

# **2010 FIRST SEMI-ANNUAL GROUNDWATER SAMPLING REPORT**

**Site 10 – Former Warehouse Area  
Buckley Air Force Base, Colorado**

**DRAFT FINAL**

*Prepared for:*

**United States Corps of Engineers – Omaha District**

1616 Capitol Avenue, Suite 9000

Omaha, Nebraska 68102-9000

Contract No.: W91238-06-D-0022

Task Order: DK06

*Prepared by:*

**Innovative Technical Solutions, Inc.**

3333 South Wadsworth Blvd., Suite 220

Lakewood, Colorado 80227

**November 2010**

This Groundwater Sampling Report presents the results of the recent groundwater sampling conducted from June 29 through July 9, 2010 at Site 10 at Buckley Air Force Base (BAFB), in Aurora, Colorado. The groundwater sampling and analysis was performed as detailed in the *Groundwater Sampling Work Plan* (Innovative Technical Solutions, Inc. [ITSI], 2010) dated June, 2010. ITSI conducted this work under Task Order (TO) DK06 of United States Army Corps of Engineers, Omaha District (USACE) Environmental Remediation Services (ERS) Small Business Contract No. W91238-06-D-0022 for remediation of BAFB Environmental Restoration Program (ERP) Sites in Aurora, Colorado.

The *Groundwater Sampling Work Plan* specified that groundwater samples were to be collected from 48 existing groundwater monitoring wells at Site 10 and analyzed for volatile organic compounds (VOCs) and bioremediation parameters. The sampling efforts and results are summarized in this report.

Analytical results are summarized in **Table 1** with tetrachloroethylene (PCE) and trichloroethylene (TCE) concentrations posted on **Figure 1** and **Figure 2**, respectively. The results of groundwater quality, bioremediation, and dissolved gas analyses for a subset of Site 10 monitoring wells are provided in **Table 2**. Water level gauging measurements are presented in **Table 3** with potentiometric surface maps of the upper and lower groundwater regimes presented on **Figure 3** and **Figure 4**, respectively. **Appendix A** includes the ITSI field sampling documentation. The laboratory analytical results and the analytical data quality report for the groundwater sampling completed by ITSI are provided in **Appendix B**.

### **Water Level Measurements**

On June 29 and 30, 2010, ITSI measured the depth-to-groundwater in 47 of the 48 wells originally proposed to be sampled during this event at Site 10, located on BAFB property and north of 6th Avenue on City of Aurora property. Monitoring well FMW-PW20A was not located during site activities and was therefore, not gauged or sampled. The gauging data is summarized in **Table 3**.

Water levels were measured using a decontaminated electronic water level indicator and were recorded to the nearest 0.01 foot. Measurements were taken from the pre-surveyed reference mark at the top of each well casing. Survey data from all existing monitoring wells was collected from several previous investigations.

### **Groundwater Sample Collection**

ITSI performed groundwater sampling from a total of 42 monitoring wells. The wells that were sampled consisted of six sparge trench wells (PW-13 through PW-18) three source area wells (PW-20 through PW-22) and 33 other existing wells proposed in the *Groundwater Sampling Work Plan*. Four monitoring wells (FDA-MW13, FWA-TW62, FWA-TW67, and USCWTP-MW1) did not have sufficient water to sample. One source area well (PW-19) remained obstructed preventing it from being sampled and FMW-PW20A could not be located.

The analytical results are presented in **Table 1** and **Table 2** and PCE and TCE concentrations are displayed on **Figure 1** and **Figure 2**.

Groundwater samples were collected using low-flow groundwater sampling techniques as described in the *Groundwater Sampling Work Plan*. These techniques included:

- Use of a submersible pump which was decontaminated between monitoring wells.
- Recording of field parameters, including continuously monitoring pH, temperature, conductivity, dissolved oxygen (DO), and turbidity during purging using a flow cell every 2 to 3 minutes. Purging of the well was considered complete when all field parameters were stable for three successive readings that were within +/- 0.1 units for pH, +/- 3 percent for specific conductance, and +/- 10 percent for DO, and turbidity. Following stabilization of field parameters, the flow cell was disconnected and groundwater samples were collected.
- Sample data was recorded on a groundwater sample collection form, including sample number and time collected; and the observed physical characteristics of the sample (e.g., color, turbidity). Field parameters (pH, specific conductance, temperature, DO, and turbidity) were recorded with a hand-held data logging device.
- Groundwater samples were collected into the appropriate sample containers. Samples were chilled to 4°C immediately after collecting the sample. A new pair of gloves was worn when collecting each sample.

Exceptions to the sampling techniques above included:

- Use of a disposable 1.5-inch polyethylene bailer to collect the groundwater sample from monitoring well FWA-DPT17. Three well casing volumes were removed prior to sample collection and field parameters were not collected.
- Samples collected from monitoring wells FDA-MW15, FDA-MW28, PW-20, FWA-MW17, FWA-TW62 and FWA-TW68 were collected without achieving stabilization of field parameters due to insufficient groundwater in each well. Each well was initially pumped dry and allowed to recharge (over a 24-hour period) so that a sample could be collected.

The ITSI field sampling documentation has been included as **Appendix A**.

### **Laboratory Analyses**

In addition to field parameters described above, all groundwater samples collected from the 42 monitoring wells were analyzed for select VOCs as shown on **Table 1**. A subset of 17 wells (detailed in **Table 2**) were also analyzed for all or some of the following bioremediation parameters:

- Alkalinity, chloride, nitrate-nitrite, sulfate, sulfide, total organic carbon (TOC), calcium, magnesium, potassium, sodium, and total iron.

Additionally, to allow for the detailed evaluation of past remediation activities, seven wells associated with the former Interim Remedial Action (the source area excavation) or the recently performed treatability study were analyzed for dissolved gases (methane, ethane, and ethene).

The results of the bioremediation parameters and dissolved gases analyses are summarized in **Table 2**. All groundwater sampling was performed in accordance with standard EPA-approved methods as specified in the Site-Specific QAPP (ITSI, 2010).

### **Investigation-Derived Waste**

Purge water from the sampling event was containerized in six 55-gallon drums and decontamination water was containerized in one 55-gallon drum. The drums were labeled, profiled, and managed as investigation-derived waste (ITSI, 2008).

### **Sampling Results**

A total of 42 monitoring wells were sampled at Site 10. Sampling also included Quality Assurance/Quality Control samples consisting of duplicates and matrix spike/matrix spike duplicates, and equipment blanks.

