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ST JULIENS CREEK  
5090.3a

FINAL TECHNICAL MEMORANDUM CONFIRMATION SAMPLING REPORT FOR THE SITE 5  
REMOVAL ACTION ST JULIENS CREEK ANNEX VA  
12/1/2012  
CH2M HILL



Final Technical Memorandum

## Confirmation Sampling Report for the Site 5 Removal Action

St. Juliens Creek Annex  
Chesapeake, Virginia

December 2012

# Confirmation Sampling Report for the Site 5 Removal Action, St. Juliens Creek Annex, Chesapeake, Virginia

PREPARED FOR: St. Juliens Creek Annex Tier I Partnering Team

PREPARED BY: CH2M HILL

DATE: December 6, 2012

## 1 Introduction

This technical memorandum summarizes the post-excavation confirmation sampling conducted to verify that the extent of the non-time-critical removal action conducted at St. Juliens Creek Annex (SJCA) Installation Restoration Program (IRP) Site 5 resulted in concentrations protective of human health. The confirmation sampling was performed in accordance with the *Final Technical Memorandum Confirmation Sampling Work Plan for Site 5 Removal Action Phases 1 through 3* (CH2M HILL, 2007c), which is an addendum to the *Final Work Plan for Delineation of Hot Spot Removal Areas at Site 5* (CH2M HILL, 2007b), with the exception of a minor deviation discussed in Section 3.

The removal action activities were conducted under AGVIQ-CH2M HILL Joint Venture II (JV II) and AGVIQ-CH2M HILL Joint Venture III (JV III) contracts. The confirmation sampling activities were conducted under the Navy Comprehensive Long-term Environmental Action Navy (CLEAN) contract N62470-02-D-3052, Contract Task Order (CTO) 139, and contract N62470-08-D-1000, CTO 063. This memorandum was prepared under the Navy CLEAN Contract N62470-11-D-8012, CTO WE05.

## 2 Site Description and Background

Site 5 is the former Burning Grounds, consisting of approximately 23 acres located in the northeastern portion of SJCA (**Figure 1**). Prior to initiating the removal action, the site consisted of an open field with a wetland in the central portion and a forested area in the southern portion. A significant portion of the site's southwestern area was covered with a layer of gravel. The Site 5 topography was generally level and sloped gently toward Blows Creek. Groundwater flow followed the topography and flowed toward Blows Creek. Vegetated drainage ditches (1 to 3 feet deep) reduced runoff to the site from adjacent areas and directed surface runoff south toward Blows Creek. Site 6, located within the east-central portion of Site 5 (**Figure 1**), is a former IRP site that was closed under a No Further Action Record of Decision in September 2003 after a removal action.

Operations began at the Burning Grounds in the 1930s when waste ordnance materials, including black powder (a mixture of charcoal, nitrate, and sulfur), smokeless powder (nitrocellulose), Explosive D (ammonium picrate), and Composition A-3 (which contains cyclotrimethylenetrinitramine [RDX] and wax), were disposed of by open burning on three main pads. Tetryl, trinitrotoluene, fuzes, solvents, paint sludge, pesticides, and various types of refuse were also disposed of. The amount of ordnance disposed of varied from year to year, and there was insufficient information to calculate the waste volume.

In mid-1977, the Burning Grounds surface was used for facility-wide ordnance and equipment decontamination. The decontamination process included filling equipment from buildings with oil and straw and igniting the straw to burn the explosives residue from off the equipment. Afterwards, the ground surface was reportedly covered with oil and straw and burned. The top 6 inches of soil were then disced, and the ground surface was covered with oil and straw and burned again. After the decontamination was completed, the Naval Ammunition Production Engineering Center collected samples for chemical analyses and certified decontamination; however, the level of decontamination was not specified.

Several environmental investigations, including a Remedial Investigation (RI) (CH2M HILL, 2003a) and an Expanded RI (CH2M HILL, 2006), were conducted in order to characterize the nature and extent of contamination at Site 5. The RI and Expanded RI human health and ecological risk assessments concluded that there was potential risk to human and ecological receptors from exposure to chemicals in soil (primarily metals and pesticides). Based on the RI and Expanded RI results, an Engineering Evaluation/Cost Analysis (EE/CA) (CH2M HILL, 2007a) was conducted and included identification and evaluation of removal action alternatives to mitigate the potential risks identified. The recommended alternative included excavation of soil, sediment, and waste; disposal characterization; disposal of soil, sediment, and waste; and site restoration.

The removal action at Site 5 consisted of the excavation, removal, backfill and restoration of the waste/burnt soil area, three isolated surface soil hot spots, and additional surface soil and sediment areas that present a risk to human health and ecological receptors as outlined in the Site 5 EE/CA (CH2M HILL, 2007a) (**Figure 2**). Within the EE/CA, risk-based cleanup goals were developed to ensure sufficient removal of the areas determined to pose risks to human health. Ecological cleanup goals were not developed because the site-wide average concentrations of ecological chemicals of potential concern remaining in place in surface soil and sediment following implementation of the removal action reduce the potential risks to an acceptable level, based on the approach described in the EE/CA. Therefore, to verify that the extent of the removal action resulted in concentrations protective of human health, confirmation samples were to be collected from the areas that posed human health risks, areas that included the waste/burnt soil area.

## 3 Field Investigation Activities

### 3.1 Field Preparation

Prior to initiating intrusive activities, all sampling locations were cleared for utilities by a third-party subcontractor provided by JV II. Due to the historical use of Site 5, there was a potential for encountering munitions and explosives of concern (MEC)/material potentially presenting an explosive hazard (MPPEH) at the site. Therefore, field activities were conducted in accordance with the Explosive Safety Submission (ESS) developed for the waste/burnt soil area and adjacent areas (CH2M HILL, 2010), and the ESS Determination Response (NOSSA, 2007) was developed for the areas not adjacent to the waste/burnt soil area. In accordance with the ESS, all sampling personnel participated in recognize, retreat, and report training, received MEC/MPPEH safety briefings from JV II/JV III unexploded ordnance (UXO) personnel, and followed the JV II/JV III explosives safety procedures, which included being escorted by a JV II/JV III UXO Technician for intrusive activities. In accordance with the ESS Determination Response, the sampling personnel practiced anomaly avoidance. No MEC/MPPEH was encountered during the confirmation sampling field activities.

### 3.2 Soil Sampling

To verify that the vertical extent of the removal resulted in concentrations protective of human health, confirmation samples were to be collected from the floor of the waste/burnt soil and human health risk removal areas shown on **Figure 2**. During the removal action, additional areas of waste/burnt soil were identified in the human health and ecological risk-based removal areas east of the initial waste/burnt soil area and the boundary of the waste/burnt soil area was extended as shown on **Figure 3**, which required collecting an additional 13 confirmation floor samples within that area. One five-point composite confirmation floor sample was collected per hot spot area and within each of the approximate 75- by 75-foot grid cells, as defined in the confirmation sampling work plan (CH2M HILL, 2007c), within the waste/burnt soil and additional surface soil and sediment human health risk-based removal areas (**Figure 3**). The samples were collected from 0 to 6 inches below the floor of the excavation.

To verify that the horizontal extent of the removal conducted in the waste/burnt soil area resulted in concentrations protective of human health, 10 wall samples were collected around the perimeter of the waste/burnt soil area (**Figure 3**). Wall samples were not collected along the perimeter of the waste/burnt soil area adjacent to the human health or ecological risk-based areas, as those areas were also identified for removal. The horizontal extents of the human health and ecological risk-based removal areas were defined using existing

sample data within the Site 5 EE/CA (CH2M HILL, 2007a). The sample interval of the wall samples was dependent upon the excavation depth in the area in which they were collected and consisted of a composite of the entire excavation depth (**Table 1**).

The soil for the samples was collected using disposable trowels, then placed on poly sheeting and homogenized. All organic material (roots and grasses) and gravel were removed from the soil prior to placement into laboratory-prepared sample containers. The sample containers were packed on ice for overnight shipment to a pre-approved offsite laboratory for analysis of arsenic, copper, and/or lead, depending on the constituents that posed human health risk in the area in which the sample was collected. The field notes for the sampling events are provided in **Attachment A**.

### 3.3 Quality Assurance/Quality Control Sampling

Quality assurance/quality control (QA/QC) samples were collected in accordance with Department of the Navy (Navy) and CH2M HILL protocols and the *Final Master Project Plan, St. Juliens Creek Annex, Chesapeake, Virginia* (CH2M HILL, 2003b). QA/QC samples consisted of field blanks, equipment blanks, duplicates, and matrix spike/matrix spike duplicates. Additionally, a temperature blank was included in each cooler used to transport samples to the laboratory.

### 3.4 Sampling Equipment Decontamination

Because samples were collected with disposable equipment, sampling equipment decontamination was not necessary. Excess soil was returned to the area that it was collected from. The poly sheeting and trowel were rinsed with water over the area that the sample was collected from prior to disposal as solid waste.

## 4 Data Results and Evaluation

Analytical data reports were submitted in hard copy and electronic format to the CH2M HILL internal data validator. Procedures outlined in the *Region III Modifications to Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses* (USEPA, 1993) were used for validation, as applicable. The complete analytical results are provided in **Attachment B**. The data validation summary reports are provided in **Attachment C**.

The analytical results for the confirmation samples were compared against the cleanup goals established in the EE/CA (22 milligrams per kilogram [mg/kg] for arsenic, 3,043 mg/kg for copper, and 400 mg/kg for lead<sup>[1]</sup>). Arsenic concentrations in three floor samples (CSF06, CSF46, and CSF47) and lead concentrations in two floor samples (CSF06 and CSF15) exceeded their respective cleanup goal (**Figure 3** and **Table 2**). No exceedances of copper were reported.

The 95 percent upper confidence limit (UCL) of the mean of all of the arsenic and lead analytical results was calculated and compared to the cleanup goals (**Table 3**). The 95 percent UCL of the mean of the arsenic and lead concentrations was 13.7 mg/kg and 89.7 mg/kg, respectively (**Table 3**), both of which are below their respective cleanup goals (**Table 2**).

## 5 Conclusions and Recommendations

Concentrations of copper in the confirmation soil samples were all below the copper cleanup goal. Arsenic concentrations in three of the confirmation floor samples (CSF06, CSF46, and CSF47) and lead concentrations in two of the confirmation floor samples (CSF06 and CSF15) exceeded their respective cleanup goal. However, the 95 percent UCL of the means of the arsenic and lead concentrations were below their respective cleanup goals. The concentrations of arsenic, copper, and lead in all of the confirmation wall samples were below their respective cleanup goals. Therefore, the confirmation samples have verified that the vertical and horizontal extent of the removal action is protective of human health.

Because the concentrations (either individual constituent results or 95 percent UCL of the means of all of the results of a constituent) in the soil remaining at Site 5 following the removal action are below the cleanup goals,

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[1] Average site-wide concentration

the removal action has been conducted to the extent that is protective of human health, and no additional confirmation samples or excavation is recommended. The confirmation sampling data will be referenced in the Site 5 Construction Completion Report to provide documentation that the extent of the removal action resulted in concentrations protective of human health, and used to support a No Further Action decision in the Site 5 Proposed Plan and Record of Decision.

## 6 References

- CH2M HILL, 2003a. *Final Remedial Investigation/Human Health Risk Assessment/ Ecological Risk Assessment for Sites 3, 4, 5, and 6, St. Juliens Creek Annex, Chesapeake, Virginia*. March.
- CH2M HILL, 2003b. *Final Master Project Plan, St. Juliens Creek Annex, Chesapeake, Virginia*. July.
- CH2M HILL, 2006. *Final Expanded Remedial Investigation/Human Health Risk Assessment/ Ecological Risk Assessment for Site 5, St. Juliens Creek Annex, Chesapeake, Virginia*. June.
- CH2M HILL, 2007a. *Final Engineering Evaluation/Cost Analysis for Site 5 Waste/Burnt Soil Area and Impacted Surface Soil and Sediment Areas, St. Juliens Creek Annex, Chesapeake, Virginia*. February.
- CH2M HILL, 2007b. *Final Work Plan for Delineation of Hot Spot Removal Areas at Site 5, St. Juliens Creek Annex, Chesapeake, Virginia*. May.
- CH2M HILL, 2007c. *Final Technical Memorandum Confirmation Sampling Work Plan for Site 5 Removal Action Phases 1 through 3, Addendum to Work Plan for Delineation of Hot Spot Removal Areas at Site 5, St. Juliens Creek Annex, Chesapeake, Virginia*. November.
- CH2M HILL, 2010. *Explosives Safety Submission for Site 5 Waste/Burnt Soil Area and Adjacent Areas. St. Juliens Creek Annex, Chesapeake, Virginia*. March.
- Naval Ordnance Safety and Security Activity (NOSSA), 2007. *Explosives Safety Submission (ESS) Determination for Installation Restoration Program Site 5, St. Juliens Creek Annex, Chesapeake, Virginia*. February.
- United States Environmental Protection Agency (USEPA), 1993. *Region III Modifications to Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses*. April.

**Tables**

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**Table 1**

Confirmation Wall Sample Depths

*Confirmation Sampling Report for the Site 5 Removal Action*

*St. Julens Creek Annex*

*Chesapeake, Virginia*

<b>Wall Sample ID</b>	<b>Sample Depth (ft bgs)</b>
CSW04	0-2
CSW05	0-2
CSW06	0-3
CSW09	0-3
CSW19	0-2
CSW23	0-2
CSW27	0-3
CSW31	0-2
CSW33	0-2
CSW35	0-2

**Notes:**

ft - feet

bgs - below ground surface

Table 2  
 Analytical Data  
 Confirmation Sampling Report for the Site 5 Removal Action  
 St. Juliens Creek Annex  
 Chesapeake, Virginia

Sample ID		SJS05-CS01	SJS05-CS02	SJS05-CSF03	SJS05-CSF04	SJS05-CSF05	SJS05-CSF06	SJS05-CSF07	SJS05-CSF08	SJS05-CSF09	SJS05-CSF10	SJS05-CSF11	SJS05-CSF12	SJS05-CSF13	SJS05-CSF14	SJS05-CSF15
<b>Total Metals (MG/KG)</b>	<b>CLEANUP GOALS (MG/KG)</b>															
Arsenic	22	NS	NA	13.5	10	14.4	24.2	21.6 J	10.3	9.4 K	15	11.9	10.2	1.3 L	8.6	11.5
Copper	3,043	NS	40.7	52.6 K	8.3	74	230	34.6 J	17	109	81.6	60.2	64.3	14.9 K	50.3	192
Lead	400	167	56.4 L	127	14.2	91.5	406	61.4	41.1	255	109	148	132	17.1	156	412

**Notes:**  
 B - Analyte not detected above the level reported in blanks  
 J - Analyte present, value may or may not be accurate or precise  
 K - Analyte present, value may be biased high, value may be lower  
 L - Analyte present, value may be biased low, value may be higher  
 NS - Not analyzed  
 MG/KG - Milligrams per kilogram  
 Shading indicates exceedance of cleanup goal

Table 2  
 Analytical Data  
 Confirmation Sampling Report for the Site 5 Removal Action  
 St. Juliens Creek Annex  
 Chesapeake, Virginia

Sample ID		SJS05-CSF16	SJS05-CSF17	SJS05-CSF18	SJS05-CSF19	SJS05-CSF20	SJS05-CSF21	SJS05-CSF22	SJS05-CSF23	SJS05-CSF24	SJS05-CSF25	SJS05-CSF26	SJS05-CSF27	SJS05-CSF28	SJS05-CSF29	SJS05-CSF30
<b>Total Metals (MG/KG)</b>	<b>CLEANUP GOALS (MG/KG)</b>															
Arsenic	22	14.2	10.5	11.4	11.2	11.7	12.1 J	4.8	9.5	1.6	10.4	14.3	12.6	7	14.4	7.4
Copper	3,043	53.5	20	67.2	23.2	25.7	29.3 J	3.6	15.8	4.8	13.2	40.1	26.1	38.6	47.6	11.1
Lead	400	82.8	28	78.3	19.6	30	40.6 J	10.2	26.2	13.3	20.5	64.2	42.1	40.8	58	28.8

**Notes:**  
 B - Analyte not detected above the level reported in blanks  
 J - Analyte present, value may or may not be accurate or precise  
 K - Analyte present, value may be biased high, value may be lower  
 L - Analyte present, value may be biased low, value may be higher  
 NS - Not analyzed  
 MG/KG - Milligrams per kilogram  
 Shading indicates exceedance of cleanup goal

