: C. CRAIG |

.... LABORATORY RESULTS ....

| | |
|---|---|
| (a): SAMPLE HEIGHT (cm): | 7.112 |
| (b): SAMPLE DIAMETER (cm): | 3.556 |
| (c): SAMPLE AREA (cm2): | 9.931 |
| (d): SAMPLE VOLUME (cc): | 70.63 |
| (e): MASS OF WET SPECIMEN (g): | 101.0 |
| (f): MASS OF DRY SPECIMEN (g): | 89.5 |
| g): MASS OF CONTAINER (g): | 10.74 |
| (h): MASS OF CONTAINER & WET SPECIMEN (g): | 65.29 |
| (i): MASS OF CONTAINER & DRY SPECIMEN (g): | 59.08 |
| (j): MASS OF WATER (g): | 6.21 |
| (k): MASS OF DRY SPECIMEN (g): | 48.34 |
| (l): WATER CONTENT (%): | **12.85** |
| (m): WET DENSITY (PCF): | **89.24** |
| (n): DRY DENSITY (PCF): | **79.08** |

NOTE: THIS SAMPLE WAS RECIEVED IN A DISTURBED CONDITION AND WAS COMPACTED IN THE LABORATORY FOR DENSITY DETERMINATION. RESULTS ARE ONLY AN INDICATION OF, BUT NOT NECESSARILY REPRESENTATIVE OF, IN-SITU DENSITY.

Leroy Bailey
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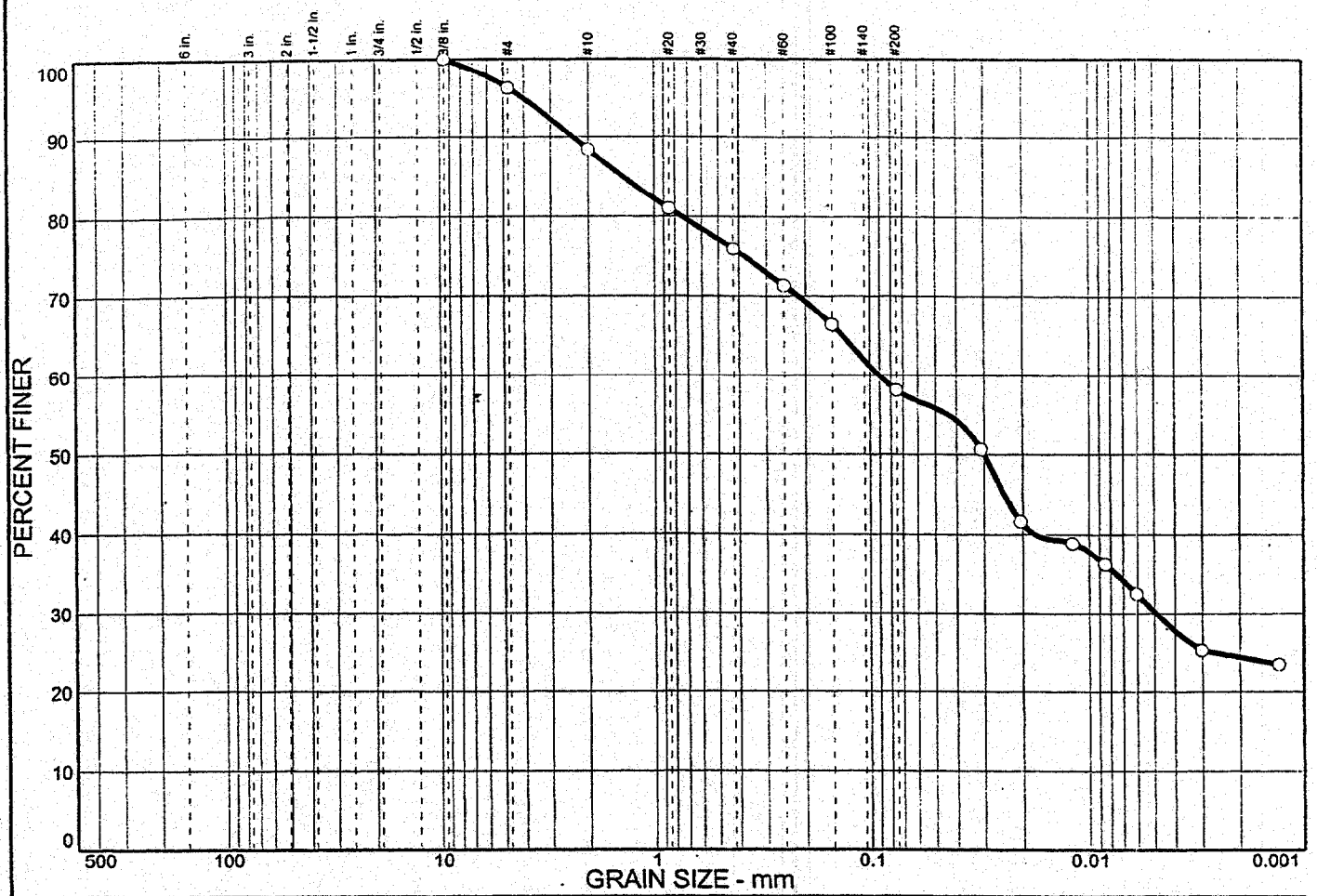
Corporate Office: 3707 Cottage Hill Rd. • P.O. Box 9637 • Mobile, AL 36691 • 334-666-2443 • Fax 334-666-6422