The VOCs of primary concern at Site 10 are PCE and TCE. PCE was detected in 26 wells and TCE was detected in 16 wells during this event. PCE and TCE were each detected at concentrations above their respective federal maximum contaminant levels (MCLs) (USEPA, 2009) of 5 micrograms per liter ( $\mu\text{g/L}$ ) and Colorado Basic Standards for Groundwater (CBSGs) (Colorado Department of Public Health and the Environment, 2009) of 5  $\mu\text{g/L}$  for PCE and TCE in 20 groundwater samples collected from 18 wells (this included two duplicated samples). In total, 16 wells showed exceedances for PCE and seven wells showed exceedances for TCE. The highest concentration of PCE was detected from monitoring well FWA-MW49 at 907  $\mu\text{g/L}$ . The highest concentration of TCE was detected from monitoring well FWA-MW52 at 92.6  $\mu\text{g/L}$ . Cis 1-2 dichloroethylene was detected above the MCL/CBSG of 70  $\mu\text{g/L}$  in one monitoring well (PW-21) at a concentration of 119  $\mu\text{g/L}$ . Vinyl chloride was detected above the MCL/CBSG of 2  $\mu\text{g/L}$  in one monitoring well (PW-21) at a concentration of 26.5  $\mu\text{g/L}$ .

TOC values ranged from a low of 3.7 milligrams per liter (mg/L) in well FWA-MW43 to a high of 1,160 mg/L in well FWA-TW68.

All VOC and TOC analytical results are summarized in **Table 1**.

Samples from a total of 17 wells were also analyzed for a number of bioremediation parameters including dissolved gases. Those results are summarized in **Table 2**.

The sampling results from the 2010 sampling event show that the highest elevated concentrations exist north of the base boundary in the area of well FWA-MW49 and FWA-TW68, approximately 300 feet north-northeast of the former excavation area as displayed on **Figure 1**.

## REFERENCES

Colorado Department of Public Health and Environment. 2009. Water Quality Control Commission. *The Basic Standards for Groundwater*. 5CCR 1002-41, Regulation No. 41. November.

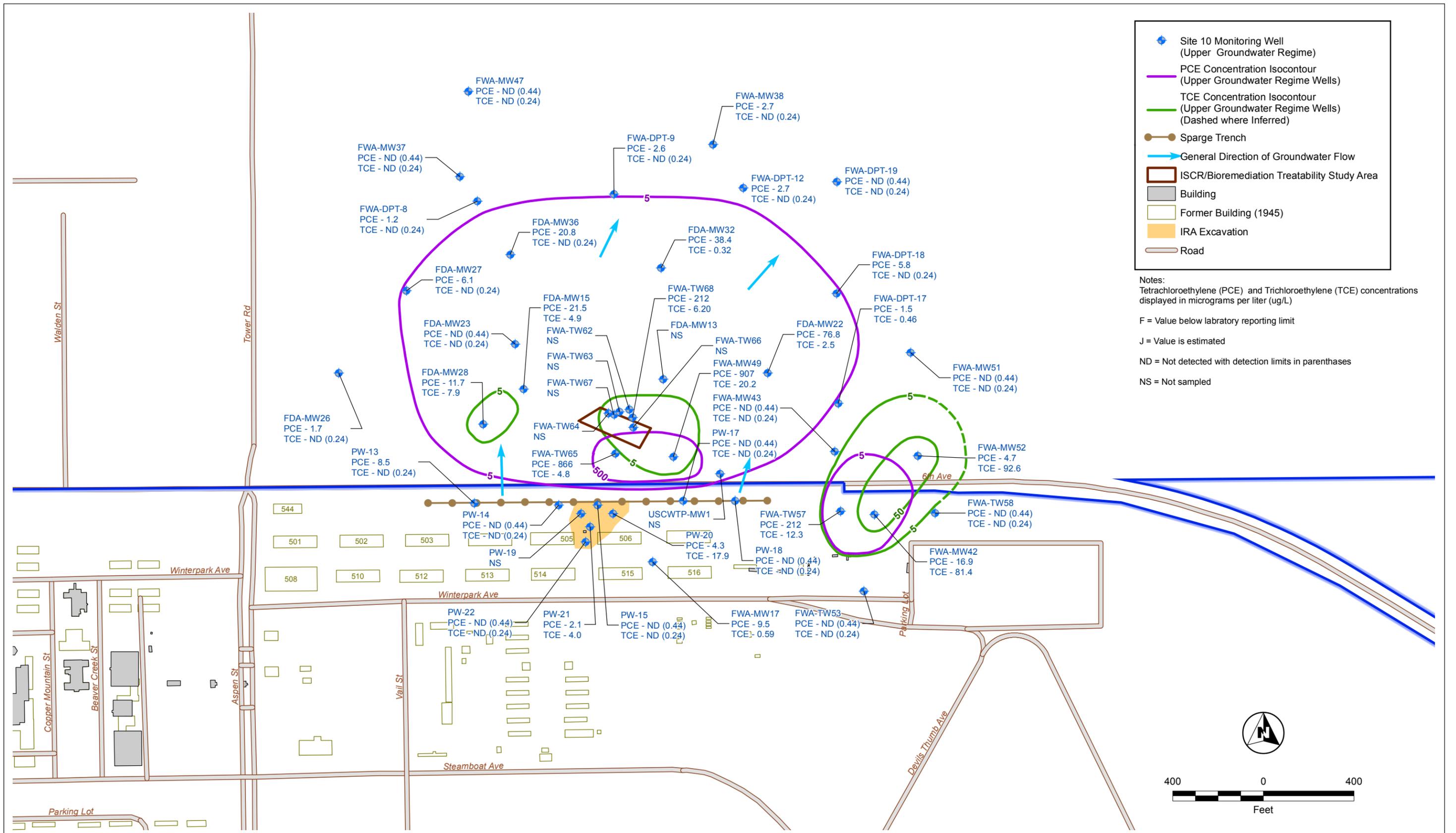
Innovative Technical Solutions, Inc. (ITSI). 2008. *Investigation-Derived Waste Management Plan Buckley Air Force Base Aurora, Colorado*. October.

ITSI. 2010. *Groundwater Sampling Work Plan Site 10 – Former Warehouse Area, Buckley Air Force Base, Colorado*. June.

United States Environmental Protection Agency (USEPA) 2009. *National Primary Drinking Water Regulations*. May.