Table 2  
 Analytical Data  
 Confirmation Sampling Report for the Site 5 Removal Action  
 St. Juliens Creek Annex  
 Chesapeake, Virginia

Sample ID		SJS05-CSF31	SJS05-CSF32	SJS05-CSF33	SJS05-CSF34	SJS05-CSF35	SJS05-CSF36	SJS05-CSF37	SJS05-CSF38	SJS05-CSF39	SJS05-CSF40	SJS05-CSF41	SJS05-CSF42	SJS05-CSF43	SJS05-CSF44	SJS05-CSF45
<b>Total Metals (MG/KG)</b>	<b>CLEANUP GOALS (MG/KG)</b>															
Arsenic	22	5.4	9.2	9.1	13	8.6	5.3	1.5 L	11.3	1.6 K	10.9	1.3	14.1	1.6	3.7	6.3
Copper	3,043	9.9	25.4	14.4	34.2	22.1	16.7	10.1 L	78.8	4.9 K	18.8	10.1 J	76.7	2 J	NS	NS
Lead	400	21.2	111	36	67.9	46.2 J	27	11.2 L	104	7 K	35.7	11.6 J	114	6.9	NS	NS

**Notes:**  
 B - Analyte not detected above the level reported in blanks  
 J - Analyte present, value may or may not be accurate or precise  
 K - Analyte present, value may be biased high, value may be lower  
 L - Analyte present, value may be biased low, value may be higher  
 NS - Not analyzed  
 MG/KG - Milligrams per kilogram  
 Shading indicates exceedance of cleanup goal

Table 2  
 Analytical Data  
 Confirmation Sampling Report for the Site 5 Removal Action  
 St. Juliens Creek Annex  
 Chesapeake, Virginia

Sample ID		SJS05-CSF46	SJS05-CSF47	SJS05-CSF48	SJS05-CSF49	SJS05-CSF50	SJS05-CSF51	SJS05-CSF52	SJS05-CSF53	SJS05-CSF54	SJS05-CSF55	SJS05-CSF56	SJS05-CSF57	SJS05-CSF58	SJS05-CSW04	SJS05-CSW05
<b>Total Metals (MG/KG)</b>	<b>CLEANUP GOALS (MG/KG)</b>															
Arsenic	22	40.5	22.9	9	5.9	7	21.1	10	8.5	4.2	7.8 K	15.5	10.3	13.6	4.6	12.7
Copper	3,043	240	163	35.4	23.4	136 J	142	44	41	14.5	122 K	33.5	21.4	39	24	59
Lead	400	286	134	100	44.4	37.6	126	45.6	62.8	19.6	86.5	48.6	25.8 J	49.4	47.5	75.4

**Notes:**  
 B - Analyte not detected above the level reported in blanks  
 J - Analyte present, value may or may not be accurate or precise  
 K - Analyte present, value may be biased high, value may be lower  
 L - Analyte present, value may be biased low, value may be higher  
 NS - Not analyzed  
 MG/KG - Milligrams per kilogram  
 Shading indicates exceedance of cleanup goal

Table 2  
 Analytical Data  
 Confirmation Sampling Report for the Site 5 Removal Action  
 St. Juliens Creek Annex  
 Chesapeake, Virginia

Sample ID		SJS05-CSW06	SJS05-CSW09	SJS05-CSW19	SJS05-CSW23	SJS05-CSW27	SJS05-CSW31	SJS05-CSW33	SJS05-CSW35
<b>Total Metals (MG/KG)</b>	<b>CLEANUP GOALS (MG/KG)</b>								
Arsenic	22	5	8.9	1.4	0.67 J	15.1	1.8	7.5	15.6 K
Copper	3,043	54.1	32	1.8 J	2.6 B	57.1	3.1	9.1	26.8 K
Lead	400	35.6	61.6	6.8	5.8	76.1	6.5	10.5	64.4

**Notes:**  
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 K - Analyte present, value may be biased high, value may be lower  
 L - Analyte present, value may be biased low, value may be higher  
 NS - Not analyzed  
 MG/KG - Milligrams per kilogram  
 Shading indicates exceedance of cleanup goal

**Table 3**

Calculated Upper Confidence Limits of Means

Confirmation Sampling Report for the *Site 5 Removal Action*

*St. Jullens Creek Annex*

*Chesapeake, Virginia*

Parameter	Units	Number of Detects	Number of Analyses	Frequency of Detects	Percent Detects	Minimum Detected Value	Maximum Detected Value	Recommended UCL	Recommended UCL Basis
Arsenic	mg/Kg	66	66	66/66	100%	0.53	40.5	13.7	95% Chebyshev (Mean, Std Dev) UCL
Lead	mg/Kg	66	66	66/66	100%	2.8	412	89.7	95% Approximate Gamma UCL

**Notes:**

UCL - Upper Confidence Limit

MG/KG - Milligrams per kilogram

**Figures**

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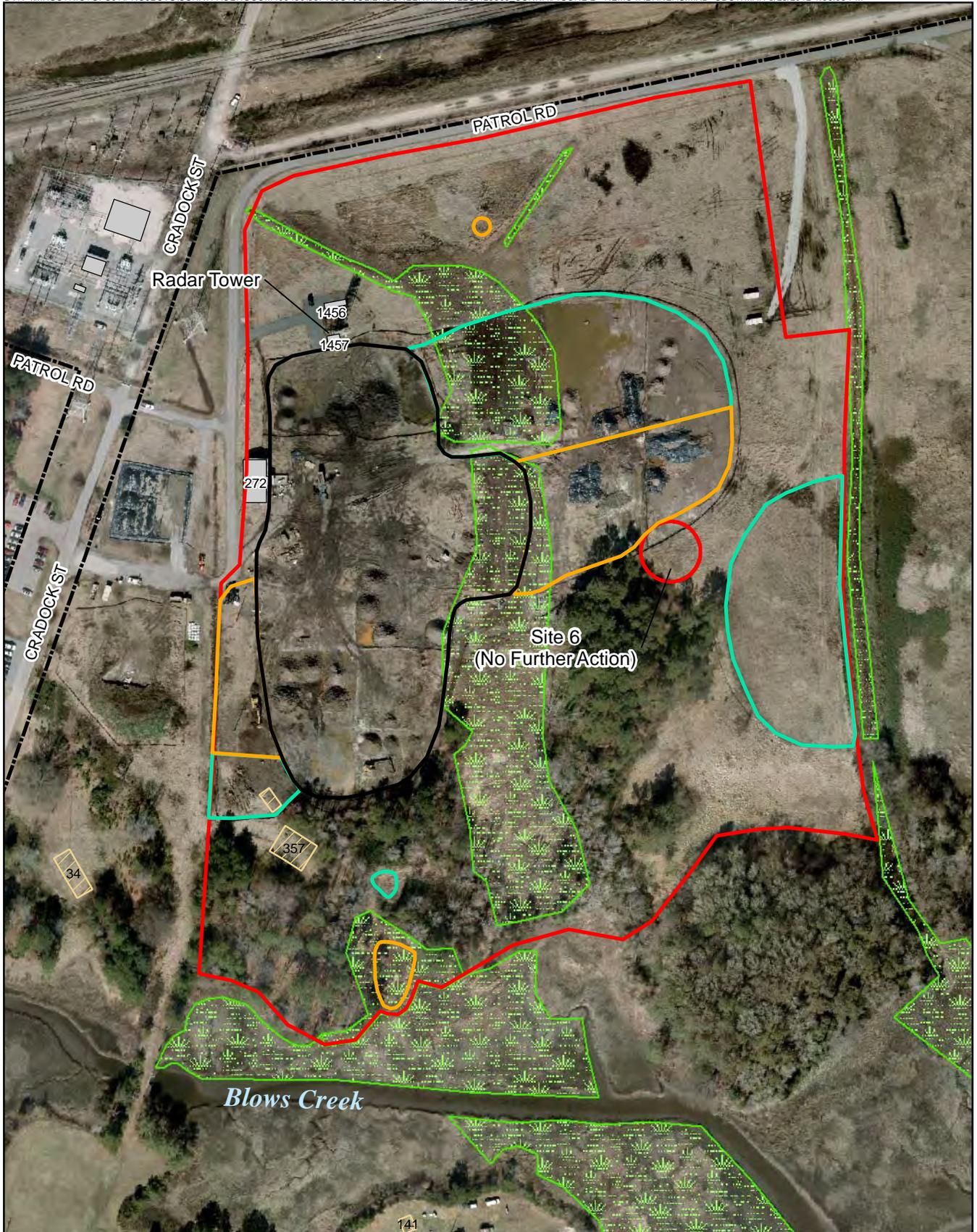
**Legend**

-  St. Juliens Creek Annex Boundary
-  Site 5 Boundary



0 450 900  
Feet

Figure 1  
Site Location  
Confirmation Sampling Report for the Site 5 Removal Action  
St. Juliens Creek Annex  
Chesapeake, Virginia



**Legend**

- SJCA Boundary
- Site 5 Boundary
- Site 5 Waste/Burnt Soil Area
- Wetland Area
- Demolished Building
- Building
- Human Health Risk-Based Removal Area
- Ecological Risk-Based Removal Area

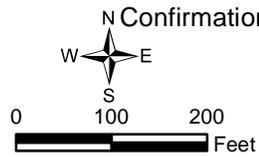
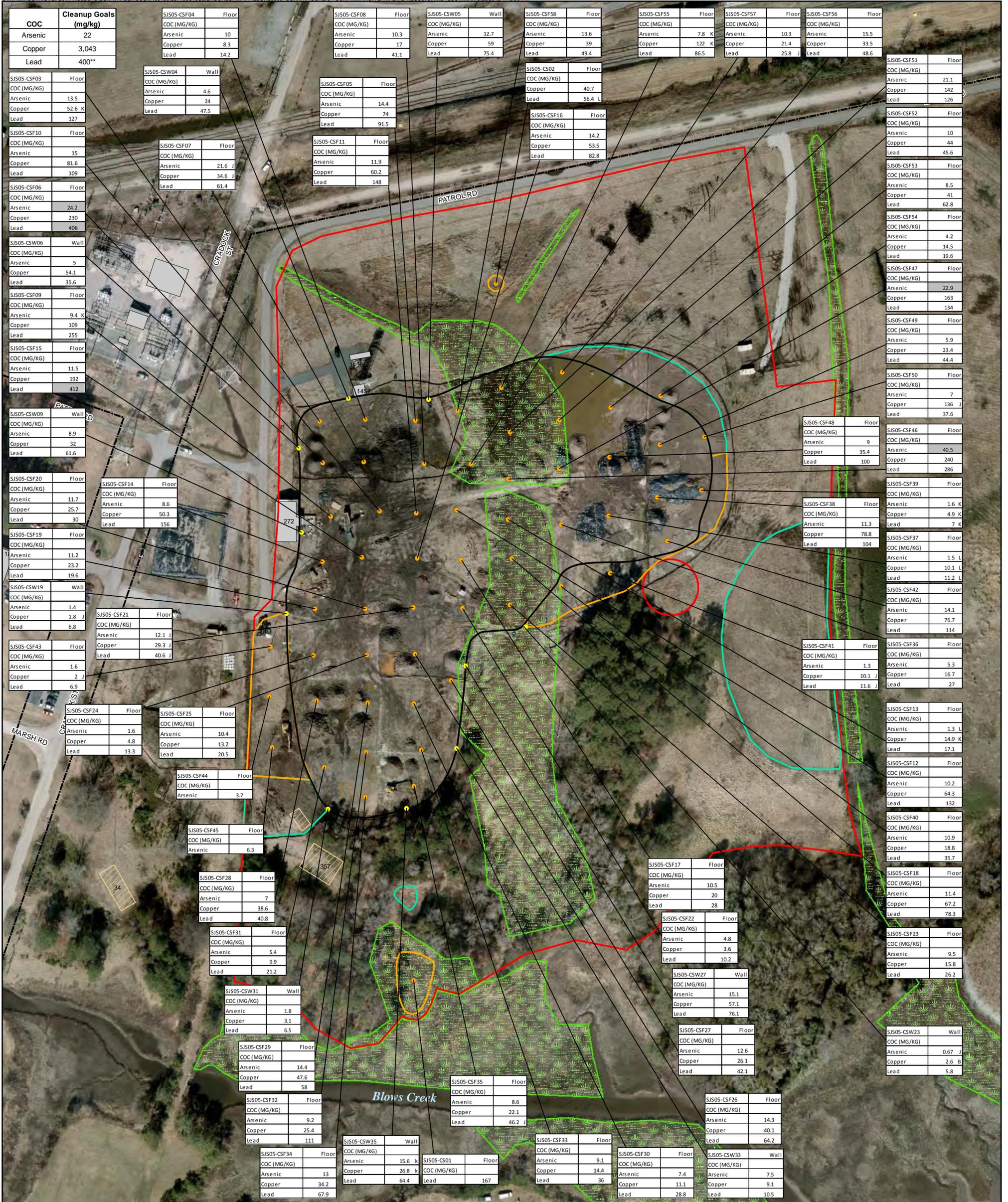


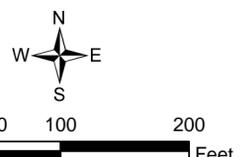
Figure 2  
 Site 5 Removal Areas  
 N Confirmation Sampling Report for the  
 Site 5 Removal Action  
 St. Juliens Creek Annex  
 Chesapeake, Virginia



**Legend**

- Floor Confirmation Sample
- Wall Confirmation Sample
- ▭ SJCA Boundary
- ▭ Site 5 Boundary
- ▭ Site 5 Waste/Burnt Soil Area
- ▭ Building
- ▭ Demolished Building
- ▭ Human Health Risk-Based Removal Areas
- ▭ Ecological Risk-Based Removal Areas
- ▭ Delineated Wetland Boundary

**Notes:**  
 B- Analyte not detected above the level reported in blanks  
 J- Analyte present, value may or may not be accurate or precise  
 K- Analyte present, value may be biased high, value may be lower  
 L- Analyte present, value may be biased low, value may be higher  
 COC - Constituents of concern  
 MG/KG - milligram per kilogram  
 \*\* Average site-wide concentration  
 Shading indicates exceedance of cleanup goal



**Figure 3**  
 Confirmation Sampling Results  
 Confirmation Sampling Report for the  
 Site 5 Removal Action  
 St. Juliens Creek Annex  
 Chesapeake, Virginia

**Attachment A**  
**Field Notes**

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1330 Arrive NWSY Pass office & meet IDW sub to get temp base pass.

1345 Arrive SJCA Site 2 IDW staging area.

Field Crew - A. Jones (CH2M Hill)

Weather - Sunny & hot (85°F)

Objective - Load sites 4 & 21 IDW drum for offsite disposal and collect soil confirmation samples at Site 5

Wait Bell onsite to sign manifest.

1350 A. Jones conducts H&S briefing & reads AHA

1400 IDW sub & Wait Bell offsite. IDW drum offsite.

1405 On site 5. Sign in at Agvia trailer.

K. Riggs conducts H&S Briefing: Bio. hazards & PPE.

1415 Prep for sample collection at hot spot SJS05-SS19.

1425 Collect soil confirmation sample.

[SJS05-CS01-08C] → for total lead.

5-pt composite sample collected w/ clean disposable plastic trowel. GPS coordinates collected from each of the 5 comp. sample collection pts.

(08) 8/14/08

Location SJCA Site 5 Date 8/14/08  
 Project / Client Site 5 Soil Confirmation Samp.

- 1520 - Collect soil confirmation sample  
~~SJS05-C502-08C~~ for lead & copper  
 from Hot Spot SJS05-SS166
- 1525 - Collect duplicate soil confirmation sample  
~~SJS05-C502-08C-P~~ for lead & copper
- 1535 - Collect GPS coordinates from each 5-pt  
 sample location within Hot Spot removed  
 area.
- 1540 - Collect fieldblank ~~SJS05-C502-08~~ of  
~~SJS05-FB081408~~ for total lead & copper
- 1545 - Collect fieldblank ~~SJS05-EB081408~~ for  
 total lead & copper. Sample collected by  
 pouring lab DI water over clean  
 disposable plastic trowel + inside of.
- 1555 - Clean up & sign out at Agvix trailer.
- 1600 - Offsite to pack & ship cooler.