# Particle Size Distribution Report




| % COBBLES | % GRAVEL | % SAND | % SILT | % CLAY |
|---|---|---|---|---|
| 0.0 | 3.7 | 38.2 | 27.8 | 30.3 |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 in. | 100.0 | | |
| #4 | 96.3 | | |
| #10 | 88.4 | | |
| #20 | 81.0 | | |
| #40 | 75.9 | | |
| #60 | 71.3 | | |
| #100 | 66.4 | | |
| #200 | 58.1 | | |

* (no specification provided)

**Soil Description**

MEDIUM TO FINE SANDY CLAY, TRACE GRAVEL

**Atterberg Limits**

PL= --- LL= --- PI= ---

**Coefficients**

$D_{85}$= 1.39 $D_{60}$= 0.0907 $D_{50}$= 0.0300
$D_{30}$= 0.0049 $D_{15}$= $D_{10}$=
$C_u$= $C_c$=

**Classification**

USCS= --- AASHTO= ---

**Remarks**

**Sample No.:** LIA-SS-27 **Source of Sample:** **Date:** 07/09/00
**Location:** **Elev./Depth:**

**Thompson Engineering**

**Client:** STL SAVANNAH LABORATORIES
**Project:** SAVANNAH #: S0-~~04089~~ 04125 AW 08.11.00
**Project No:** 2000-00-0595 **Plate**

## GRAIN SIZE DISTRIBUTION TEST DATA

Client: STL SAVANNAH LABORATORIES
Project: SAVANNAH #: S0-04089
Project Number: 2000-00-0595

### Sample Data

Source:
Sample No.: LIA-SS-27
Elev. or Depth: Sample Length (in./cm.):
Location:
Description: MEDIUM TO FINE SANDY CLAY, TRACE GRAVEL
Date: 07/09/00 PL: - - - LL: - - - PI: - - -
USCS Classification: - - - AASHTO Classification: - - -
Testing Remarks:

### Mechanical Analysis Data

| | Initial |
|---|---|
| Dry sample and tare= | 75.53 |
| Tare = | 0.00 |
| Dry sample weight = | 75.53 |

Sample split on number 10 sieve
Split sample data:
Sample and tare = 48.90 Tare = .00 Sample weight = 48.90
Cumulative weight retained tare= .00
Tare for cumulative weight retained= .00

| Sieve | Cumul. Wt. retained | Percent finer |
|---|---|---|
| .375 inch | 0.00 | 100.0 |
| # 4 | 2.79 | 96.3 |
| # 10 | 8.76 | 88.4 |
| # 20 | 4.10 | 81.0 |
| # 40 | 6.91 | 75.9 |
| # 60 | 9.44 | 71.3 |
| # 100 | 12.16 | 66.4 |
| # 200 | 16.78 | 58.1 |