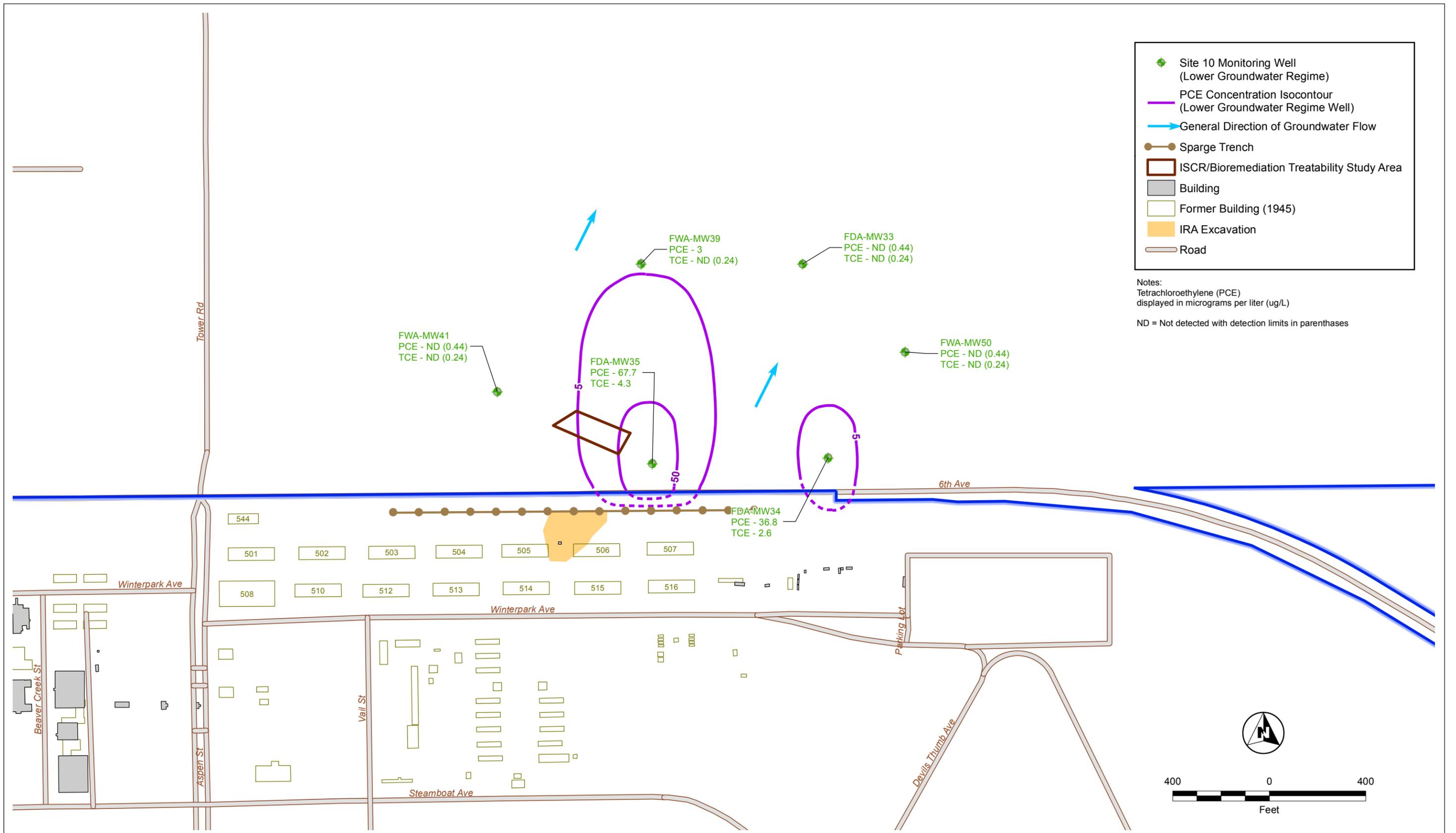
## **FIGURES**

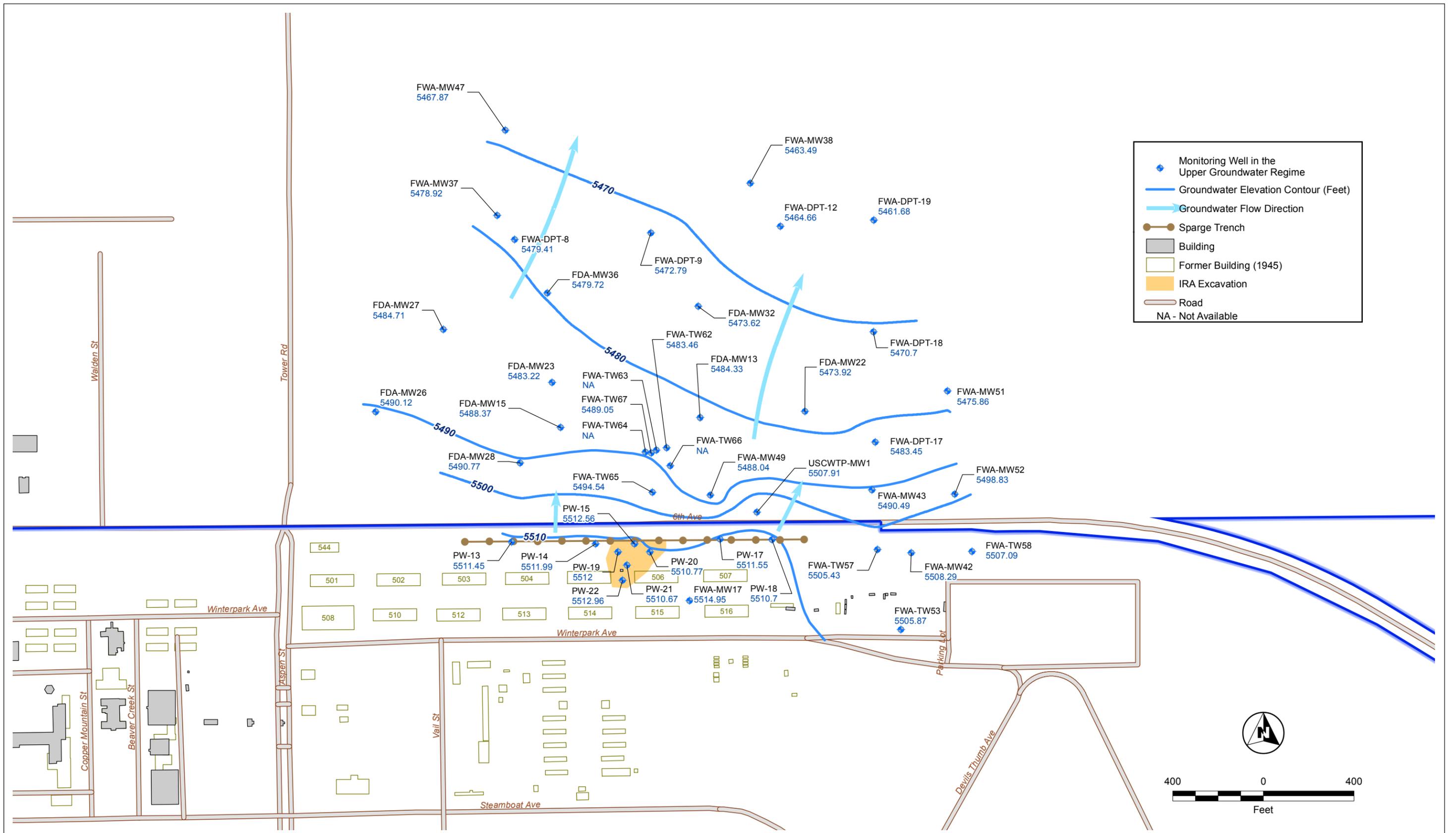


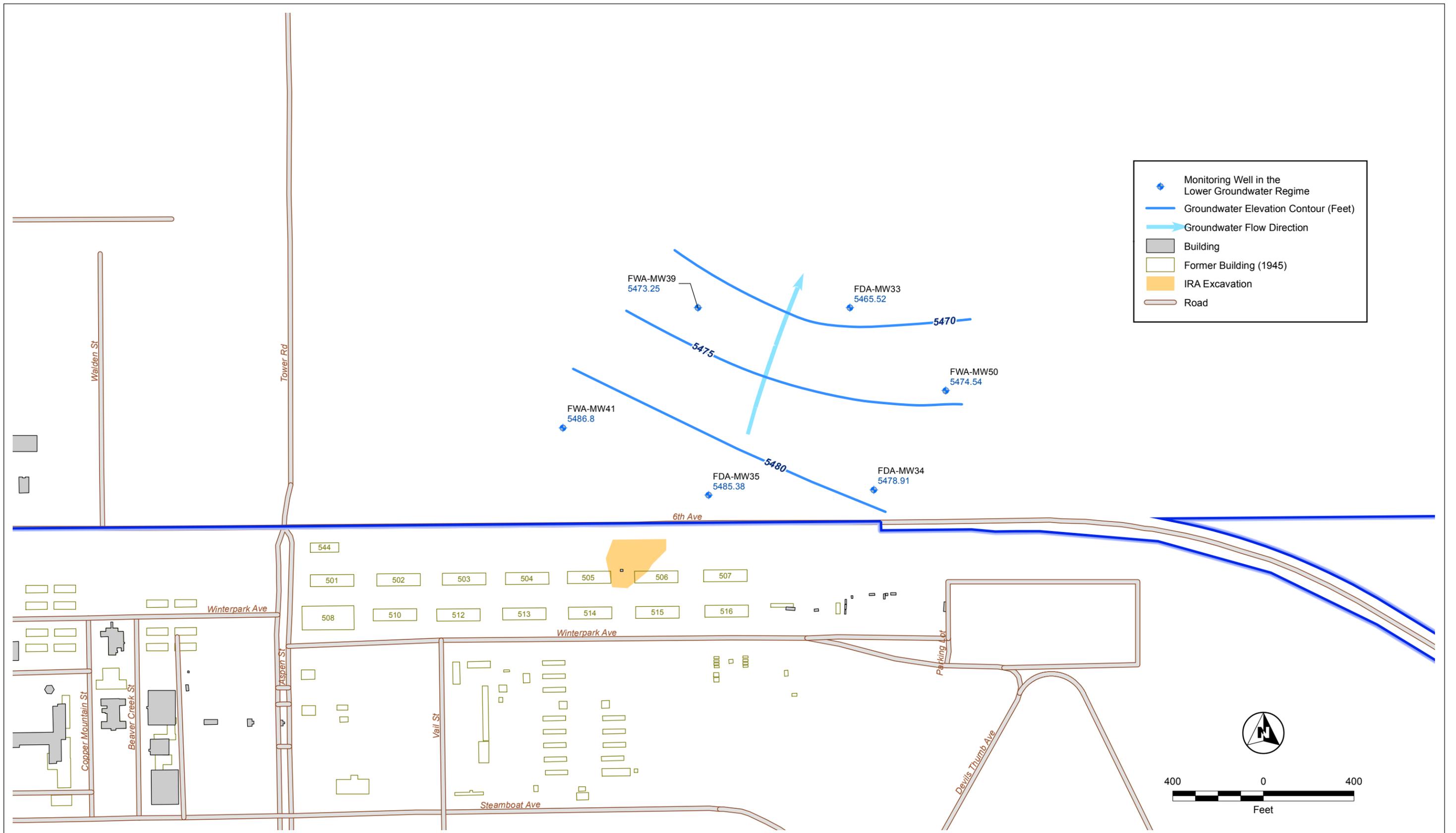


**Site 10**  
 Buckley Air Force Base,  
 Aurora, Colorado

**FIGURE 1**  
 2010 PCE and TCE Concentrations  
 Upper Groundwater Regime







## **TABLES**



**Table 1**  
**Volatile Organic Compounds and Organic Carbon in Groundwater**  
**Site 10, Buckley AFB, CO**

Well ID	Date Well Sampled	Sampling Event	VOC Concentrations (ug/L)				Organic Carbon Concentrations (mg/L)	
			Tetrachloroethylene (PCE)	Trichloroethylene (TCE)	Cis-1-2 Dichloroethylene	Vinyl Chloride	TOC	DOC
Federal MCL or CBSG			5	5	70	2	NA	NA
FDA-MW13	NS	Pre-FS Sampling, ITSI 2009	NS	NS	NS	NS	NS	NS
	NS	ITSI 2010	NS	NS	NS	NS	NS	NS
FDA-MW15	9/30/2009	Pre-FS Sampling, ITSI	<b>30</b>	<b>7</b>	ND (0.20)	ND (0.30)	12.0	11.5
	7/8/2010	ITSI 2010	<b>21.5</b>	4.9	ND (0.32)	ND (0.28)	NS	NA
FDA-MW16	NS	Pre-FS Sampling, ITSI	NS	NS	NS	NS	NS	NS
FDA-MW22	7/24/2009	Third Semi-Annual Treatability Study Monitoring,	<b>47</b>	1.5	ND (<0.098)	NR	NR	NR
	6/30/2010	ITSI 2010	<b>76.8</b>	2.5	ND (0.32)	ND (0.28)	3.9	NA
FDA-MW23	9/30/2009	Pre-FS Sampling, ITSI	ND (0.22)	0.42 J	ND (0.20)	ND (0.30)	4.2	4.3
	6/30/2010	ITSI 2010	ND (0.44)	ND (0.24)	ND (0.32)	ND (0.28)	4.1	NA
FDA-MW24	7/22/2009	Treatability Study Monitoring, URS	ND (<0.14)	ND (0.32)	ND (<0.098)	NR	NR	NR
FDA-MW25	9/30/2009	Pre-FS Sampling, ITSI	3	0.37 J	ND (0.20)	ND (0.30)	8.0	7.6
FDA-MW26	7/22/2009	Third Semi-Annual Treatability Study Monitoring,	1.4	ND (0.32)	ND (<0.098)	NR	NR	NR