*Adriana J. J. J.*  
 8/14/08



4

Location St. Juliens Creek Date 7/18/11  
 Project / Client Soil Confirmation Sampling  
at Site 5

- 1700 Start to sample ~~ID~~ SJS05-CS03  
 Point ID 12123840.99 (E)  
3456006.61 (N)
- 1710 Collect SJS05-CSFD3-11C  
 composite sample
- ~~1720 Collected SJS05-CSW06-11E~~  
SJS05-CS03-11C-MS  
SJS05-CS03-11C-SD
- 1720 Collected SJS05-CSW06-11C  
 Point ID 3455954.12 (N)  
12123770.54 (E)
- ~~1730 E~~
- 1730 Collected SJS05-FB071811
- 1820 Arrived back at VBO office  
 for packing and shipping
- 1900 Ship 1 cooler Priority Overnight  
 to lab.
- 1915 End of Day

*D. Miller*

5

Location St. Juliens Creek Date 7/20/11  
 Project / Client Soil Confirmation Sampling  
Site 5

- Team: D. Miller (CH2M Hill)  
T. Stewart (CH2M Hill)
- Objective: To conduct soil  
 composite samples.
- Weather: High upper 90°F
- 10:30 Arrive on Site
- 10:35 Check in at trailer
- 10:40 Health and Safety  
 Tailgate
- 11:00 Began stake out and  
 sampling Grid K and I  
 # 31
- GPS Coordinates for points
- ~~# 1 NW point~~ NW point from center:  
3455635.42' (N)  
12123797.73' (E)
- # 2 SW point from center:  
3455666.65' (N)  
12123806.65' (E)
- # 3 SE point from center  
3455573.24' (N)  
12123817.05' (E)

6

Location St. Julians Creek Date 7/20/11  
 Project / Client Soil Confirmation Sampling  
at Site 5

#4 NE point from center

3455626.19' (N)

12123832.64' (E)

#5 Center Point

3455613.52' (N)

12123808.33' (E)

1145 Collect SJS05-CSF31-11C

Move to wall sample at  
 point #31 Grid I+K.

GPS Coordinates:

3455525.32' (N)

12123815.87' (E)

1150 Collect SJS05-CSW31-11C

1200 Move to sample #34 in  
 Grid K

GPS Coordinates

#1 NE point

3455557.20' (N)

12123911.74' (E)

#2 NW point

3455573.12' (N)

12123881.98' (E)

Location St. Julians Creek Date 7/20/11  
 Project / Client Soil Confirmation Sampling  
at Site 5

#3 SW point ~~344~~ <sup>SW</sup>

345557.44' (N)

12123868.59' (E)

#4 SE point

3455540.19' (N)

12123902.13' (E)

Center Sample point

3455556.82' (N)

12123889.27' (E)

1210 Sample collected SJS05-CSF34-11C

Move to sample #32 in Grid K

GPS coordinates:

#1 SW point

3455608.50' (N)

12123887.84' (E)

#2 SE point

3455607.66' (N)

12123900.39' (E)

#3 NE point

3455632.77' (N)

12123901.23' (E)

#4 NW Point

3455631.96' (N)

12123885.18' (E)

8 Location St. Juliens Creek Date 7/20/11  
Project / Client Soil Confirmation Sampling  
at Site 5

Center point for # 32

3455617.94' (N)

12123896.463' (E)

1230 Collected sample STSD5-CSE32-11C

1245 Move over to sample # 35

located in Grid L

GPS Coordinates:

#1 ~~SW~~ point NW point

3455556.94' (N)

12123928.85' (E)

#2 NE point

3455560.29' (N)

12123946.42' (E)

#3 SE point

3455548.57' (N)

12123945.59' (E)

#4 SW Point

3455543.13' (N)

12123931.70' (E)

Center Point

3455552.68' (N)

12123937.43' (E)

9 Location St. Juliens Creek Date 7/20/11  
Project / Client Soil Confirmation Sampling  
at Site 5

#35 ~~Walk~~ Sample Coordinates

1310 Collected STSD5-CSE33-11C

1320 Break due to heat

1330 Moved to sample # 33

in Grid J+L

1320 Collected STSD5-CSW33-11C

GPS Coordinates for Sample #33

#1 NW point

3455612.27ft (N)

12123937.60' (E)

#2 SW point

3455595.87' (N)

12123937.60' (E)

#3 NE Point

3455608.27' (N)

12123955.34' (E)

#4 SE point

3455592.19' (N)

12123947.31' (E)

Center point

3455599.89' (N)

12123940.95' (E)

1320 Collected STSD5-CSW35-11C

10 Location St. Juliens Creek Date 7/20/11  
Project / Client Soil Confirmation Sampling  
at Site 5

1330 Collected Sample

ST505-CSF35-11C

1335 Field Duplicated collected

ST505-CSF35-11C-P

1415 Collected Sample

ST505-CSF28-11C

1430 Collected Sample

ST505-CSF29-11C

1500 Collected Sample

ST505-CSF30-11C

GPS Coordinates for # 28

Grid I

# 1 NW point

3455684.59' (N)

12123771.55' (E)

# 2 SW point

3455661.15' (N)

12123779.57' (E)

# 3 NE point

3455676.22' (N)

12123822.60' (E)

Center point

3455664.50' (N)

12123795.82' (E)

11 Location St. Juliens Creek Date 7/20/11  
Project / Client Soil Confirmation Sampling  
at Site 5

# 4 Southeast point

3455667.01' (N)

12123820.93' (E)

GPS Coordinates for # 29

Grid I

# 1 NW point

3455702.16' (N)

12123846.87' (E)

# 2 SW point

3455668.68' (N)

12123849.39' (E)

# 3 NW NE point

3455697.98' (N)

12123884.54' (E)

# 4 SE point

3455661.99' (N)

12123879.52' (E)

Center point

3455687.51' (N)

12123859.34' (E)

GPS Coordinates for sample

# 3D Grid J

Location St. Juliens Creek Date 7/20/11  
 Project / Client Site 5

# 30 Grid J cont.

# 1 NW point

3455696.31' (N)

12123937.34' (E)

# 2 SW point

3455671.20' (N)

12123934.75' (E)

# 3 NE point

3455695.47' (N)

12123965.72' (E)

# 4 SE point

3455646.17' (N)

12123963.21' (E)

Center point

3455681.24' (N)

12123953.17' (E)

1545 Off site to office  
to ship samples for  
24 hour TAT.

1700 End of day

*St. Julien*

Location St. Juliens Creek Date 7/21/11  
 Project / Client Site 5 Confirmation Sampling

12:00 On Site. Signed in at trailer.

Nate Price conducted a Health and Safety briefing on the site. Objective: to complete confirmation sampling in Grids that are available

1215 Began setting up in Grid R to collect samples at 39 + 50

Coordinates for # 50

# 1 SE point: 3456083.99' (N)

12124416.81' (E)

# 2 NE point: 3456118.30' (N)

12124415.98' (E)

# 3 NW point: 3456112.44' (N)

12124385.85' (E)

# 4 SW point: 3456088.15' (N)

12124382.92' (E)

Center point: 3456100.39' (N)

12124403.38' (E)

1230 Collected composite sample  
 STS05-CSF50-11C and  
 STS05-CSF50-11C-P at 12:35

Location St. Juliens Creek Date 7/20/11  
 Project / Client Site 5 Confirmation Sampling

# 39 GPS points

#1 NE: 3456035.30'(N)  
 1212419.49'(E)

#2 NW point: 3456033.44'(N)  
 12124387.62'(E)

#3 SW: 3455991.81'(N)  
 12124384.90'(E)

#4 SE: 3455993.06'(N)  
 12124411.70'(E)

Center: 3456017.87'(N)  
 12124399.24'(E)

1300 Collected STS05-CSE39-11C

1330 Move over to Grid G, to H,  
 collect I and J to collect  
 numbers 24, 25, 26 and  
 27 samples.

1 Coordinates for # 24

#1 3455783.52'(N)  
 12123763.66'(E)

#2 3455779.51'(N)  
 12123824.59'(E)

Center: 3455763.10'(N)  
 12123793.12'(E)

Location St. Juliens Creek Date 7/27/11  
 Project / Client Site 5 Confirmation Sampling

#4: 3455742.34'(N)  
 12123764.33'(E)

#5: 3455741.01'(N)  
 12123829.27'(E)

1355 Marked off # 25. GPS  
 coordinates:

#1 3455779.67'(N)  
 12123852.71'(E)

~~Center #2 3455780.84'(N)  
 12123884.51'(E)~~

#2 3455780.17'(N)  
 12123906.61'(E)

#3 3455743.35'(N)  
 12123904.93'(E)

#4 3455742.34'(N)  
 12123843.67'(E)

Center: 3455763.77'(N)  
 12123876.81'(E)

1425 Marked off # 26. GPS  
 coordinates

Center: 3455765.11'(N)  
 12123951.80'(E)

Location St. Juliens Creek Date 7/27/11  
 Project / Client Site 5 Confirmation Sampling

#2 3455789.21' (N)

12123923.35' (E)

#3 3455785.20' (N)

12123979.59' (E)

#4 3455742.01' (N)

12123979.93' (E)

#5 3455741.34' (N)

12123924.02' (E)

1450 Mark of # 27. GPS coordinate points:

⊙ #1 (center point) <sup>3455724.79</sup>  
~~3455787.87~~ (N)  
 12124007.73 ~~12124010.75~~ (E)

⊙ #2 3455831.73' (N) 3455750.56'  
 12123997.67' (E) 12124000.03

⊙ #3 3455829.72' (N) 3455745.88  
 12124035.16' (E) 12124021.45

⊙ #4 3455760.42' (N) 3455695.66'  
 12123994.66' (E) 12124015.09'

⊙ #5 3455757.74' (N) 3455695.99'  
 12124027.80' (E) 12123998.02'

1515 Marked off wall sample CSW27  
 GPS Coordinates:

3455746.77' (N)

12124030.74' (E)

Location St. Juliens Creek Date 7/27/11 17  
 Project / Client Site 5 Confirmation Sampling

1525 Collected composite sample

SJS05-CSF24-11C

1545 Collected composite sample

SJS05-CSF25-11C

1600 Collected Equipment Blank

SJS05-EB072711 off of

trowel.

1620 Collected Field Blank

SJS05-FB072711

1630 Collected SJS05-CSF26-11C  
 composite sample.

1650 Collected SJS05-CSF27-11C  
 composite sample.

1710 Collected SJS05-CSW27-11C  
 wall sample.

1720 Went Back at previous sample locations to gather correct GPS coordinates at flagged composite samples.

Grid A completed samples taken from numbers 3, 4, and 5.

Wall sample # 6 coordinate

3456083.39' (N)

⊙ ~~12123786.30~~ (E) 12123770.26'

Location St. Juliens Creek Date 7/27/11Project / Client Site 5 Confirmation  
Sampling

Grid A coordinates cont.

Grid A # 3 coordinates:

Center point: 3456124.33'(N)  
12123802.83'(E)

# 2 point composite:

3456136.72'(N)

12123789.10'(E)

# 3 point: 3456133.37'(N)

12123824.92'(E)

# 4 point: 3456108.26'(N)

12123822.58'(E)

# 5 point: 3456107.92'(N)

12123778.72'(E)

Grid A # 4 sample coordinates

Center point: 3456127.68'(N)  
12123874.14'(E)

# 2 point: 3456142.07'(N)

12123850.70'(E)

# 3 point: 3456138.39'(N)

12123899.58'(E)

# 4 point: 3456109.26'(N)

12123900.25'(E)

# 5 point: 3456108.59'(N)

12123849.36'(E)

Location St. Juliens Creek Date 7/27/11Project / Client Site 5 Confirmation  
Sampling# 4 wall sample in Grid A  
coordinate: 3456159.69'(N)  
12123847.72'(E)Grid A # 5 sample coordinates  
Center point: 3456126.00'(N)  
12123951.97'(E)

# 2 point: 3456147.09'(N)

12123922.18'(E)

# 3 point: 3456145.42'(N)

12123972.39'(E)

# 4 point: 3456109.26'(N)

12123974.07'(E)

# 5 point: 3456108.59'(N)

12123924.85'(E)

# 5 wall sample in Grid A  
coordinate: 3456158.17'(N)  
12123972.82'(E)# 33 Grids J + L floor sample  
coordinates

Center point: 3455616.63'(N)

12123961.51'(E)

# 2 point: 3455639.73'(N)

12123930.71'(E)

Location St. Juliens Creek Date 7/27/11Project / Client Site 5 ConfirmationSampling

# 33 coordinates cont.

# 3 point 3455639.07'(N)  
12123998.34'(E)# 4 point 3455595.21'(N)  
12123994.66'(E)# 5 point 3455593.87'(N)  
12123926.03'(E)# 33 wall sample coordinates  
3455619.21'(N)  
12124016.47'(E)Sample # 35 in Grid L coordinates  
Center point: 3455560.73'(N)  
12123950.13'(E)# 2 point  
3455575.79'(N)  
12123923.01'(E)# 3 point  
3455573.11'(N)  
12123986.62'(E)# 4 point  
3455549.01'(N)  
12123970.89'(E)Location St. Juliens Creek Date 7/27/11Project / Client Site 5 ConfirmationSampling

# 35 sample coordinates cont.

# 5 point: 345557.34'(N)  
12123924.35'(E)# 35 wall sample coordinates  
3455526.34'(N)  
12123938.58'(E)Sample # 30 Grid J coordinates:  
Center point: 3455688.33'(N)  
12123949.73'(E)# 2 point 3455711.43'(N)  
12123925.63'(E)# 3 point 3455709.42'(N)  
12123974.17'(E)# 4 point 3455660.54'(N)  
12123969.15'(E)# 5 point 3455659.54'(N)  
12123927.64'(E)Sample # 29 Grids I and J  
coordinates:Center point: 3455689.33'(N)  
12123877.92'(E)# 2 point: 3455709.42'(N)  
12123845.79'(E)

Location St. Juliens Creek Date 7/27/11Project / Client Site 5 Confirmation  
Sampling

Sample # 29 coordinates cont.

# 3 point: 3455708.75'(N)  
12123905.04'(E)# 4 point: 3455659.20'(N)  
12123903.37'(E)# 5 point: 3455656.86'(N)  
12123845.45'(E)Sample # 32 in Grids K, J, I, and L  
CoordinatesCenter point: 3455613.34'(N)  
12123875.58'(E)# 2 point: 3455638.11'(N)  
12123847.12'(E)# 3 point: 3455636.10'(N)  
12123904.71'(E)# 4 point: 3455582.54'(N)  
12123900.35'(E)# 5 point: 3455580.19'(N)  
12123845.79'(E)

Sample # 34 in Grids K and L

center point: 3455544.04'(N)  
12123874.24'(E)Location St. Juliens Creek Date 7/27/11Project / Client Site 5 Confirmation  
Sampling

# 34 coordinates cont.

# 2 point: 3455564.79'(N)  
12123846.79'(E)# 3 point: 3455562.78'(N)  
12123906.05'(E)# 4 point: 3455526.63'(N)  
12123902.70'(E)# 5 point: 3455525.62'(N)  
12123847.12'(E)Sample # 28 in Grid I  
coordinatesCenter point: 3455692.64'(N)  
12123798.18'(E)# 2 point: 3455707.38'(N)  
12123769.72'(E)# 3 point: 3455706.71'(N)  
12123830.65'(E)# 4 point: 3455659.17'(N)  
12123826.30'(E)# 5 point: 3455659.17'(N)  
12123776.75'(E)

Location St. Juliens Creek Date 7/27/11

Project / Client Site 5 Confirmation

## Soil Sampling

Sample # 31 in Grids I and K

Center point: 3455590.04' (N)

12123810.23' (E)

# 2 point: 3455632.55' (N)

12123780.77' (E)

# 3 point: 3455631.21' (N)

12123822.95' (E)

# 4 point: 3455562.92' (N)

12123798.51' (E)

# 5 point: 3455562.92' (N)

12123830.65' (E)

# 31 Wall sample coordinates

3455525.32' (N)

12123815.87' (E)

Headed back to office to pack

Sample and ship for 24 hour

TAT.

1930 End of day

~~Dana Miller  
7/27/11~~

Location St. Juliens Creek Date 10/5/11

Project / Client Site 5 Confirmation

## Soil Sampling

0930 Leave office

0940 Stop to get gas for fleet  
vehicle and get ice for samples

1020 On Site, check in at trailer

Sign PTSP and HASP

1100 Began to set up in Grid M to  
collect 44 and 45.-Samples being collected for  
Arsenic Only.1110 Began flagging out 5 points  
in # 44 Sampling Grid in Grid Cell

M. GPS coordinates are:

point 1: 3455720.40' (N)

12123703.61' (E)

point 2: 3455720.06' (N)

12123742.77' (E)

point 3: 3455673.86' (N)

12123700.59' (E)

point 4: 3455675.54' (N)

12123748.80' (E)

Center point: 3455689.31' (N)

12123724.36' (E)

1120 Collected SJSD5-CSF44-11D

for Arsenic Only.