### Hydrometer Analysis Data

Separation sieve is #10
Percent -#10 based upon complete sample= 88.4
Weight of hydrometer sample: 50.05
Hygroscopic moisture correction:
Moist weight & tare = 20.87
Dry weight & tare = 20.66
Tare = 11.71
Hygroscopic moisture= 2.4 %
Calculated biased weight= 55.32
Table of composite correction values:

| Temp, deg C: | 19.0 | 23.0 |
|---|---|---|
| Comp. corr: | -8.0 | -8.0 |

Meniscus correction only= 0
Specific gravity of solids= 2.65
Specific gravity correction factor= 1.000

Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

| Elapsed time, min | Temp, deg C | Actual reading | Corrected reading | K | Rm | Eff. depth | Diameter mm | Percent finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 20.5 | 36.0 | 28.0 | 0.0136 | 36.0 | 10.4 | 0.0309 | 50.6 |
| 5.00 | 20.2 | 31.0 | 23.0 | 0.0136 | 31.0 | 11.2 | 0.0204 | 41.6 |
| 15.00 | 20.6 | 29.5 | 21.5 | 0.0135 | 29.5 | 11.5 | 0.0118 | 38.9 |
| 30.00 | 20.8 | 28.0 | 20.0 | 0.0135 | 28.0 | 11.7 | 0.0084 | 36.2 |
| 60.00 | 20.8 | 26.0 | 18.0 | 0.0135 | 26.0 | 12.0 | 0.0060 | 32.5 |
| 250.00 | 21.8 | 22.0 | 14.0 | 0.0133 | 22.0 | 12.7 | 0.0030 | 25.3 |
| 1440.00 | 19.2 | 21.0 | 13.0 | 0.0138 | 21.0 | 12.9 | 0.0013 | 23.5 |

## Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL = 3.7 % SAND = 38.2
% SILT = 27.8 % CLAY = 30.3

$D_{85}$= 1.39 $D_{60}$= 0.09 $D_{50}$= 0.03
$D_{30}$= 0.00

Leroy Bayley
MATERIALS ENGINEERING LABORATORY

# Thompson Engineering

JULY 9, 2000

CLIENT: STL SAVANNAH LABORATORIES AW
PROJECT: SAVANNAH #: S0-~~04089~~ 04125 08.11.00

JOB #: 2000-00-0595
LAB #: 4253

**REPORT OF: LABORATORY DETERMINATION OF UNIT WEIGHTS, VOID RATIO, POROSITY, AND DEGREE SATURATION USCOE EM 1110-2-1906 APPENDIX II (VOLUMETRIC METHOD)**

**SAMPLE IDENTIFICATION: LIA-SS-27**

| DATES | TECHNICIAN |
|---|---|
| SAMPLED: 06/20/00 | SAMPLED: CLIENT |
| TESTED: 07/03/00 | TESTED: C. CRAIG |

.... LABORATORY RESULTS ....

| | |
|---|---|
| (a): SAMPLE HEIGHT (cm): | 7.112 |
| (b): SAMPLE DIAMETER (cm): | 3.556 |
| (c): SAMPLE AREA (cm2): | 9.931 |
| (d): SAMPLE VOLUME (cc): | 70.63 |
| (e): MASS OF WET SPECIMEN (g): | 96.3 |
| (f): MASS OF DRY SPECIMEN (g): | 87.8 |
| (g): MASS OF CONTAINER (g): | 10.93 |
| (h): MASS OF CONTAINER & WET SPECIMEN (g): | 60.66 |
| (i): MASS OF CONTAINER & DRY SPECIMEN (g): | 56.31 |
| (j): MASS OF WATER (g): | 4.35 |
| (k): MASS OF DRY SPECIMEN (g): | 45.38 |
| (l): WATER CONTENT (%): | **9.59** |
| (m): WET DENSITY (PCF): | **85.05** |
| (n): DRY DENSITY (PCF): | **77.61** |

NOTE: THIS SAMPLE WAS RECIEVED IN A DISTURBED CONDITION AND WAS COMPACTED IN THE LABORATORY FOR DENSITY DETERMINATION. RESULTS ARE ONLY AN INDICATION OF, BUT NOT NECESSARILY REPRESENTATIVE OF, IN-SITU DENSITY.

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