	6/30/2010	ITSI 2010	1.7	ND (0.24)	ND (0.32)	ND (0.28)	NA	NA
FDA-MW27	7/23/2009	Third Semi-Annual Treatability Study Monitoring,	2.9	ND (0.32)	ND (<0.098)	NR	NR	NR
	6/29/2010	ITSI 2010	<b>6.1</b>	ND (0.24)	ND (0.32)	ND (0.28)	NA	NA
FDA-MW27DUP	6/29/2010	ITSI 2010	<b>6</b>	ND (0.24)	ND (0.32)	ND (0.28)	NA	NA
FDA-MW28	NS	Pre-FS Sampling, ITSI	NS	NS	NS	NS	NS	NS
	7/9/2010	ITSI 2010	<b>11.7</b>	<b>7.9</b>	ND (0.32)	ND (0.28)	NA	NA
FDA-MW29	9/30/2009	Pre-FS Sampling, ITSI	ND (0.22)	0.55 J	ND (0.20)	ND (0.30)	3.4	3.3
FDA-MW30	9/30/2009	Pre-FS Sampling, ITSI	ND (0.22)	0.75 J	ND (0.20)	0.34 J	2.0	1.9
FDA-MW31	10/15/2009	Pre-FS Sampling, ITSI	ND (0.22)	ND (0.32)	ND (0.20)	ND (0.30)	1.3	1.5
FDA-MW32	7/23/2009	Third Semi-Annual Treatability Study Monitoring,	<b>23</b>	0.17 F	ND (<0.098)	NR	NR	NR
	6/29/2010	ITSI 2010	<b>38.4</b>	0.32	ND (0.32)	ND (0.28)	NA	NA
FDA-MW33	7/6/2010	ITSI 2010	ND (0.44)	ND (0.24)	ND (0.32)	ND (0.28)	NA	NA
FDA-MW33 DUP	7/6/2010	ITSI 2010	ND (0.44)	ND (0.24)	ND (0.32)	ND (0.28)	NA	NA

**Table 1**  
**Volatile Organic Compounds and Organic Carbon in Groundwater**  
**Site 10, Buckley AFB, CO**

Well ID	Date Well Sampled	Sampling Event	VOC Concentrations (ug/L)				Organic Carbon Concentrations (mg/L)	
			Tetrachloroethylene (PCE)	Trichloroethylene (TCE)	Cis-1-2 Dichloroethylene	Vinyl Chloride	TOC	DOC
Federal MCL or CBSG			5	5	70	2	NA	NA
FDA-MW34	10/1/2009	Pre-FS Sampling, ITSI	<b>34.1</b>	2.6	ND (0.20)	ND (0.30)	3.7	4.2