Location St. Juliens Creek Date 10/5/11

Project / Client Site 5 Confirmation  
Sampling

# 45 Sample Coordinates:

point 1: 3455639.72' (N)

12123702.77' (E)

point 2: 3455640.05' (N)

12123754.66' (E)

point 3: 3455592.18' (N)

12123699.76' (E)

point 4: 3455591.84' (N)

12123765.37' (E)

Centerpoint: 3455620.63' (N)

12123728.88' (E)

11:45 Collected STSD5-CSF45-11D  
for Arsenic only.12:00 Moving over to Grid R to  
collect # 54, 49, 42 and 38.

# 54 Sample Coordinates

point 1: 3456189.72' (N)

12124321.68' (E)

point 2: 3456189.72' (N)

12124359.84' (E)

point 3: 3456141.17' (N)

12124323.02' (E)

point 4: 3456147.20' (N)

12124357.16' (E)

Location St. Juliens Creek Date 10/5/11

Project / Client Site 5 Confirmation  
SamplingCenter Point: <sup>3456163.96'</sup>~~3456113.96'~~ (N) <sup>(SM)</sup>12124335.20' (E) ~~12124333.20'~~ (E) <sup>(SM)</sup>1220 Collected STSD5-CSF54-11D

Analysis: As, Cu, Pb

# 49 Sample Coordinates

point 1: 3456111.71' (N)

12124326.20' (E)

point 2: 3456115.06' (N)

12124356.33' (E)

point 3: 3456066.18' (N)

12124324.86' (E)

point 4: 3456068.19' (N)

12124354.32' (E)

Center point: 3456088.29' (N)

12124334.23' (E) ~~12124342.94'~~ (E) <sup>(SM)</sup>1240 Collected STSD5-CSF49-11D

Analysis: As, Cu, Pb

# 38 Sample Coordinates

point 1: 3456029.69' (N)

12124323.02' (E)

point 2: 3456035.05' (N)

12124358.17' (E)

Location St. Juliens Creek Date 10/5/11Project / Client Site 5 Confirmation Sampling

# 38 Sample Coordinates cont.

point 3: 3455970.10' (N)

12124322.35' (E)

point 4: 3455979.14' (N)

12124356.83' (E)

Center point: 3456008.91' (N)

12124330.05' ~~12124340.76' (E)~~1300 Collected STSD5-CSF38-11D

Analysis: Cu, Pb, As

# 42 Sample Coordinates

point 1: 3455945.33' (N)

12124308.62' (E)

point 2: 3455901.14' (N)

12124306.28' (E)

point 3: 3455966.42' (N)

12124399.01' (E)

point 4: 3455944.99' (N)

12124385.28' (E)

Center point: 3455939.30' (N)

12124346.12' (E)

1330 Collected STSD5-CSF42-11D

1335 Collected STSD5-EB100511

off of plastic trowel.

Analysis: As, Cu, Pb

Location St. Juliens Creek Date 10/5/11Project / Client Site 5 Confirmation Sampling

1345 Moving over to Grids P and Q to collect # 53, 48, 37, and 41 sample grid locations.

# 53 Sample Coordinates

point 1: 3456161.93' (N)

12124230.78' (E)

point 2: 3456165.28' (N)

12124284.01' (E)

~~Center point~~  
point 3: 3456145.86' (N)

12124257.23' (E)

point 4: 3456127.11' (N)

12124281.67' (E)

~~Center point~~ 3: 3456118.07' (N)

12124232.12' (E)

1400 Collected STSD5-CSF53-11D

Analysis: As, Cu, Pb

# 48 Sample Coordinates

point 1: 3456088.95' (N)

12124231.62' (E)

point 2: 3456093.97' (N)

12124280.50' (E)

point 3: 3456044.09' (N)

12124228.61' (E)

Location St. Juliens Creek Date 10/5/11

Project / Client Site 5 Confirmation

## Sampling

# 48 cont.

point 4: 3456053.13' (N)  
12124279.83' (E)Center point 3456069.20' (N)  
12124255.39' (E)

14:25 Collected [STSO5-CSE48-11D]

Analysis: As, Cu, Pb

# 37 Coordinates

point 1: 3456001.24' (N)  
12124229.86' (E)point 2: 3456007.60' (N)  
12124283.76' (E)point 3: 3455950.02' (N)  
12124228.18' (E)point 4: 3455955.71' (N)  
12124279.40' (E)Center point: 3455978.81' (N)  
12124253.96' (E)

1445 Collected [STSO5-CSE37-11D]

Analysis: As, Cu, Pb

# 41 Sample Coordinates

point 1: 3455916.71' (N)  
12124226.84' (E)

Location St. Juliens Creek Date 10/5/11

Project / Client Site 5 Confirmation

## Sampling

# 41 cont.

point 2: 3455920.73' (N)  
12124282.42' (E)point 3: 3455862.81' (N)  
12124231.53' (E)point 4: 3455873.86' (N)  
12124275.05' (E)Center point: 3455889.93' (N)  
12124256.30' (E)

1510 Collected [STSO5-CSF41-11D]

1515 Collected [STSO5-CSF41-11D-P]

Analysis: As, Cu, Pb

1520 Collected [STSO5-FB100511]

Analysis: As, Cu, Pb

1600 Clean area and disposed of  
trash.

1620 Packed samples with ice.

1645 Shipped samples to  
Katahdin for 24 hour

Turn around

1700 End of day

Jana Miller

Location St. Juliens Creek Date 10/6/11Project / Client Site 5 Confirmation  
Sampling

0900 Leave office

0920 Stop for gas and ire

1000 ON Site. Sign in at trailer

Filled out PTSP

1015 Marked off Sample locations

( in Grids # 52, 47, 36, 40

1 51 and 46

# 52 Sample Coordinates

point 1: 3456141.35'(N)

12124145.99'(E)

point 2: 3456148.38'(N)

12124206.26'(E)

point 3: 3456097.49'(N)

12124145.66'(E)

point 4: 3456110.55'(N)

12124206.26'(E)

Center point: 3456126.28'(N)

12124177.13'(E)

# 51 Sample Coordinates

point 1: 3456123.44'(N)

12124069.67'(E)

Location St. Juliens Creek Date 10/6/11Project / Client Site 5 Confirmation  
Sampling

# 51 cont.

point 2: 3456077.24'(N)

12124073.01'(E)

point 3: 3456134.82'(N)

12124123.56'(E)

point 4: 3456090.29'(N)

12124124.57'(E)

Center point: 3456107.70'(N)

12124100.13'(E)

# 46 Sample Coordinates

point 1: 3456052.63'(N)

12124075.36'(E)

point 2: 3456054.64'(N)

12124123.56'(E)

point 3: 3456022.17'(N)

12124076.36'(E)

point 4: 3456027.86'(N)

12124128.25'(E)

Center point: 3456035.22'(N)

12124097.45'(E)

Location St. Juliens Creek Date 10/6/11

Project / Client Site 5 Confirmation  
Sampling

# 47 Sample point

10~~05~~ Experiencing problems with  
GPS Battery. Will mark off  
points and log center locations

# 47 Center point

3456051.29'(N)

12124176.63'(E)

# 36 Center point

3455965.09'(N)

12124179.97'(E)

# 40 Center point

3455869.51'(N)

12124179.64'(E)

1300 End of day/coolers shipped  
from office

Location St. Juliens Creek Date 11/17/2012

Project / Client Site 5 Confirmation Sampling

11:00 Leave office

11:10 Pick up ice for samples

11:40 On Site, Check in of trailer  
and fill out PTSP

12:00 Load truck with supplies

12:15 Began to mark out locations  
for sampling. Will collect from  
Grids 13, 18, 19, 20, 21, 22, and 23.QA/QC List will be: 1 Equipment  
Blank, 1 Field Blank, and 1-Field  
Duplicate.# 19 Sample Coordinates Center  
points will only be logged because  
GPS having trouble picking up  
satellites.

# 19 Center Point Sample location

3455834.85'(N)

12123795.64'(E)

# 20 Center Point Sample location

3455834.92'(N)

12123874.17'(E)

# 21 Center Point Sample location

3455836.87'(N)

12123948.96'(E)

Location St. Juliens Creek Date 02/17/12  
 Project / Client Site 5 Confirmation Sampling

# 22 Center Point Sample Location

3455835.79'(N)

12124025.91'(E)

# 23 Center Point Sample Location

3455841.22'(N)

12124099.83'(E)

# 18 Center Point Sample Location

3455912.74'(N)

12124102.87'(E)

# 13 Center Point Sample Location

3455972.96'(N)

12124096.78'(E)

1310 Began collecting composite sample from the 5 points.

1315 Collected Field Blank STSD5-EB021712

for select Metals: As, Cu, Pb

1320 Collect STSD5-CSE19-12A

1330 Collect STSD5-EB021712

1350 Collect STSD5-CSE20-12A

1400 Collect STSD5-CSE13-12A

1405 Collect STSD5-CSE21-12A

1410 Collect STSD5-CSE21-12A-D

Location St. Juliens Creek Date 2/17/12  
 Project / Client Site 5 Confirmation Sampling

1420 Collect STSD5-CSE22-12A

1430 Collect STSD5-CSE23-12A

1440 Collect STSD5-CSE18-12A

\* All sample analyzed for select metals (Pb, As, Cu)

1450 off site

1530 Stop for ice.

1600 Packing samples for delivery

1700 End of day

Dana R. Miller

Location St. Julien's Creek Date 05/14/12Project / Client Site 5 Confirmation

- 0715 Genevieve Moore (CH2M HILL) on site at ~~AGVIA~~ <sup>gm</sup> AGVIA field trailer for check in. Objective: collect remaining confirmation soil samples. Weather 70°F, cloudy, light rain.
- 0730 H & S Briefing @ AGVIA trailer. Be aware of extra personnel on site & heavy equipment.
- 0735 N. PRICE DIRECTS G. MOORE on site.
- 0738 G. MOORE calls TOBY STEWART to trouble shoot GPS / N. PRICE can't figure it out.
- 0800 call VBO - no solution during trouble shooting w/ TOBY.
- 0815 call Janna Stazak → connects to APETREE. APETREE suggests that satellites are not working / picking up due to weather. recommends measuring grids to collect samples.
- 0830 MOB to trailer for tape measure. N. Price measures grids on PDF. G. MOORE calls C. Bowman & leaves.
- gm 5/14/12

Location St. Julien's Creek Date 5/14/12Project / Client Site 5 Confirmation Sampling

- 0830 a message
- 0840 MOB Back to Field Site
- 0845 C. Bowman calls & trouble-shoots GPS. GPS is up & running.
- 0850 Begin collecting SUS05-CSF06
- 1) N: 3456089.9, E: 1212382892  
~~2) 30m~~ soil = some fine gravel, mostly hard clay
  - 2) N: 3456039.72, E: 12123824.28, soil = same as 1<sup>st</sup> location
  - 3) N: 3456032.57, E: 12123799.02, soil = hard clay
  - 4) N: 345000.22, E: 12123808.13, soil = same as loc. 1
  - 5) N: 3456099.9, E: 12123798.98, soil = same as location 1
- 0915 collect SUS05-CSF06-12B after mixing location samples on polysheeting.
- 0930 collect SUS05-CSW06-12B from wall of grid 6 \*see pg 47
- 0935 MOB to truck to put samples in cooler & grab more sample supplies.
- gm 5/14/12

Location St. Juliens Creek Date 5/14/12Project / Client Site 5 Confirmation Sampling

1005 set up polysheeting @ SJS05-CSF09

location 1) N: 3456008.95, E: 12123824.99

soil = hard clay

location 2) N: 3455982.71, E: 12123828.79

soil = hard clay, DRY

location 3) N: 3455976.57, E: 12123796.84

soil = hard, dry, <sup>clay</sup> clay

location 4) N: 3455990.36, E: 12123802.88

soil = hard clay, orangeish w/ fines

location 5) N: 3456008.104, E: 12123788.29

soil = gravels, dry, clay

mix samples on polysheeting

1030 collect SJS05-CSF09-12BSJS05-CSF09-12B-MSSJS05-CSF09-12B-SD

1035 set up at SJS05-CSW09

N: 3455912.29, E: 12123798.98

soil = clay, DRY → wet w/ gravel

1038 collect SJS05-CSW09-12B \*see pg 47

take samples to cooler &amp; get supplies at truck for next sample

1100 MCB to SJS05-CSF07

location 1 - very wet, most of grid

covered by surface water.

9M - 5/14/12

Location St. Juliens Creek Date 5/14/12Project / Client Site 5 Confirmation Sampling1100 <sup>9M</sup> location 1) N: 3456008.93, E: 12123867.44

location 2) N: 3456033.97, E: 12123897.28

soil = hard clay

location 3) N: 3456002.10, E: 12123871.69

soil = hard clay

location 4) N: 3456071.86, E: 12123847.18

wet clay

location 5) N: 3456032.59, E: 12123854.48

clay - mix on poly sheeting

1120 = collect SJS05-CSF07-12B1125 = collect SJS05-CSF07-12B-P

1130 take samples to cooler

1135 = set up @ SJS05-CSF08

(center) location 1) N: 3456058.89

E: 12123966.15

soil = clay, DRY

location 2) N: 3456085.78, E: 12124003.52

wet clay

location 3) N: 3456090.69, E: 12123924. <sup>119</sup> <sup>9M</sup>

wet clay

location 4) N: 3456040.79, E: 12123923.94

hard clay

location 5) N: 3456042.44, E: 12124001.24

hard, dry clay

9M - 5/14/12

Location St. Julien's creek Date 5/14/12  
 Project / Client Site 5 confirmation sampling

- 1150 T. Stewart calls to check on GPS status. G. Moore informs him that GPS is running correctly
- 1155 G. Moore calls J. Stozak to give brief update on GPS status & confirms A. Jones can be contacted via cell
- 1157 mix SJS05-CSF08 on poly sheeting
- 1200 collect SJS05-CSF08-12B
- 1205 Begin set up on SJS05-CSF12  
 (center) Location 1)  $N=3455967.39$ ,  $E=12124016.86$   
 wet clay / damp gray clay  
 Location 2)  $N=3455995.61$ ,  $E=12124049.21$   
 dry clay  
 Location 3)  $N=3455960.28$ ,  $E=12124051.69$   
 fine gravel, clay  
 Location 4)  $N=3455955.59$ ,  $E=12123988.77$   
 dry clay, somewhat damp under top  
 Location 5)  $3456014.25$ ,  $E=12123996.58$   
 0-2 inches is wet sand & clay underneath  
 mix samples on poly sheeting
- 1220 collect SJS05-CSF12-12B  
 sample is CSF12
- 1225 mob to truck to put CSF12 & CSF08 in cooler

5/14/12 - am

Location St. Julien's creek Date \_\_\_\_\_  
 Project / Client Site 5 confirmation sampling

- 1235 set up @ SJS05-CSF17 <sup>am</sup>  
 (center) Location 1)  $N=3455910.25$ ,  $E=12124024.03$   
 wet/dry gray clay  
 Location 2)  $N=3455934.55$ ,  $E=12124049.16$   
 0-1 in = sand, fine; under = gray clay  
 Location 3)  $N=3455935.30$ ,  $E=12124005.49$   
 0-1 = dry clay, under = gray hard damp clay  
 Location 4)  $N=345583.47$ ,  $E=12124011.67$   
 very wet clay  
 Location 5)  $N=3455804.95$ ,  $E=12124049.28$   
 0-1 in = sand, under dark hard clay
- \* 1255 mix sample and collect SJS05-CSF17-12B
- 1300 setup on SJS05-CSF11  
 (center) Location 1)  $N=3455982.87$ ,  $E=12123953.85$   
 Dry → wet clay - dark w/ orangeish tint  
 Location 2)  $N=3456011.09$ ,  $E=12123927.06$   
 Dry, hard clay  
 Location 3)  $N=3455963.29$ ,  $E=12123922.32$   
 hard dark, orange-gray clay  
 Location 4)  $N=3455962.82$ ,  $E=12123980.06$   
 dry clay over hard, gray, damp clay  
 Location 5)  $N=3456000.21$ ,  $E=12123971.07$   
 dark & orangeish clay
- 1320 mix sample on poly sheeting  
 am 5/14/12

Location St. Julien's Creek Date 5/14/12Project / Client SITE 5 CONFIRMATION SAMPLING1325 collect SJS05-CSF11-12B\* 1250 Collect SJS05-CSF17-12B-P please  
note time & location of duplicate  
sample!1330 take CSF17, CSF17-P, & CSF11 to cooler  
& get supplies for CSF10 & CSF14