FDA-MW34	7/6/2010	ITSI 2010	<b>36.8</b>	2.6	ND (0.32)	ND (0.28)	NA	NA
FDA-MW34 DUP	7/6/2010	ITSI 2010	<b>38.6</b>	2.7	ND (0.32)	ND (0.28)	NA	NA
FDA-MW35	7/23/2009	Third Semi-Annual Treatability Study Monitoring,	<b>59</b>	3.7	ND (<0.098)	NR	NR	NR
FDA-MW35	7/6/2010	ITSI 2010	<b>67.7</b>	4.3	ND (0.32)	ND (0.28)	NA	NA
FDA-MW36	9/30/2009	Pre-FS Sampling, ITSI	<b>20.1</b>	ND (0.32)	ND (0.20)	ND (0.30)	7.6	7.4
	6/29/2010	ITSI 2010	<b>20.8</b>	ND (0.24)	ND (0.32)	ND (0.28)	NA	NA
FWA-MW7	10/1/2009	Pre-FS Sampling, ITSI	ND (0.22)	ND (0.32)	ND (0.20)	ND (0.30)	8.2	8.8
FWA-MW9	7/24/2009	Third Semi-Annual Treatability Study Monitoring,	0.4 F	0.42 F	ND (<0.098)	NR	NR	NR
FWA-MW10	10/3/2009	Pre-FS Sampling, ITSI	ND (0.22)	ND (0.32)	ND (0.20)	ND (0.30)	7.0	7.9
FWA-MW17	7/7/2010	ITSI 2010	<b>9.5</b>	0.59	ND (0.32)	ND (0.28)	NA	NA
FWA-MW37	7/22/2009	Third Semi-Annual Treatability Study Monitoring,	0.4 F	ND (0.32)	ND (<0.098)	NR	NR	NR
	6/29/2010	ITSI 2010	ND (0.44)	ND (0.24)	ND (0.32)	ND (0.28)	NA	NA
FWA-MW38	7/23/2009	Third Semi-Annual Treatability Study Monitoring,	1.90	ND (0.32)	ND (<0.098)	NR	NR	NR
	6/30/2010	ITSI 2010	2.70	ND (0.24)	ND (0.32)	ND (0.28)	NA	NA
FWA-MW39	7/2/2010	ITSI 2010	3	ND (0.24)	ND (0.32)	ND (0.28)	NA	NA
FWA-MW41	7/23/2009	Third Semi-Annual Treatability Study Monitoring,	0.38 F	ND (0.32)	ND (<0.098)	NR	NR	NR
	7/2/2010	ITSI 2010	ND (0.44)	ND (0.24)	ND (0.32)	ND (0.28)	NA	NA
FWA-MW42	10/2/2009	Pre-FS Sampling, ITSI	<b>16</b>	<b>75.4</b>	19	ND (0.30)	10.4	10.5
	7/7/2010	ITSI 2010	<b>16.9</b>	<b>81.4</b>	21	ND (0.56)	9.7	NA