1345 set up on SJS05-CSF10

(center) Location 1) N=3455985.50, E=12123896.43  
hard, gray clay, dampLocation 2) N=3456003.20, E=12123857.61  
wet gray clayLocation 3) N=3456006.46, E=12123896.79  
dry, red clay, dark under neathLocation 4) N=3455956.10, E=12123849.04  
dark gray HARD clayLocation 5) N=3455966.66, E=12123901.00  
0-2"-DRY, gravel/sand, underneath = wet clay

1400 mix samples on poly sheeting

1405 collect SJS05-CSF10-12B

1410 set up at SJS05-CSF14

(center) Location 1) N=3455907.79, E=12123807.15

dry gray sandy clay over dark clay

Location 2) N=3455881.00, E=12123782.15

wet dark clay

gm 5/14/12

Location St. Julien's creek Date 5/14/12Project / Client SITE 5 CONFIRMATION SAMPLING

Location 3) N=3455884.89, E=12123832.43

dry, dirt, clay underneath - orange &amp; light gray

Location 4) N=3455931.77, E=12123792.61

hard dark gray clay

Location 5) N=3455940.83, E=<sup>12123835.88</sup>~~12123835.88~~ gm

orange, dry clay

mix sample on poly sheeting

1430 collect SJS05-CSF14-12B

1435 take CSF10 &amp; CSF14 to cooler

1455 set up on SJS05-CSF15

(center) Location 1) N=3455914.78, E=12123868.64

very dry, very hard clay/dirt

Location 2) N=3456037.01, E=12123850.82

dry gray clay

Location 3) N=3455939.57, E=12123853.70

wet gray clay

Location 4) N=3455882.81, E=12123848.79

dark, gray wet/dry

Location 5) N=3455886.52, E=12123897.68

dry gray clay

1530 mix sample on poly sheeting

1535 collect SJS05-CSF15-12B (CSF15)

1540 set up on SJS05-CSF16

(center) Location 1) N=3455913.05, E=12123955.17

5/14/12-gm

Location St JULIENS CREEK Date 5/14/12Project / Client Site 5 confirmation sampling

Location 1 contd:

Location 2) N=3455926.64, E=12123933.63

moist, soft clay

Location 3) N=3455925.97, E=12123970.35

moist gray clay

Location 4) N=3455881.5, E=12123927.35

moist clay, gray

Location 5) N=3455879.62, E=12123976.85

Very moist, very soft clay

1545 mix sample on poly sheeting

1550 collect SJS05-CSF10-12B

1555 MOB BACK to truck to put samples in cooler

1605 Collect SJS05-FB0514121610 collect SJS05-EB051412 from clean plastic trowel

1620 MOB to ABVIO trailer to hand off Radio to N. Price

1635 OFF SITE - MOB to FEDEX

1700 Buy fresh ice to put on samples in cooler

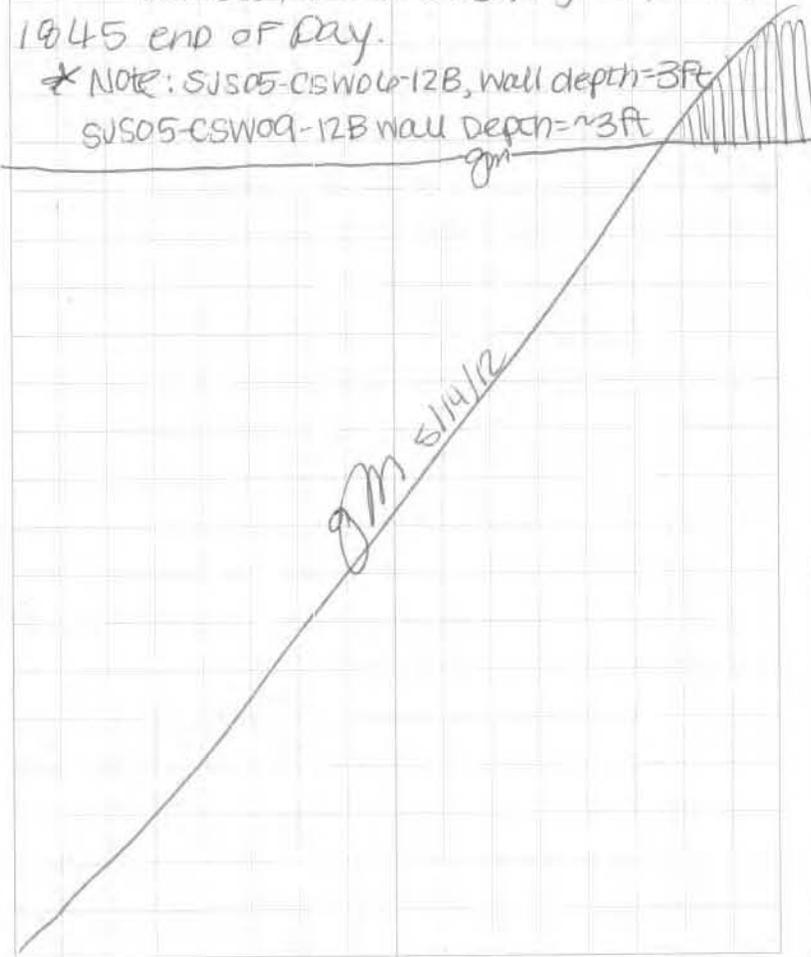
1745 Heavy traffic. arrive @ FEDEX ELLSMERE AVENUE

1815 MOB to office gm 5/14/12

Location St JULIEN'S CREEK Date 5/14/12Project / Client Site 5 confirmation samplingshipped 1 cooler. First overnight  
TRACKING# = 8007633274891830 arrive at office, unload fleet  
vehicle, scan COCs, logbook, & air bill  
1845 end of day.

\* NOTE: SJS05-CSW06-12B, wall depth=3ft

SJS05-CSW09-12B wall depth=3ft



Location ST. JULIENS CREEK Date 5/16/12Project / Client SITE 5 CONFIRMATION SAMPLING

0646 - NATE PRICE (CH2M HILL) ONSITE

AT AGVIQ FIELD TRAILER FOR H&amp;S

BRIEFING

\* OBJECTIVE: COLLECT REMAINING CONFIRMATION  
SAMPLE0700 - N. PRICE PARTICIPATES IN AGVIQ H&S  
BRIEFING AND SIGNS THEIR PTSP AS WELL AS

( THE CH2M HILL PTSP

0715 - N. PRICE LEAVES FIELD TRAILER AND  
GOES ONTO EXCAVATION AREA0800 - N. PRICE COLLECTS ~~SJS05 - CS12~~ (ND)SJS05 - CSW23 - 12B WALL DEPTH

APPROXIMATELY 2 FT

GPS COORDINATES: 383121.67 E

4072763.67 N

0830 - N. PRICE OFFSITE TO SHIP SAMPLE

21/08  
5/16/12

Location \_\_\_\_\_

Date \_\_\_\_\_

Project / Client \_\_\_\_\_

**Attachment B**  
**Analytical Results**

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Attachment B  
 Raw Analytical Data  
 Confirmation Sampling Report for the Site 5 Removal Action.  
 St. Juliens Creek Annex  
 Chesapeake, Virginia

Sample ID	SJS05-CS01-08C	SJS05-CS02-08C	SJS05-CS02-08C-P	SJS05-CSF03-11C	SJS05-CSF04-11C	SJS05-CSF05-11C	SJS05-CSF06-12B	SJS05-CSF07-12B	SJS05-CSF07-12B-P	SJS05-CSF08-12B
Sample Date	8/14/08	8/14/08	8/14/08	7/18/11	7/18/11	7/18/11	5/14/12	5/14/12	5/14/12	5/14/12
Chemical Name										
Total Metals (MG/KG)										
Arsenic	NS	NS	NS	13.5	10	14.4	24.2	21.6 J	7.1 J	10.3
Copper	NS	37.6	40.7	52.6 K	8.3	74	230	34.6 J	21.9 J	17
Lead	167	56.4 L	54	127	14.2	91.5	406	61.4	60.7	41.1

Notes:

- B - Analyte not detected above the level reported in blanks
- J - Analyte present. Value may or may not be accurate or precise
- K - Analyte present. Value may be biased high. Value may be lower
- L - Analyte present. Value may be biased low. Value may be higher
- NS - Not sampled
- MG/KG - Milligrams per kilogram

Attachment B  
 Raw Analytical Data  
 Confirmation Sampling Report for the Site 5 Removal Action.  
 St. Juliens Creek Annex  
 Chesapeake, Virginia

Sample ID	SJS05-CSF09-12B	SJS05-CSF10-12B	SJS05-CSF11-12B	SJS05-CSF12-12B	SJS05-CSF13-12A	SJS05-CSF14-12B	SJS05-CSF15-12B	SJS05-CSF16-12B	SJS05-CSF17-12B	SJS05-CSF17-12B-P
Sample Date	5/14/12	5/14/12	5/14/12	5/14/12	2/17/12	5/14/12	5/14/12	5/14/12	5/14/12	5/14/12
Chemical Name										
<b>Total Metals (MG/KG)</b>										
Arsenic	9.4 K	15	11.9	10.2	1.3 L	8.6	11.5	14.2	8.8	10.5
Copper	109	81.6	60.2	64.3	14.9 K	50.3	192	53.5	18.2	20
Lead	255	109	148	132	17.1	156	412	82.8	22.4	28

**Notes:**

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- L - Analyte present. Value may be biased low. Value may be higher
- NS - Not sampled
- MG/KG - Milligrams per kilogram

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 Raw Analytical Data  
 Confirmation Sampling Report for the Site 5 Removal Action  
 St. Juliens Creek Annex  
 Chesapeake, Virginia

Sample ID	SJS05-CSF18-12A	SJS05-CSF19-12A	SJS05-CSF20-12A	SJS05-CSF21-12A	SJS05-CSF21-12A-P	SJS05-CSF22-12A	SJS05-CSF23-12A	SJS05-CSF24-11C	SJS05-CSF25-11C	SJS05-CSF26-11C
Sample Date	2/17/12	2/17/12	2/17/12	2/17/12	2/17/12	2/17/12	2/17/12	7/27/11	7/27/11	7/27/11
Chemical Name										
<b>Total Metals (MG/KG)</b>										
Arsenic	11.4	11.2	11.7	8.1 J	12.1 J	4.8	9.5	1.6	10.4	14.3
Copper	67.2	23.2	25.7	14.8 J	29.3 J	3.6	15.8	4.8	13.2	40.1
Lead	78.3	19.6	30	23.2 J	40.6 J	10.2	26.2	13.3	20.5	64.2

Notes:

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- L - Analyte present. Value may be biased low. Value may be higher
- NS - Not sampled
- MG/KG - Milligrams per kilogram

Attachment B  
 Raw Analytical Data  
 Confirmation Sampling Report for the Site 5 Removal Action.  
 St. Juliens Creek Annex  
 Chesapeake, Virginia

Sample ID	SJS05-CSF27-11C	SJS05-CSF28-11C	SJS05-CSF29-11C	SJS05-CSF30-11C	SJS05-CSF31-11C	SJS05-CSF32-11C	SJS05-CSF33-11C	SJS05-CSF34-11C	SJS05-CSF35-11C	SJS05-CSF35-11C-P
Sample Date	7/27/11	7/20/11	7/20/11	7/20/11	7/20/11	7/20/11	7/20/11	7/20/11	7/20/11	7/20/11
Chemical Name										
<b>Total Metals (MG/KG)</b>										
Arsenic	12.6	7	14.4	7.4	5.4	9.2	9.1	13	8.6	8.9
Copper	26.1	38.6	47.6	11.1	9.9	25.4	14.4	34.2	22.1	18.8
Lead	42.1	40.8	58	28.8	21.2	111	36	67.9	46.2 J	28.5 J

**Notes:**

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- L - Analyte present. Value may be biased low. Value may be higher
- NS - Not sampled
- MG/KG - Milligrams per kilogram

Attachment B  
 Raw Analytical Data  
 Confirmation Sampling Report for the Site 5 Removal Action.  
 St. Juliens Creek Annex  
 Chesapeake, Virginia

Sample ID	SJS05-CSF36-11D	SJS05-CSF37-11D	SJS05-CSF38-11D	SJS05-CSF39-11C	SJS05-CSF40-11D	SJS05-CSF40-11D-P	SJS05-CSF41-11D	SJS05-CSF41-11D-P	SJS05-CSF42-11D	SJS05-CSF43-11D
Sample Date	10/6/11	10/5/11	10/5/11	7/27/11	10/6/11	10/6/11	10/5/11	10/5/11	10/5/11	12/1/11
Chemical Name										
<b>Total Metals (MG/KG)</b>										
Arsenic	5.3	1.5 L	11.3	1.6 K	10.9	10.8	1.3	0.53 J	14.1	1.6
Copper	16.7	10.1 L	78.8	4.9 K	18.8	18.5	10.1 J	1.5 J	76.7	2 J
Lead	27	11.2 L	104	7 K	35.7	27.9	11.6 J	2.8 J	114	6.9

**Notes:**

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- L - Analyte present. Value may be biased low. Value may be higher
- NS - Not sampled
- MG/KG - Milligrams per kilogram

Attachment B  
 Raw Analytical Data  
 Confirmation Sampling Report for the Site 5 Removal Action  
 St. Juliens Creek Annex  
 Chesapeake, Virginia

Sample ID	SJS05-CSF44-11D	SJS05-CSF45-11D	SJS05-CSF46-11D	SJS05-CSF47-11D	SJS05-CSF48-11D	SJS05-CSF49-11D	SJS05-CSF50-11C	SJS05-CSF50-11C-P	SJS05-CSF51-11D	SJS05-CSF52-11D
Sample Date	10/5/11	10/5/11	10/6/11	10/6/11	10/5/11	10/5/11	7/27/11	7/27/11	10/6/11	10/6/11
Chemical Name										
<b>Total Metals (MG/KG)</b>										
Arsenic	3.7	6.3	40.5	22.9	9	5.9	7	5.2	21.1	10
Copper	NS	NS	240	163	35.4	23.4	136 J	20.1 J	142	44
Lead	NS	NS	286	134	100	44.4	37.6	30.4	126	45.6

Notes:

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- J - Analyte present. Value may or may not be accurate or precise
- K - Analyte present. Value may be biased high. Value may be lower
- L - Analyte present. Value may be biased low. Value may be higher
- NS - Not sampled
- MG/KG - Milligrams per kilogram

Attachment B  
 Raw Analytical Data  
 Confirmation Sampling Report for the Site 5 Removal Action.  
 St. Juliens Creek Annex  
 Chesapeake, Virginia

Sample ID	SJS05-CSF53-11D	SJS05-CSF54-11D	SJS05-CSF55-11D	SJS05-CSF56-11D	SJS05-CSF57-11D	SJS05-CSF57-11D-P	SJS05-CSF58-11D	SJS05-CSW04-11C	SJS05-CSW05-11C	SJS05-CSW06-11C
Sample Date	10/5/11	10/5/11	12/1/11	12/1/11	12/1/11	12/1/11	12/1/11	7/18/11	7/18/11	7/18/11
Chemical Name										
<b>Total Metals (MG/KG)</b>										
Arsenic	8.5	4.2	7.8 K	15.5	8.1	10.3	13.6	4.6	12.7	5
Copper	41	14.5	122 K	33.5	19.7	21.4	39	24	59	54.1
Lead	62.8	19.6	86.5	48.6	25.8 J	16.2 J	49.4	47.5	75.4	35.6

Notes:

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- J - Analyte present. Value may or may not be accurate or precise
- K - Analyte present. Value may be biased high. Value may be lower
- L - Analyte present. Value may be biased low. Value may be higher
- NS - Not sampled
- MG/KG - Milligrams per kilogram

Attachment B  
 Raw Analytical Data  
 Confirmation Sampling Report for the Site 5 Removal Action.  
 St. Juliens Creek Annex  
 Chesapeake, Virginia

Sample ID	SJS05-CSW09-12B	SJS05-CSW19-11D	SJS05-CSW23-12B	SJS05-CSW27-11C	SJS05-CSW31-11C	SJS05-CSW33-11C	SJS05-CSW35-11C
Sample Date	5/14/12	12/1/11	5/16/12	7/27/11	7/20/11	7/20/11	7/20/11
Chemical Name							
<b>Total Metals (MG/KG)</b>							
Arsenic	8.9	1.4	0.67 L	15.1	1.8	7.5	15.6 K
Copper	32	1.8 J	2.6 B	57.1	3.1	9.1	26.8 K
Lead	61.6	6.8	5.8	76.1	6.5	10.5	64.4

**Notes:**

- B - Analyte not detected above the level reported in blanks
- J - Analyte present. Value may or may not be accurate or precise
- K - Analyte present. Value may be biased high. Value may be lower
- L - Analyte present. Value may be biased low. Value may be higher
- NS - Not sampled
- MG/KG - Milligrams per kilogram

**Attachment C**  
**Data Validation Summary Reports**

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## Data Validation Summary

### St. Juliens CTO-63, Site 5

TO: Megan Morrison/WDC  
Anita Dodson/VBO

FROM: Tiffany McGlynn/GNV

CC: Herb Kelly/GNV

DATE: August 10, 2012

#### Introduction

The following data validation report discusses the data validation process and findings for Katahdin Analytical Services for SDG CTO139-1.

Samples were analyzed using the following analytical methods:

- SW6010B Metals

The samples included in this SDG are listed in the table below.

Sample Name	Matrix
SJS05-CSF04-11C	Soil
SJS05-CSW05-11C	Soil
SJS05-CSF05-11C	Soil
SJS05-CSW04-11C	Soil
SJS05-CSF03-11C	Soil
SJS05-CSW06-11C	Soil
SJS05-FB071811	Water
SJS05-CSF31-11C	Soil
SJS05-CSW31-11C	Soil
SJS05-CSF34-11C	Soil
SJS05-CSF32-11C	Soil
SJS05-CSF33-11C	Soil
SJS05-CSW33-11C	Soil
SJS05-CSW35-11C	Soil
SJS05-CSF35-11C	Soil

<b>Sample Name</b>	<b>Matrix</b>
SJS05-CSF35-11C-P	Soil
SJS05-CSF28-11C	Soil
SJS05-CSF29-11C	Soil
SJS05-CSF30-11C	Soil
SJS05-EB072011	Water

## **Data Evaluation**

Data was evaluated in accordance with the analytical methods and with the criteria found in the following guidance documents: Region III Modifications for Inorganic Data Review (EPA 1993), as applicable. The samples were evaluated based on the following criteria:

- Data Completeness
- Technical Holding Times
- Initial/Continuing Calibrations
- Blanks
- Internal Standards
- Serial Dilutions
- Laboratory Control Samples
- Matrix Spike Recoveries
- Field Duplicates
- Identification/Quantitation
- Reporting Limits

## **Overall Evaluation of Data/Potential Usability Issues**

Specific details regarding qualification of the data are addressed in the sections below. If an issue is not addressed there were no actions required based on unmet quality criteria. When more than one qualifier is associated with a compound/analyte, the validator has chosen the qualifier that best indicates possible bias in the results and qualified these data accordingly.

### **Data Completeness**

The SDG was received complete and intact.

### Technical Holding Times

According to the chain of custody records, sampling was performed on 7/18/12 and 7/20/12. Samples were received at the laboratory on 7/19/12 and 7/21/12. All sample preparation analysis was performed within holding time requirements.

### Blanks

Compounds detected in the method/prep blanks and equipment blank are listed below. No data was affected.

Blank ID	Compound	Conc.	Units
PBSBG19ICS0	Arsenic	0.167	MG_KG
PBSBG19ICS0	Copper	0.265	MG_KG
SJS05-EB072011	Copper	1.4	UG_L

### Matrix Spike/Spike Duplicate

Copper exhibited high recoveries in the MS/MSD for spiked samples SJS05-CSF03-11C and SJS05-CSW35-11C. Arsenic exhibited high recoveries in the MS/MSD for spiked sample SJS05-CSW35-11C. Affected data are summarized in **Attachment 1**.

### Field Duplicate Precision

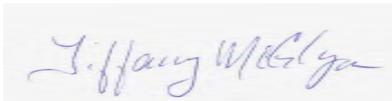
Lead did not meet field duplicate precision criteria between native sample SJS05-CSF35-11C and field duplicate SJS05-CSF35-11C-P. Affected data are summarized in **Attachment 1**.

### Conclusion

These data can be used in the project decision-making process as qualified by the data quality evaluation process.

Please do not hesitate to contact us about this validation report.

Sincerely,



Tiffany McGlynn

## Qualification Flags

Exclude	More appropriate data exist for this analyte.
R	Data were rejected for use.
UL	Analyte not detected, quantitation limit is potentially biased low.
UJ	Analyte not detected, estimated quantitation limit.
U	Analyte not detected.
B	Not detected substantially above the level reported in laboratory or field blanks.
L	Analyte present, estimated value potentially biased low.
K	Analyte present, estimated value potentially biased high.
N	Analyte identification presumptive; no second column analysis performed or GC/MS tentative identification.
J	Analyte present, estimated value.
NJ	Analysis indicates the presence of an analyte that was "tentatively identified" and the associated value represents its approximate concentration.
None	Placeholder for calculating quality control issues that do not require flagging.
=	Analyte was detected at a concentration greater than the quantitation limit.

## Qualifier Code Reference

<b>Value</b>	<b>Description</b>
%SOL	High Moisture content
2C	Second Column – Poor Dual Column Reproducibility
2S	Second Source – Bad reproducibility between tandem detectors
BD	Blank Spike/Blank Spike Duplicate(LCS/LCSD) Precision
BRL	Below Reporting Limit
BSH	Blank Spike/LCS – High Recovery
BSL	Blank Spike/LCS – Low Recovery
CC	Continuing Calibration
CCBL	Continuing Calibration Blank Contamination
CCH	Continuing Calibration Verification – High Recovery
CCL	Continuing Calibration Verification – Low Recovery
DL	Redundant Result – due to Dilution
EBL	Equipment Blank Contamination
EMPC	Estimated Possible Maximum Concentration
ESH	Extraction Standard - High Recovery
ESL	Extraction Standard - Low Recovery
FBL	Field Blank Contamination
FD	Field Duplicate
HT	Holding Time
ICB	Initial Calibration – Bad Linearity or Curve Function
ICH	Initial Calibration – High Relative Response Factors
ICL	Initial Calibration – Low Relative Response Factors
IR15	Ion ratio exceeds +/- 15% difference
ISH	Internal Standard – High Recovery
ISL	Internal Standard – Low Recovery
LD	Lab Duplicate Reproducibility
LR	Concentration Exceeds Linear Range
MBL	Method Blank Contamination
MDP	Matrix Spike/Matrix Spike Duplicate Precision
MI	Matrix interference obscuring the raw data

MSH	Matrix Spike and/or Matrix Spike Duplicate – High Recovery
MSL	Matrix Spike and/or Matrix Spike Duplicate – Low Recovery
OT	Other
PD	Pesticide Degradation
RE	Redundant Result - due to Reanalysis or Re-extraction
SD	Serial Dilution Reproducibility
SSH	Spiked Surrogate – High Recovery
SSL	Spiked Surrogate – Low Recovery
TBL	Trip Blank Contamination
TN	Tune

St. Juliens CTO-63, Site 5  
Attachment 1 Change Qual. Table  
SDG CTO139-1

<b>Sample ID</b>	<b>Compound</b>	<b>Q Flag</b>	<b>Qual Code</b>
SJS05-CSF03-11C	Copper	K	MSH
SJS05-CSW35-11C	Arsenic	K	MSH
SJS05-CSW35-11C	Copper	K	MSH
SJS05-CSF35-11C	Lead	J	FD
SJS05-CSF35-11C-P	Lead	J	FD

## Data Validation Summary

### St. Juliens CTO-63, Site 5

TO: Megan Morrison/WDC  
Anita Dodson/VBO

FROM: Tiffany McGlynn/GNV

CC: Herb Kelly/GNV

DATE: August 10, 2012

#### Introduction

The following data validation report discusses the data validation process and findings for Katahdin Analytical Services for SDG CTO139-2.

Samples were analyzed using the following analytical methods:

- SW6010B Metals

The samples included in this SDG are listed in the table below.

Sample Name	Matrix
SJS05-CSF50-11C	Soil
SJS05-CSF39-11C	Soil
SJS05-CSF50-11C-P	Soil
SJS05-CSF24-11C	Soil
SJS05-CSF25-11C	Soil
SJS05-EB072711	Water
SJS05-FB072711	Water
SJS05-CSF26-11C	Soil
SJS05-CSF27-11C	Soil
SJS05-CSW27-11C	Soil

#### Data Evaluation

Data was evaluated in accordance with the analytical methods and with the criteria found in the following guidance documents: Region III Modifications for Inorganic Data Review (EPA 1993), as applicable. The samples were evaluated based on the following criteria:

- Data Completeness
- Technical Holding Times
- Initial/Continuing Calibrations
- Blanks
- Internal Standards
- Serial Dilutions
- Laboratory Control Samples
- Matrix Spike Recoveries
- Field Duplicates
- Identification/Quantitation
- Reporting Limits

## **Overall Evaluation of Data/Potential Usability Issues**

Specific details regarding qualification of the data are addressed in the sections below. If an issue is not addressed there were no actions required based on unmet quality criteria. When more than one qualifier is associated with a compound/analyte, the validator has chosen the qualifier that best indicates possible bias in the results and qualified these data accordingly.

### **Data Completeness**

The SDG was received complete and intact.

### **Technical Holding Times**

According to the chain of custody records, sampling was performed on 7/27/12. Samples were received at the laboratory on 7/28/12. All sample preparation analysis was performed within holding time requirements.

### **Blanks**

Compounds detected in the method/prep blanks, field blank and equipment blank are listed below. No data was affected.

<b>Blank ID</b>	<b>Compound</b>	<b>Conc.</b>	<b>Units</b>
PBSBG28ICS0	Arsenic	0.134	MG_KG
SJS05-EB072711	Copper	0.99	UG_L
SJS05-FB072711	Copper	1.2	UG_L

**Matrix Spike/Spike Duplicate**

Copper, lead, and arsenic exhibited high recoveries in the MS/MSD for spiked sample SJS05-CSF39-11C. Affected data are summarized in **Attachment 1**.

**Field Duplicate Precision**

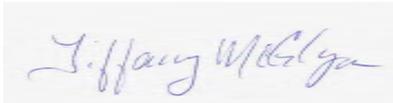
Copper did not meet field duplicate precision criteria between native sample SJS05-CSF50-11C and field duplicate SJS05-CSF50-11C-P. Affected data are summarized in **Attachment 1**.

**Conclusion**

These data can be used in the project decision-making process as qualified by the data quality evaluation process.

Please do not hesitate to contact us about this validation report.

Sincerely,

A rectangular box containing a handwritten signature in blue ink that reads "Tiffany McGlynn".

Tiffany McGlynn

## Qualification Flags

Exclude	More appropriate data exist for this analyte.
R	Data were rejected for use.
UL	Analyte not detected, quantitation limit is potentially biased low.
UJ	Analyte not detected, estimated quantitation limit.
U	Analyte not detected.
B	Not detected substantially above the level reported in laboratory or field blanks.
L	Analyte present, estimated value potentially biased low.
K	Analyte present, estimated value potentially biased high.
N	Analyte identification presumptive; no second column analysis performed or GC/MS tentative identification.
J	Analyte present, estimated value.
NJ	Analysis indicates the presence of an analyte that was "tentatively identified" and the associated value represents its approximate concentration.
None	Placeholder for calculating quality control issues that do not require flagging.
=	Analyte was detected at a concentration greater than the quantitation limit.

## Qualifier Code Reference

<b>Value</b>	<b>Description</b>
%SOL	High Moisture content
2C	Second Column – Poor Dual Column Reproducibility
2S	Second Source – Bad reproducibility between tandem detectors
BD	Blank Spike/Blank Spike Duplicate(LCS/LCSD) Precision
BRL	Below Reporting Limit
BSH	Blank Spike/LCS – High Recovery
BSL	Blank Spike/LCS – Low Recovery
CC	Continuing Calibration
CCBL	Continuing Calibration Blank Contamination
CCH	Continuing Calibration Verification – High Recovery
CCL	Continuing Calibration Verification – Low Recovery
DL	Redundant Result – due to Dilution
EBL	Equipment Blank Contamination
EMPC	Estimated Possible Maximum Concentration
ESH	Extraction Standard - High Recovery
ESL	Extraction Standard - Low Recovery
FBL	Field Blank Contamination
FD	Field Duplicate
HT	Holding Time
ICB	Initial Calibration – Bad Linearity or Curve Function
ICH	Initial Calibration – High Relative Response Factors
ICL	Initial Calibration – Low Relative Response Factors
IR15	Ion ratio exceeds +/- 15% difference
ISH	Internal Standard – High Recovery
ISL	Internal Standard – Low Recovery
LD	Lab Duplicate Reproducibility
LR	Concentration Exceeds Linear Range
MBL	Method Blank Contamination
MDP	Matrix Spike/Matrix Spike Duplicate Precision
MI	Matrix interference obscuring the raw data

MSH	Matrix Spike and/or Matrix Spike Duplicate – High Recovery
MSL	Matrix Spike and/or Matrix Spike Duplicate – Low Recovery
OT	Other
PD	Pesticide Degradation
RE	Redundant Result - due to Reanalysis or Re-extraction
SD	Serial Dilution Reproducibility
SSH	Spiked Surrogate – High Recovery
SSL	Spiked Surrogate – Low Recovery
TBL	Trip Blank Contamination
TN	Tune

St. Juliens CTO-63, Site 5  
Attachment 1 Change Qual. Table  
SDG CTO139-2

<b>Sample ID</b>	<b>Compound</b>	<b>Q Flag</b>	<b>Qual Code</b>
SJS05-CSF50-11C	Copper	J	FD
SJS05-CSF50-11C-P	Copper	J	FD
SJS05-CSF39-11C	Arsenic	K	MSH
SJS05-CSF39-11C	Copper	K	MSH
SJS05-CSF39-11C	Lead	K	MSH

## Data Validation Summary

### St. Juliens CTO-63, Site 5

TO: Megan Morrison/WDC  
Anita Dodson/VBO

FROM: Tiffany McGlynn/GNV

CC: Herb Kelly/GNV

DATE: August 10, 2012

#### Introduction

The following data validation report discusses the data validation process and findings for Katahdin Analytical Services for SDG CTO139-3.

Samples were analyzed using the following analytical methods:

- SW6010B Metals

The samples included in this SDG are listed in the table below.

Sample Name	Matrix
SJS05-CSF37-11D	Soil
SJS05-CSF44-11D	Soil
SJS05-CSF45-11D	Soil
SJS05-CSF54-11D	Soil
SJS05-CSF49-11D	Soil
SJS05-CSF38-11D	Soil
SJS05-CSF42-11D	Soil
SJS05-CSF53-11D	Soil
SJS05-CSF46-11D	Soil
SJS05-CSF48-11D	Soil
SJS05-CSF41-11D	Soil
SJS05-CSF41-11D-P	Soil
SJS05-FB100511	Water
SJS05-EB100511	Water
SJS05-CSF52-11D	Soil
SJS05-CSF47-11D	Soil
SJS05-CSF36-11D	Soil

<b>Sample Name</b>	<b>Matrix</b>
SJS05-CSF40-11D	Soil
SJS05-CSF40-11D-P	Soil
SJS05-CSF51-11D	Soil

## **Data Evaluation**

Data was evaluated in accordance with the analytical methods and with the criteria found in the following guidance documents: Region III Modifications for Inorganic Data Review (EPA 1993), as applicable. The samples were evaluated based on the following criteria:

- Data Completeness
- Technical Holding Times
- Initial/Continuing Calibrations
- Blanks
- Internal Standards
- Serial Dilutions
- Laboratory Control Samples
- Matrix Spike Recoveries
- Field Duplicates
- Identification/Quantitation
- Reporting Limits

## **Overall Evaluation of Data/Potential Usability Issues**

Specific details regarding qualification of the data are addressed in the sections below. If an issue is not addressed there were no actions required based on unmet quality criteria. When more than one qualifier is associated with a compound/analyte, the validator has chosen the qualifier that best indicates possible bias in the results and qualified these data accordingly.

### **Data Completeness**

The SDG was received complete and intact.

### Technical Holding Times

According to the chain of custody records, sampling was performed on 10/5/11 and 10/6/11. Samples were received at the laboratory on 10/6/11 and 10/7/11. All sample preparation analysis was performed within holding time requirements.

### Blanks

Compounds detected in the method/prep blanks and equipment blank are listed below. No data was affected.