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**Volatile Organic Compounds and Organic Carbon in Groundwater**  
**Site 10, Buckley AFB, CO**

Well ID	Date Well Sampled	Sampling Event	VOC Concentrations (ug/L)				Organic Carbon Concentrations (mg/L)	
			Tetrachloroethylene (PCE)	Trichloroethylene (TCE)	Cis-1-2 Dichloroethylene	Vinyl Chloride	TOC	DOC
Federal MCL or CBSG			5	5	70	2	NA	NA
FWA-MW43	10/1/2009	Pre-FS Sampling, ITSI	ND (0.22)	0.34 J	ND (0.20)	ND (0.30)	3.9	4.0
	6/30/2010	ITSI 2010	ND (0.44)	ND (0.24)	ND (0.32)	ND (0.28)	3.7	NA
FWA-MW47	7/22/2009	Third Semi-Annual Treatability Study Monitoring,	0.34 F	ND (0.32)	ND (<0.098)	NR	NR	NR
	6/29/2010	ITSI 2010	ND (0.44)	ND (0.24)	ND (0.32)	ND (0.28)	NA	NA
FWA-MW49	7/22/2009	Third Semi-Annual Treatability Study Monitoring,	<b>760</b>	<b>22</b>	7 F	NR	NR	NR
	7/1/2010	ITSI 2010	<b>907</b>	<b>20.2</b>	4.4	ND (2.8)	7.7	NA
FWA-MW50	7/6/2010	ITSI 2010	ND (0.44)	ND (0.24)	ND (0.32)	ND (0.28)	NA	NA
FWA-MW51	10/1/2009	Pre-FS Sampling, ITSI	ND (0.22)	1.1	ND (0.20)	ND (0.30)	4.1	4.2
	7/6/2010	ITSI 2010	ND (0.44)	ND (0.24)	ND (0.32)	ND (0.28)	NA	NA
FWA-MW52	10/1/2009	Pre-FS Sampling, ITSI	4.6	<b>73.7</b>	21.6	ND (0.30)	4.5	4.6
	7/2/2010	ITSI 2010	4.7	<b>92.6</b>	30.9	ND (0.28)	4.4	NA
FWA-PZ3	10/1/2009	Pre-FS Sampling, ITSI	0.60 J	ND (0.32)	ND (0.20)	ND (0.30)	4.7	5.0
FWA-PZ4	10/1/2009	Pre-FS Sampling, ITSI	ND (0.22)	0.74 J	0.20 U	ND (0.30)	5.3	5.4
FWA-PZ4DUP	10/1/2009	Pre-FS Sampling, ITSI	ND (0.22)	0.64 J	0.20 U	ND (0.30)	5.3	5.4
FWA-TW53	7/7/2010	ITSI 2010	ND (0.44)	ND (0.24)	ND (0.32)	ND (0.28)	NA	NA
FWA-TW57	7/7/2010	ITSI 2010	<b>212</b>	<b>12.3</b>	16	ND (1.4)	7.7	NA
FWA-TW58	7/6/2010	ITSI 2010	ND (0.44)	ND (0.24)	ND (0.32)	ND (0.28)	5.8	NA
FWA-TW62	7/24/2009	Third Semi-Annual Treatability Study Monitoring,	<b>3,500</b>	<b>55</b>	2.3 F	NR	NR	NR
	7/6/2010	ITSI 2010	NS	NS	NS	NS	NS	NS
FWA-TW65	7/24/2009	Third Semi-Annual Treatability Study Monitoring,	<b>84</b>	1.3 F	ND (<0.098)	NR	NR	NR
	7/2/2010	ITSI 2010	<b>866</b>	4.8	ND (0.32)	ND (0.28)	9.5	NA

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**Volatile Organic Compounds and Organic Carbon in Groundwater**  
**Site 10, Buckley AFB, CO**

Well ID	Date Well Sampled	Sampling Event	VOC Concentrations (ug/L)				Organic Carbon Concentrations (mg/L)	
			Tetrachloroethylene (PCE)	Trichloroethylene (TCE)	Cis-1-2 Dichloroethylene	Vinyl Chloride	TOC	DOC
Federal MCL or CBSG			5	5	70	2	NA	NA
FWA-TW67	7/24/2009	Third Semi-Annual Treatability Study Monitoring,	<b>140</b>	ND (0.32)	0.47 F	NR	NR	NR
	NS	ITSI 2010	NS	NS	NS	NS	NS	NS
FWA-TW68	7/24/2009	Third Semi-Annual Treatability Study Monitoring,	<b>200</b>	1.6 F	<0.25 U	NR	NR	NR
	7/9/2010	ITSI 2010	<b>212</b>	<b>6.20</b>	ND (0.32)	ND (0.28)	1,160	NA
USCWTP-MW1	NS	Pre-FS Sampling, ITSI	NS	NS	NS	NS	NS	NS
	NS	ITSI 2010	NS	NS	NS	NS	NS	NS
USCWTP-MW2	7/22/2009	Third Semi-Annual Treatability Study Monitoring,	ND (<0.14)	ND (0.32)	ND (<0.098)	NR	NR	NR
USCWTP-MW3	10/1/2009	Pre-FS Sampling, ITSI	ND (0.22)	0.55 J	ND (0.20)	ND (0.30)	2.5	2.5
USCWTP-MW3 DUP	10/1/2009	Pre-FS Sampling, ITSI	ND (0.22)	0.33 J	ND (0.20)	ND (0.30)	2.5	2.6
FWA-DPT8	7/9/2010	ITSI 2010	1.2	ND (0.24)	ND (0.32)	ND (0.28)	NA	NA
FWA-DPT9	7/8/2010	ITSI 2010	2.6	ND (0.24)	ND (0.32)	ND (0.28)	NA	NA
FWA-DPT12	7/8/2010	ITSI 2010	2.7	ND (0.24)	ND (0.32)	ND (0.28)	NA	NA
FWA-DPT17	7/9/2010	ITSI 2010	1.5	0.46	ND (0.32)	ND (0.28)	NA	NA
FWA-DPT18	7/8/2010	ITSI 2010	<b>5.8</b>	ND (0.24)	ND (0.32)	ND (0.28)	NA	NA
FWA-DPT19	7/9/2010	ITSI 2010	ND (0.44)	ND (0.24)	ND (0.32)	ND (0.28)	NA	NA
<b>Sparge Trench Monitoring Wells</b>								
PW-13	10/3/2009	Pre-FS Sampling, ITSI	ND (0.22)	ND (0.32)	ND (0.20)	ND (0.30)	14.8	13.7
PW-13 DUP	10/3/2009	Pre-FS Sampling, ITSI	ND (0.22)	ND (0.32)	ND (0.20)	ND (0.30)	13.9	13.5
PW-13	7/1/2010	ITSI 2010	<b>8.5</b>	ND (0.24)	ND (0.32)	ND (0.28)	NA	NA
PW-14	10/3/2009	Pre-FS Sampling, ITSI	<b>25.4</b>	1.7	ND (0.20)	ND (0.30)	6.1	6.1
	7/1/2010	ITSI 2010	ND (0.44)	ND (0.24)	ND (0.32)	ND (0.28)	5.1	NA
PW-14 DUP	7/1/2010	ITSI 2010	ND (0.44)	ND (0.24)	ND (0.32)	ND (0.28)	5.1	NA

**Table 1**  
**Volatile Organic Compounds and Organic Carbon in Groundwater**  
**Site 10, Buckley AFB, CO**

Well ID	Date Well Sampled	Sampling Event	VOC Concentrations (ug/L)				Organic Carbon Concentrations (mg/L)	
			Tetrachloroethylene (PCE)	Trichloroethylene (TCE)	Cis-1-2 Dichloroethylene	Vinyl Chloride	TOC	DOC
Federal MCL or CBSG			5	5	70	2	NA	NA
<b>Sparge Trench Monitoring Wells</b>								
PW-15	10/3/2009	Pre-FS Sampling, ITSI	ND (0.22)	0.82 J	ND (0.20)	ND (0.30)	9.6	7.2
	7/1/2010	ITSI 2010	ND (0.44)	ND (0.24)	ND (0.32)	ND (0.28)	5.7	NA
PW-16	10/2/2009	Pre-FS Sampling, ITSI	0.51 J	ND (0.32)	ND (0.20)	ND (0.30)	7.5	7.3
PW-17	10/2/2009	Pre-FS Sampling, ITSI	ND (0.22)	1.8	ND (0.20)	ND (0.30)	9.1	8.8
	7/1/2010	ITSI 2010	ND (0.44)	ND (0.24)	ND (0.32)	ND (0.28)	8.7	NA
PW-17 DUP	7/1/2010	ITSI 2010	ND (0.44)	ND (0.24)	ND (0.32)	ND (0.28)	8.8	NA
PW-18	10/2/2009	Pre-FS Sampling, ITSI	ND (0.22)	ND (0.32)	ND (0.20)	ND (0.30)	19.0	18.3
	7/6/2010	ITSI 2010	ND (0.44)	ND (0.24)	ND (0.32)	ND (0.28)	17.5	NA
<b>Source Area Monitoring Wells</b>								
PW-19	NS	Pre-FS Sampling, ITSI	NS	NS	NS	NS	NS	NS
	NS	ITSI 2010	NS	NS	NS	NS	NS	NS
PW-20	10/4/2009	Pre-FS Sampling, ITSI	3.9	<b>31.7</b>	<b>87.8</b>	<b>2</b>	23.8	22.6
	7/8/2010	ITSI 2010	4.3	<b>17.9</b>	42.2	ND (0.28)	20.3	NA
PW-21	10/3/2009	Pre-FS Sampling, ITSI	ND (0.22)	<b>15</b>	<b>151</b>	<b>13.9</b>	21.0	16.2
	7/2/2010	ITSI 2010	2.1	4.0	<b>119</b>	<b>26.5</b>	26.4	NA
PW-22	10/3/2009	Pre-FS Sampling, ITSI	ND (0.22)	0.39 J	0.34 J	ND (0.30)	163.0	48.9
	7/7/2010	ITSI 2010	ND (0.44)	ND (0.24)	ND (0.32)	ND (0.28)	61.5	NA

Notes:

Results reported in micrograms per liter (µg/L)

Bold = Result equals or exceeds MCL/CBSG

< = Result was less than the method detection limit

µg/L = micrograms per liter

mg/L = milligrams per liter

CBSG = Colorado Basic Standards for Groundwater, 5CCR 1002-41, May 2008

F = The analyte was positively identified but the associated numerical value is at or below the reporting limit

J = Value is estimated

MCL = Federal Maximum Contaminant Level

ND = Analyte not detected, method detection limit in parentheses

NA = Parameter/constituent not analyzed

NR = Result not reported

NS = Well not sampled due to insufficient groundwater

VOC = Volatile Organic Compound

TOC = Total Organic Carbon

DOC = Dissolved Organic Carbon

Well completed in the lower groundwater regime

**Table 2**  
**Bioremediation Parameters in Groundwater**  
**Site 10, Buckley AFB, CO**

Well ID	Date Well Sampled	Alkalinity (Total as CaCO <sub>3</sub> ) (mg/L)	Cl <sup>-</sup> (mg/L)	N, NO <sub>3</sub> +NO <sub>2</sub> (mg/L)	SO <sub>4</sub> <sup>2-</sup> (mg/L)	S <sup>2-</sup> (mg/L)	Ca (ug/L)	Fe (ug/L)	Mg (ug/L)	K (ug/L)	Na (ug/L)	MEE (ug/L)
FDA-MW22	6/30/2010	223	414	8.5	2,310	0.97 J	493,000	794	68,800	8,840 J	831,000	NA
FDA-MW23	6/30/2010	85.3	861	19.4	2,190	ND (0.60)	543,000	271 J	44,800	9,210 J	1,020,000	NA
FWA-MW42	7/7/2010	311	378	16.7	3,020	0.97 J	443,000	102 J	109,000	8,120 J	1,300,000	NA
FWA-MW43	6/30/2010	232	575	8.3	2,060	0.61 J	464,000	10,300	97,000	10,800	1,140,000	NA
FWA-MW49	7/1/2010	345	226	9.9	2,620	ND (0.60)	420,000	ND (35)	102,000	8,820 J	1,110,000	NA
FWA-MW52	7/2/2010	188	374	6.9	2,530	ND (0.60)	412,000	150 J	94,100	8,850 J	1,170,000	0.25 - ND (0.32) - ND (0.43)
FWA-TW57	7/7/2010	473	542	5.0	2,370	1.1	474,000	ND (35)	145,000	7,910 J	819,000	NA
FWA-TW58	7/6/2010	175	864	22.1	1,890	1.4	459,000	128 J	77,900	10,900	1,130,000	NA
FWA-TW65	7/2/2010	121	759	15.0	2,330	NA	437,000	60,200	108,000	15,200	1,290,000	ND (0.16) - ND (0.32) - ND (0.43)
FWA-TW68	7/9/2010	2,550	456	3.7	1,050	NA	778,000	164,000	131,000	15,400	1,280,000	4.33 - ND (0.32) - 0.47
<b>Sparge Trench Monitoring Wells</b>												
PW-14	7/1/2010	75	159	6.5	1,560	0.63 J	202,000	ND (35)	71,900	6,080 J	559,000	NA
PW-14DUP	7/1/2010	76	153	6.2	1,540	ND (0.60)	208,000	ND (35)	74,100	6,280 J	576,000	NA
PW-15	7/1/2010	77	161	9.5	1,760	ND (0.60)	221,000	ND (35)	81,400	5,950 J	586,000	0.18 - ND (0.32) - ND (0.43)
PW-17	7/1/2010	69	204	15.0	1,900	0.70 J	329,000	210 J	110,000	6,500 J	598,000	NA
PW-17DUP	7/1/2010	65	210	15.4	1,750	0.77 J	319,000	870	105,000	6,490 J	592,000	NA
PW-18	7/6/2010	104	324	16.6	2,510	1.5	452,000	711	150,000	9,300 J	819,000	NA
<b>Source Area Monitoring Wells</b>												
PW-20	7/8/2010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	836 - ND (0.32) - ND (0.43)
PW-21	7/2/2010	NA	NA	0.053 J	NA	NA	306,000	23,000	176,000	5,510 J	529,000	3,590 - 0.40 - 5.20
PW-22	7/7/2010	2,500	134	ND (0.050)	16.8	2.4	396,000	49,300	115,000	50,700	413,000	5,810 - ND (0.32) - ND (0.43)