Blank ID	Compound	Conc.	Units
PBSBJ06ICS3	Copper	0.235	MG_KG
PBWBJ06ICW2	Lead	1.405	UG_L
SJS05-EB100511	Copper	0.70	UG_L

### Matrix Spike/Spike Duplicate

Copper, lead, and arsenic exhibited low recoveries in the MS/MSD for spiked sample SJS05-CSF37-11D. Affected data are summarized in **Attachment 1**.

### Field Duplicate Precision

Copper and lead did not meet field duplicate precision criteria between native sample SJS05-CSF41-11D and field duplicate SJS05-CSF41-11D-P. Affected data are summarized in **Attachment 1**.

### Conclusion

These data can be used in the project decision-making process as qualified by the data quality evaluation process.

Please do not hesitate to contact us about this validation report.

Sincerely,



Tiffany McGlynn

## Qualification Flags

Exclude	More appropriate data exist for this analyte.
R	Data were rejected for use.
UL	Analyte not detected, quantitation limit is potentially biased low.
UJ	Analyte not detected, estimated quantitation limit.
U	Analyte not detected.
B	Not detected substantially above the level reported in laboratory or field blanks.
L	Analyte present, estimated value potentially biased low.
K	Analyte present, estimated value potentially biased high.
N	Analyte identification presumptive; no second column analysis performed or GC/MS tentative identification.
J	Analyte present, estimated value.
NJ	Analysis indicates the presence of an analyte that was "tentatively identified" and the associated value represents its approximate concentration.
None	Placeholder for calculating quality control issues that do not require flagging.
=	Analyte was detected at a concentration greater than the quantitation limit.

## Qualifier Code Reference

<b>Value</b>	<b>Description</b>
%SOL	High Moisture content
2C	Second Column – Poor Dual Column Reproducibility
2S	Second Source – Bad reproducibility between tandem detectors
BD	Blank Spike/Blank Spike Duplicate(LCS/LCSD) Precision
BRL	Below Reporting Limit
BSH	Blank Spike/LCS – High Recovery
BSL	Blank Spike/LCS – Low Recovery
CC	Continuing Calibration
CCBL	Continuing Calibration Blank Contamination
CCH	Continuing Calibration Verification – High Recovery
CCL	Continuing Calibration Verification – Low Recovery
DL	Redundant Result – due to Dilution
EBL	Equipment Blank Contamination
EMPC	Estimated Possible Maximum Concentration
ESH	Extraction Standard - High Recovery
ESL	Extraction Standard - Low Recovery
FBL	Field Blank Contamination
FD	Field Duplicate
HT	Holding Time
ICB	Initial Calibration – Bad Linearity or Curve Function
ICH	Initial Calibration – High Relative Response Factors
ICL	Initial Calibration – Low Relative Response Factors
IR15	Ion ratio exceeds +/- 15% difference
ISH	Internal Standard – High Recovery
ISL	Internal Standard – Low Recovery
LD	Lab Duplicate Reproducibility
LR	Concentration Exceeds Linear Range
MBL	Method Blank Contamination
MDP	Matrix Spike/Matrix Spike Duplicate Precision
MI	Matrix interference obscuring the raw data

MSH	Matrix Spike and/or Matrix Spike Duplicate – High Recovery
MSL	Matrix Spike and/or Matrix Spike Duplicate – Low Recovery
OT	Other
PD	Pesticide Degradation
RE	Redundant Result - due to Reanalysis or Re-extraction
SD	Serial Dilution Reproducibility
SSH	Spiked Surrogate – High Recovery
SSL	Spiked Surrogate – Low Recovery
TBL	Trip Blank Contamination
TN	Tune

St. Juliens CTO-63, Site 5  
Attachment 1 Change Qual. Table  
SDG CTO139-3

<b>Sample ID</b>	<b>Compound</b>	<b>Q Flag</b>	<b>Qual Code</b>
SJS05-CSF37-11D	Arsenic	L	MSL
SJS05-CSF37-11D	Copper	L	MSL
SJS05-CSF37-11D	Lead	L	MSL
SJS05-CSF41-11D	Copper	J	FD
SJS05-CSF41-11D	Lead	J	FD
SJS05-CSF41-11D-P	Copper	J	FD
SJS05-CSF41-11D-P	Lead	J	FD

## Data Validation Summary

### St. Juliens CTO-63, Site 5

TO: Megan Morrison/WDC  
Anita Dodson/VBO

FROM: Tiffany McGlynn/GNV

CC: Herb Kelly/GNV

DATE: August 10, 2012

#### Introduction

The following data validation report discusses the data validation process and findings for Katahdin Analytical Services for SDG CTO139-4.

Samples were analyzed using the following analytical methods:

- SW6010B Metals

The samples included in this SDG are listed in the table below.

Sample Name	Matrix
SJS05-CSF55-11D	Soil
SJS05-CSF43-11D	Soil
SJS05-CSW19-11D	Soil
SJS05-CSF57-11D	Soil
SJS05-CSF57-11D-P	Soil
SJS05-CSF58-11D	Soil
SJS05-CSF56-11D	Soil
SJS05-FB120111	Water
SJS05-EB120111	Water

#### Data Evaluation

Data was evaluated in accordance with the analytical methods and with the criteria found in the following guidance documents: Region III Modifications for Inorganic Data Review (EPA 1993), as applicable. The samples were evaluated based on the following criteria:

- Data Completeness

- Technical Holding Times
- Initial/Continuing Calibrations
- Blanks
- Internal Standards
- Serial Dilutions
- Laboratory Control Samples
- Matrix Spike Recoveries
- Field Duplicates
- Identification/Quantitation
- Reporting Limits

## **Overall Evaluation of Data/Potential Usability Issues**

Specific details regarding qualification of the data are addressed in the sections below. If an issue is not addressed there were no actions required based on unmet quality criteria. When more than one qualifier is associated with a compound/analyte, the validator has chosen the qualifier that best indicates possible bias in the results and qualified these data accordingly.

### **Data Completeness**

The SDG was received complete and intact.

### **Technical Holding Times**

According to the chain of custody records, sampling was performed on 12/1/11. Samples were received at the laboratory on 12/2/11. All sample preparation analysis was performed within holding time requirements.

### **Blanks**

Compounds detected in the method/prep blanks and field blank are listed below. No data was affected.

<b>Blank ID</b>	<b>Compound</b>	<b>Conc.</b>	<b>Units</b>
PBSBL02ICS1	Arsenic	0.089	MG_KG
SJS05-FB120111	Copper	0.64	UG_L

**Matrix Spike/Spike Duplicate**

Copper and arsenic exhibited high recoveries in the MS/MSD for spiked sample SJS05-CSF55-11D. Affected data are summarized in **Attachment 1**.

**Field Duplicate Precision**

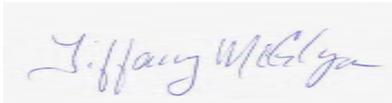
Lead did not meet field duplicate precision criteria between native sample SJS05-CSF57-11D and field duplicate SJS05-CSF57-11D-P. Affected data are summarized in **Attachment 1**.

**Conclusion**

These data can be used in the project decision-making process as qualified by the data quality evaluation process.

Please do not hesitate to contact us about this validation report.

Sincerely,

A rectangular box containing a handwritten signature in blue ink that reads "Tiffany McGlynn".

Tiffany McGlynn

## Qualification Flags

Exclude	More appropriate data exist for this analyte.
R	Data were rejected for use.
UL	Analyte not detected, quantitation limit is potentially biased low.
UJ	Analyte not detected, estimated quantitation limit.
U	Analyte not detected.
B	Not detected substantially above the level reported in laboratory or field blanks.
L	Analyte present, estimated value potentially biased low.
K	Analyte present, estimated value potentially biased high.
N	Analyte identification presumptive; no second column analysis performed or GC/MS tentative identification.
J	Analyte present, estimated value.
NJ	Analysis indicates the presence of an analyte that was "tentatively identified" and the associated value represents its approximate concentration.
None	Placeholder for calculating quality control issues that do not require flagging.
=	Analyte was detected at a concentration greater than the quantitation limit.

## Qualifier Code Reference

<b>Value</b>	<b>Description</b>
%SOL	High Moisture content
2C	Second Column – Poor Dual Column Reproducibility
2S	Second Source – Bad reproducibility between tandem detectors
BD	Blank Spike/Blank Spike Duplicate(LCS/LCSD) Precision
BRL	Below Reporting Limit
BSH	Blank Spike/LCS – High Recovery
BSL	Blank Spike/LCS – Low Recovery
CC	Continuing Calibration
CCBL	Continuing Calibration Blank Contamination
CCH	Continuing Calibration Verification – High Recovery
CCL	Continuing Calibration Verification – Low Recovery
DL	Redundant Result – due to Dilution
EBL	Equipment Blank Contamination
EMPC	Estimated Possible Maximum Concentration
ESH	Extraction Standard - High Recovery
ESL	Extraction Standard - Low Recovery
FBL	Field Blank Contamination
FD	Field Duplicate
HT	Holding Time
ICB	Initial Calibration – Bad Linearity or Curve Function
ICH	Initial Calibration – High Relative Response Factors
ICL	Initial Calibration – Low Relative Response Factors
IR15	Ion ratio exceeds +/- 15% difference
ISH	Internal Standard – High Recovery
ISL	Internal Standard – Low Recovery
LD	Lab Duplicate Reproducibility
LR	Concentration Exceeds Linear Range
MBL	Method Blank Contamination
MDP	Matrix Spike/Matrix Spike Duplicate Precision
MI	Matrix interference obscuring the raw data

MSH	Matrix Spike and/or Matrix Spike Duplicate – High Recovery
MSL	Matrix Spike and/or Matrix Spike Duplicate – Low Recovery
OT	Other
PD	Pesticide Degradation
RE	Redundant Result - due to Reanalysis or Re-extraction
SD	Serial Dilution Reproducibility
SSH	Spiked Surrogate – High Recovery
SSL	Spiked Surrogate – Low Recovery
TBL	Trip Blank Contamination
TN	Tune

St. Juliens CTO-63, Site 5  
Attachment 1 Change Qual. Table  
SDG CTO139-4

<b>Sample ID</b>	<b>Compound</b>	<b>Q Flag</b>	<b>Qual Code</b>
SJS05-CSF55-11D	Arsenic	K	MSH
SJS05-CSF55-11D	Copper	K	MSH
SJS05-CSF57-11D	Lead	J	FD
SJS05-CSF57-11D-P	Lead	J	FD

## Data Validation Summary

### St. Juliens CTO-63, Site 5

TO: Megan Morrison/WDC  
Anita Dodson/VBO

FROM: Tiffany McGlynn/GNV

CC: Herb Kelly/GNV

DATE: August 10, 2012

#### Introduction

The following data validation report discusses the data validation process and findings for Katahdin Analytical Services for SDG CTO139-5.

Samples were analyzed using the following analytical methods:

- SW6010B Metals

The samples included in this SDG are listed in the table below.

Sample Name	Matrix
SJS05-CSF06-12B	Soil
SJS05-CSF07-12B	Soil
SJS05-CSF08-12B	Soil
SJS05-CSF09-12B	Soil
SJS05-CSW09-12B	Soil
SJS05-CSF10-12B	Soil
SJS05-CSF11-12B	Soil
SJS05-CSF12-12B	Soil
SJS05-CSF14-12B	Soil
SJS05-CSF15-12B	Soil
SJS05-CSF16-12B	Soil
SJS05-CSF17-12B	Soil
SJS05-CSF07-12B-P	Soil
SJS05-CSF17-12B-P	Soil
SJS05-FB051412	Water
SJS05-EB051412	Water

## **Data Evaluation**

Data was evaluated in accordance with the analytical methods and with the criteria found in the following guidance documents: Region III Modifications for Inorganic Data Review (EPA 1993), as applicable. The samples were evaluated based on the following criteria:

- Data Completeness
- Technical Holding Times
- Initial/Continuing Calibrations
- Blanks
- Internal Standards
- Serial Dilutions
- Laboratory Control Samples
- Matrix Spike Recoveries
- Field Duplicates
- Identification/Quantitation
- Reporting Limits

### **Overall Evaluation of Data/Potential Usability Issues**

Specific details regarding qualification of the data are addressed in the sections below. If an issue is not addressed there were no actions required based on unmet quality criteria. When more than one qualifier is associated with a compound/analyte, the validator has chosen the qualifier that best indicates possible bias in the results and qualified these data accordingly.

#### **Data Completeness**

The SDG was received complete and intact.

#### **Technical Holding Times**

According to the chain of custody records, sampling was performed on 5/14/12. Samples were received at the laboratory on 5/15/12. All sample preparation analysis was performed within holding time requirements.

#### **Blanks**

Compounds detected in the equipment blank and field blank are listed below. No data was affected.

Blank ID	Compound	Conc.	Units
SJS05-FB051412	Lead	2.0	UG_L
SJS05-EB051412	Lead	2.2	UG_L

### **Matrix Spike/Spike Duplicate**

Arsenic exhibited high recoveries in the MS/MSD for spiked sample SJS05-CSF09-12B. Affected data are summarized in **Attachment 1**.

### **Field Duplicate Precision**

Arsenic and copper did not meet field duplicate precision criteria between native sample SJS05-CSF07-12B and field duplicate SJS05-CSF07-12B-P. Affected data are summarized in **Attachment 1**.

### **Conclusion**

These data can be used in the project decision-making process as qualified by the data quality evaluation process.

Please do not hesitate to contact us about this validation report.

Sincerely,



Tiffany McGlynn

## Qualification Flags

Exclude	More appropriate data exist for this analyte.
R	Data were rejected for use.
UL	Analyte not detected, quantitation limit is potentially biased low.
UJ	Analyte not detected, estimated quantitation limit.
U	Analyte not detected.
B	Not detected substantially above the level reported in laboratory or field blanks.
L	Analyte present, estimated value potentially biased low.
K	Analyte present, estimated value potentially biased high.
N	Analyte identification presumptive; no second column analysis performed or GC/MS tentative identification.
J	Analyte present, estimated value.
NJ	Analysis indicates the presence of an analyte that was "tentatively identified" and the associated value represents its approximate concentration.
None	Placeholder for calculating quality control issues that do not require flagging.
=	Analyte was detected at a concentration greater than the quantitation limit.

## Qualifier Code Reference

<b>Value</b>	<b>Description</b>
%SOL	High Moisture content
2C	Second Column – Poor Dual Column Reproducibility
2S	Second Source – Bad reproducibility between tandem detectors
BD	Blank Spike/Blank Spike Duplicate(LCS/LCSD) Precision
BRL	Below Reporting Limit
BSH	Blank Spike/LCS – High Recovery
BSL	Blank Spike/LCS – Low Recovery
CC	Continuing Calibration
CCBL	Continuing Calibration Blank Contamination
CCH	Continuing Calibration Verification – High Recovery
CCL	Continuing Calibration Verification – Low Recovery
DL	Redundant Result – due to Dilution
EBL	Equipment Blank Contamination
EMPC	Estimated Possible Maximum Concentration
ESH	Extraction Standard - High Recovery
ESL	Extraction Standard - Low Recovery
FBL	Field Blank Contamination
FD	Field Duplicate
HT	Holding Time
ICB	Initial Calibration – Bad Linearity or Curve Function
ICH	Initial Calibration – High Relative Response Factors
ICL	Initial Calibration – Low Relative Response Factors
IR15	Ion ratio exceeds +/- 15% difference
ISH	Internal Standard – High Recovery
ISL	Internal Standard – Low Recovery
LD	Lab Duplicate Reproducibility
LR	Concentration Exceeds Linear Range
MBL	Method Blank Contamination
MDP	Matrix Spike/Matrix Spike Duplicate Precision
MI	Matrix interference obscuring the raw data

MSH	Matrix Spike and/or Matrix Spike Duplicate – High Recovery
MSL	Matrix Spike and/or Matrix Spike Duplicate – Low Recovery
OT	Other
PD	Pesticide Degradation
RE	Redundant Result - due to Reanalysis or Re-extraction
SD	Serial Dilution Reproducibility
SSH	Spiked Surrogate – High Recovery
SSL	Spiked Surrogate – Low Recovery
TBL	Trip Blank Contamination
TN	Tune

St. Juliens CTO-63, Site 5  
Attachment 1 Change Qual. Table  
SDG CTO139-5

<b>Sample ID</b>	<b>Compound</b>	<b>Q Flag</b>	<b>Qual Code</b>
SJS05-CSF07-12B	Arsenic	J	FD
SJS05-CSF07-12B	Copper	J	FD
SJS05-CSF09-12B	Arsenic	K	MSH
SJS05-CSF07-12B-P	Arsenic	J	FD
SJS05-CSF07-12B-P	Copper	J	FD

## Data Validation Summary

### St. Juliens CTO-63, Site 5

TO: Megan Morrison/WDC  
Anita Dodson/VBO

FROM: Tiffany McGlynn/GNV

CC: Herb Kelly/GNV

DATE: August 10, 2012

#### Introduction

The following data validation report discusses the data validation process and findings for Katahdin Analytical Services for SDG CTO139-6.

Samples were analyzed using the following analytical methods:

- SW6010B Metals

The samples included in this SDG are listed in the table below.

Sample Name	Matrix
SJS05-CSW23-12B	Soil

#### Data Evaluation

Data was evaluated in accordance with the analytical methods and with the criteria found in the following guidance documents: Region III Modifications for Inorganic Data Review (EPA 1993), as applicable. The samples were evaluated based on the following criteria:

- Data Completeness
- Technical Holding Times
- Initial/Continuing Calibrations
- Blanks
- Internal Standards
- Serial Dilutions

- Laboratory Control Samples
- Matrix Spike Recoveries
- Field Duplicates
- Identification/Quantitation
- Reporting Limits

## **Overall Evaluation of Data/Potential Usability Issues**

Specific details regarding qualification of the data are addressed in the sections below. If an issue is not addressed there were no actions required based on unmet quality criteria. When more than one qualifier is associated with a compound/analyte, the validator has chosen the qualifier that best indicates possible bias in the results and qualified these data accordingly.

### **Data Completeness**

The SDG was received complete and intact.

### **Technical Holding Times**

According to the chain of custody records, sampling was performed on 5/16/12. Samples were received at the laboratory on 5/17/12. All sample preparation analysis was performed within holding time requirements.

### **Blanks**

Compounds detected in the method blanks are listed below. Copper was qualified in sample SJS05-CSW23-12B as 'B-MBL'.

<b>Blank ID</b>	<b>Compound</b>	<b>Conc.</b>	<b>Units</b>
PBSFE17ICS1	Arsenic	-0.144	MG_KG
PBSFE17ICS1	Copper	1.242	MG_KG

### **Matrix Spike/Spike Duplicate**

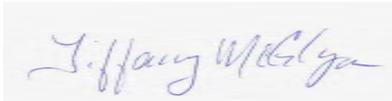
Arsenic exhibited low recoveries in the MS/MSD for spiked sample SJS05-CSW23-12B. The sample result was qualified as 'L-MSL'.

## **Conclusion**

These data can be used in the project decision-making process as qualified by the data quality evaluation process.

Please do not hesitate to contact us about this validation report.

Sincerely,

A handwritten signature in blue ink that reads "Tiffany McGlynn". The signature is written in a cursive style and is contained within a light gray rectangular box.

Tiffany McGlynn

## Qualification Flags

Exclude	More appropriate data exist for this analyte.
R	Data were rejected for use.
UL	Analyte not detected, quantitation limit is potentially biased low.
UJ	Analyte not detected, estimated quantitation limit.
U	Analyte not detected.
B	Not detected substantially above the level reported in laboratory or field blanks.
L	Analyte present, estimated value potentially biased low.
K	Analyte present, estimated value potentially biased high.
N	Analyte identification presumptive; no second column analysis performed or GC/MS tentative identification.
J	Analyte present, estimated value.
NJ	Analysis indicates the presence of an analyte that was "tentatively identified" and the associated value represents its approximate concentration.
None	Placeholder for calculating quality control issues that do not require flagging.
=	Analyte was detected at a concentration greater than the quantitation limit.

## Qualifier Code Reference

<b>Value</b>	<b>Description</b>
%SOL	High Moisture content
2C	Second Column – Poor Dual Column Reproducibility
2S	Second Source – Bad reproducibility between tandem detectors
BD	Blank Spike/Blank Spike Duplicate(LCS/LCSD) Precision
BRL	Below Reporting Limit
BSH	Blank Spike/LCS – High Recovery
BSL	Blank Spike/LCS – Low Recovery
CC	Continuing Calibration
CCBL	Continuing Calibration Blank Contamination
CCH	Continuing Calibration Verification – High Recovery
CCL	Continuing Calibration Verification – Low Recovery
DL	Redundant Result – due to Dilution
EBL	Equipment Blank Contamination
EMPC	Estimated Possible Maximum Concentration
ESH	Extraction Standard - High Recovery
ESL	Extraction Standard - Low Recovery
FBL	Field Blank Contamination
FD	Field Duplicate
HT	Holding Time
ICB	Initial Calibration – Bad Linearity or Curve Function
ICH	Initial Calibration – High Relative Response Factors
ICL	Initial Calibration – Low Relative Response Factors
IR15	Ion ratio exceeds +/- 15% difference
ISH	Internal Standard – High Recovery
ISL	Internal Standard – Low Recovery
LD	Lab Duplicate Reproducibility
LR	Concentration Exceeds Linear Range
MBL	Method Blank Contamination
MDP	Matrix Spike/Matrix Spike Duplicate Precision
MI	Matrix interference obscuring the raw data

MSH	Matrix Spike and/or Matrix Spike Duplicate – High Recovery
MSL	Matrix Spike and/or Matrix Spike Duplicate – Low Recovery
OT	Other
PD	Pesticide Degradation
RE	Redundant Result - due to Reanalysis or Re-extraction
SD	Serial Dilution Reproducibility
SSH	Spiked Surrogate – High Recovery
SSL	Spiked Surrogate – Low Recovery
TBL	Trip Blank Contamination
TN	Tune

## Data Validation Summary

### St. Juliens CTO-63, Site 5

TO: Megan Morrison/WDC  
Anita Dodson/VBO

FROM: Tiffany McGlynn/GNV

CC: Herb Kelly/GNV

DATE: August 10, 2012

#### Introduction

The following data validation report discusses the data validation process and findings for Katahdin Analytical Services for SDG SB4543.

Samples were analyzed using the following analytical methods:

- SW6010B Metals

The samples included in this SDG are listed in the table below.

Sample Name	Matrix
SJS05-CS01-08C	Soil
SJS05-CS02-08C	Soil
SJS05-CS02-08C-P	Soil
SJS05-FB081408	Water
SJS05-EB081408	Water

#### Data Evaluation

Data was evaluated in accordance with the analytical methods and with the criteria found in the following guidance documents: Region III Modifications for Inorganic Data Review (EPA 1993), as applicable. The samples were evaluated based on the following criteria:

- Data Completeness
- Technical Holding Times
- Initial/Continuing Calibrations

- Blanks
- Internal Standards
- Serial Dilutions
- Laboratory Control Samples
- Matrix Spike Recoveries
- Field Duplicates
- Identification/Quantitation
- Reporting Limits

### **Overall Evaluation of Data/Potential Usability Issues**

Specific details regarding qualification of the data are addressed in the sections below. If an issue is not addressed there were no actions required based on unmet quality criteria. When more than one qualifier is associated with a compound/analyte, the validator has chosen the qualifier that best indicates possible bias in the results and qualified these data accordingly.

#### **Data Completeness**

The SDG was received complete and intact.

#### **Technical Holding Times**

According to the chain of custody records, sampling was performed on 8/14/08. Samples were received at the laboratory on 8/15/08. All sample preparation analysis was performed within holding time requirements.

#### **Matrix Spike/Spike Duplicate**

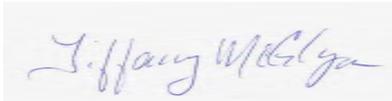
Lead exhibited low recoveries in the MS/MSD for spiked sample SJS05-CS02-08C. The sample result was qualified as 'L-MSL'.

## **Conclusion**

These data can be used in the project decision-making process as qualified by the data quality evaluation process.

Please do not hesitate to contact us about this validation report.

Sincerely,

A handwritten signature in blue ink that reads "Tiffany McGlynn". The signature is written in a cursive style and is contained within a light gray rectangular box.

Tiffany McGlynn

## Qualification Flags

Exclude	More appropriate data exist for this analyte.
R	Data were rejected for use.
UL	Analyte not detected, quantitation limit is potentially biased low.
UJ	Analyte not detected, estimated quantitation limit.
U	Analyte not detected.
B	Not detected substantially above the level reported in laboratory or field blanks.
L	Analyte present, estimated value potentially biased low.
K	Analyte present, estimated value potentially biased high.
N	Analyte identification presumptive; no second column analysis performed or GC/MS tentative identification.
J	Analyte present, estimated value.
NJ	Analysis indicates the presence of an analyte that was "tentatively identified" and the associated value represents its approximate concentration.
None	Placeholder for calculating quality control issues that do not require flagging.
=	Analyte was detected at a concentration greater than the quantitation limit.

## Qualifier Code Reference

<b>Value</b>	<b>Description</b>
%SOL	High Moisture content
2C	Second Column – Poor Dual Column Reproducibility
2S	Second Source – Bad reproducibility between tandem detectors
BD	Blank Spike/Blank Spike Duplicate(LCS/LCSD) Precision
BRL	Below Reporting Limit
BSH	Blank Spike/LCS – High Recovery
BSL	Blank Spike/LCS – Low Recovery
CC	Continuing Calibration
CCBL	Continuing Calibration Blank Contamination
CCH	Continuing Calibration Verification – High Recovery
CCL	Continuing Calibration Verification – Low Recovery
DL	Redundant Result – due to Dilution
EBL	Equipment Blank Contamination
EMPC	Estimated Possible Maximum Concentration
ESH	Extraction Standard - High Recovery
ESL	Extraction Standard - Low Recovery
FBL	Field Blank Contamination
FD	Field Duplicate
HT	Holding Time
ICB	Initial Calibration – Bad Linearity or Curve Function
ICH	Initial Calibration – High Relative Response Factors
ICL	Initial Calibration – Low Relative Response Factors
IR15	Ion ratio exceeds +/- 15% difference
ISH	Internal Standard – High Recovery
ISL	Internal Standard – Low Recovery
LD	Lab Duplicate Reproducibility
LR	Concentration Exceeds Linear Range
MBL	Method Blank Contamination
MDP	Matrix Spike/Matrix Spike Duplicate Precision
MI	Matrix interference obscuring the raw data

MSH	Matrix Spike and/or Matrix Spike Duplicate – High Recovery
MSL	Matrix Spike and/or Matrix Spike Duplicate – Low Recovery
OT	Other
PD	Pesticide Degradation
RE	Redundant Result - due to Reanalysis or Re-extraction
SD	Serial Dilution Reproducibility
SSH	Spiked Surrogate – High Recovery
SSL	Spiked Surrogate – Low Recovery
TBL	Trip Blank Contamination
TN	Tune

## Data Validation Summary

### St. Juliens CTO-63, Site 5

TO: Megan Morrison/WDC  
Anita Dodson/VBO

FROM: Tiffany McGlynn/GNV

CC: Herb Kelly/GNV

DATE: August 10, 2012

#### Introduction

The following data validation report discusses the data validation process and findings for Katahdin Analytical Services for SDG SF0961.

Samples were analyzed using the following analytical methods:

- SW6010B Metals

The samples included in this SDG are listed in the table below.

Sample Name	Matrix
SJS05-CSF19-12A	Soil
SJS05-CSF20-12A	Soil
SJS05-CSF21-12A	Soil
SJS05-CSF21-12A-P	Soil
SJS05-CSF22-12A	Soil
SJS05-CSF23-12A	Soil
SJS05-CSF18-12A	Soil
SJS05-CSF13-12A	Soil
SJS05-FB021712	Water
SJS05-EB021712	Water

#### Data Evaluation

Data was evaluated in accordance with the analytical methods and with the criteria found in the following guidance documents: Region III Modifications for Inorganic Data Review (EPA 1993), as applicable. The samples were evaluated based on the following criteria:

- Data Completeness
- Technical Holding Times
- Initial/Continuing Calibrations
- Blanks
- Internal Standards
- Serial Dilutions
- Laboratory Control Samples
- Matrix Spike Recoveries
- Field Duplicates
- Identification/Quantitation
- Reporting Limits

## **Overall Evaluation of Data/Potential Usability Issues**

Specific details regarding qualification of the data are addressed in the sections below. If an issue is not addressed there were no actions required based on unmet quality criteria. When more than one qualifier is associated with a compound/analyte, the validator has chosen the qualifier that best indicates possible bias in the results and qualified these data accordingly.

### **Data Completeness**

The SDG was received complete and intact.

### **Technical Holding Times**

According to the chain of custody records, sampling was performed on 2/17/12. Samples were received at the laboratory on 2/18/12. All sample preparation analysis was performed within holding time requirements.

### **Blanks**

Compounds detected in the method/prep blanks, field blank, and equipment blank are listed below. No data were affected.

<b>Blank ID</b>	<b>Compound</b>	<b>Conc.</b>	<b>Units</b>
SJS05-FB021712	Copper	0.66	UG_L
SJS05-EB021712	Lead	1.3	UG_L
PBSFB20ICS2	Arsenic	0.153	MG_KG
PBSFB20ICS2	Lead	0.112	MG_KG

**Matrix Spike/Spike Duplicate**

Arsenic exhibited low recoveries and copper exhibited high recoveries in the MS/MSD for spiked sample SJS05-CSF13-12A. Affected data are summarized in **Attachment 1**.

**Field Duplicate Precision**

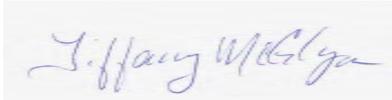
Arsenic, copper, and lead did not meet field duplicate precision criteria between native sample SJS05-CSF21-12A and field duplicate SJS05-CSF21-12A-P. Affected data are summarized in **Attachment 1**.

**Conclusion**

These data can be used in the project decision-making process as qualified by the data quality evaluation process.

Please do not hesitate to contact us about this validation report.

Sincerely,

A handwritten signature in blue ink that reads "Tiffany McGlynn". The signature is written in a cursive style and is placed on a light gray rectangular background.

Tiffany McGlynn

## Qualification Flags

Exclude	More appropriate data exist for this analyte.
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NJ	Analysis indicates the presence of an analyte that was "tentatively identified" and the associated value represents its approximate concentration.
None	Placeholder for calculating quality control issues that do not require flagging.
=	Analyte was detected at a concentration greater than the quantitation limit.

## Qualifier Code Reference

<b>Value</b>	<b>Description</b>
%SOL	High Moisture content
2C	Second Column – Poor Dual Column Reproducibility
2S	Second Source – Bad reproducibility between tandem detectors
BD	Blank Spike/Blank Spike Duplicate(LCS/LCSD) Precision
BRL	Below Reporting Limit
BSH	Blank Spike/LCS – High Recovery
BSL	Blank Spike/LCS – Low Recovery
CC	Continuing Calibration
CCBL	Continuing Calibration Blank Contamination
CCH	Continuing Calibration Verification – High Recovery
CCL	Continuing Calibration Verification – Low Recovery
DL	Redundant Result – due to Dilution
EBL	Equipment Blank Contamination
EMPC	Estimated Possible Maximum Concentration
ESH	Extraction Standard - High Recovery
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ICB	Initial Calibration – Bad Linearity or Curve Function
ICH	Initial Calibration – High Relative Response Factors
ICL	Initial Calibration – Low Relative Response Factors
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ISH	Internal Standard – High Recovery
ISL	Internal Standard – Low Recovery
LD	Lab Duplicate Reproducibility
LR	Concentration Exceeds Linear Range
MBL	Method Blank Contamination
MDP	Matrix Spike/Matrix Spike Duplicate Precision
MI	Matrix interference obscuring the raw data

MSH	Matrix Spike and/or Matrix Spike Duplicate – High Recovery
MSL	Matrix Spike and/or Matrix Spike Duplicate – Low Recovery
OT	Other
PD	Pesticide Degradation
RE	Redundant Result - due to Reanalysis or Re-extraction
SD	Serial Dilution Reproducibility
SSH	Spiked Surrogate – High Recovery
SSL	Spiked Surrogate – Low Recovery
TBL	Trip Blank Contamination
TN	Tune

St. Juliens CTO-63, Site 5  
Attachment 1 Change Qual. Table  
SDG SF0961

<b>Sample ID</b>	<b>Compound</b>	<b>Q Flag</b>	<b>Qual Code</b>
SJS05-CSF21-12A	Arsenic	J	FD
SJS05-CSF21-12A	Copper	J	FD
SJS05-CSF21-12A	Lead	J	FD
SJS05-CSF21-12A-P	Arsenic	J	FD
SJS05-CSF21-12A-P	Copper	J	FD
SJS05-CSF21-12A-P	Lead	J	FD
SJS05-CSF13-12A	Arsenic	L	MSL
SJS05-CSF13-12A	Copper	K	MSH