Notes:  
Results reported in micrograms per liter (µg/L)  
µg/L = micrograms per liter  
mg/L = milligrams per liter  
Cl<sup>-</sup> = Chloride, N, NO<sub>3</sub>+NO<sub>2</sub> = Nitrogen, Nitrate + Nitrite, SO<sub>4</sub><sup>2-</sup> = Sulfate, S<sup>2-</sup> = Sulfide, Ca = Calcium, Fe = Iron, Mg = Magnesium, K = Potassium, Na = Sodium, MEE = Methane, Ethane, Ethene  
F = The analyte was positively identified but the associated numerical value is at or below the reporting limit  
J = Value is estimated  
NA = Parameter/constituent not analyzed  
ND = Analyte not detected, method detection limit in parentheses

**Table 3  
Monitoring Well Water Level Measurements  
Site 10, Buckley AFB, CO**

Well ID	Northing (ft)	Easting (ft)	Top of Casing Elevation (ft)	Ground Elevation (ft)	Well Depth (ft bgs)	Well Diameter (inches)	Date	Depth to Water (ft) from TOC	Water Table Elevation (ft)
<b>Monitoring Wells</b>									
FDA-MW13	1690483.38	3206484.46	5517.59	5514.95	30.44	2	6/28/2010	33.26	5484.33
FDA-MW15	1690440.91	3205868.75	5517.27	5515.42	28.25	2	6/28/2010	28.90	5488.37
FDA-MW22	1690511.88	3206946.96	5513.36	5511.30	55.25	2	6/28/2010	39.44	5473.92
FDA-MW23	1690637.99	3205831.88	5513.15	5510.94	49.25	2	6/28/2010	29.93	5483.22
FDA-MW26	1690510.22	3205053.38	5516.78	5514.06	37.75	2	6/28/2010	26.66	5490.12
FDA-MW27	1690873.11	3205351.09	5509.83	5507.52	32.25	2	6/29/2010	25.12	5484.71
FDA-MW28	1690284.72	3205690.19	5522.21	5519.57	30.25	2	6/28/2010	31.44	5490.77
FDA-MW32	1690974.06	3206476.28	5502.15	5500.14	34.25	2	6/28/2010	28.53	5473.62
FDA-MW33	1690967.02	3207145.77	5498.64	5496.37	65.25	2	6/29/2010	33.12	5465.52
FDA-MW34	1690165.28	3207251.22	5521.73	5519.87	70.25	2	6/29/2010	42.82	5478.91
FDA-MW35	1690141.81	3206522.13	5526.67	5524.11	62.25	2	6/29/2010	41.29	5485.38
FDA-MW36	1691032.32	3205810.39	5507.33	5504.61	31.25	2	6/29/2010	27.61	5479.72
FMW-PW20A^	1689938.84	3205979.86	5534.77	5532.50	70.00	2	NA	NA	NA
FWA-DPT-8	1691266.87	3205665.48	5502.08	5499.81	30.25	1.5	6/29/2010	22.67	5479.41
FWA-DPT-9	1691298.50	3206267.89	5499.60	5497.13	32.25	1.5	6/29/2010	26.81	5472.79
FWA-DPT-12	1691325.94	3206838.96	5494.34	5492.35	31.25	1.5	6/29/2010	29.68	5464.66
FWA-DPT-17	1690375.93	3207258.67	5517.41	5515.20	40.25	1	6/28/2010	33.96	5483.45
FWA-DPT-18	1690860.22	3207250.76	5503.83	5501.49	50.25	1.5	6/28/2010	33.13	5470.70
FWA-DPT-19	1691352.31	3207251.81	5480.69	5478.41	20.25	1.5	6/29/2010	19.01	5461.68
FWA-MW17	1689678.01	3206438.40	5540.83	5538.53	25.25	2	6/28/2010	25.88	5514.95
FWA-MW37	1691374.64	3205588.25	5498.61	5496.52	32.25	2	6/29/2010	19.69	5478.92
FWA-MW38	1691516.28	3206705.74	5485.94	5483.81	30.25	2	6/29/2010	22.45	5463.49
FWA-MW39	1690967.41	3206475.88	5501.81	5500.04	59.30	2	6/29/2010	28.56	5473.25
FWA-MW41	1690438.04	3205879.74	5517.70	5515.33	70.30	2	6/29/2010	30.90	5486.80
FWA-MW42	1689884.95	3207418.18	5526.26	5524.36	45.25	2	6/28/2010	17.97	5508.29
FWA-MW43	1690165.04	3207243.08	5521.86	5519.65	50.30	2	6/28/2010	31.37	5490.49
FWA-MW47	1691750.38	3205625.31	5486.80	5485.18	29.00	2	6/29/2010	18.93	5467.87
FWA-MW49	1690141.43	3206530.61	5525.84	5523.73	41.00	2	6/28/2010	37.80	5488.04
FWA-MW50	1690602.50	3207569.45	5501.37	5501.25	55.60	2	6/29/2010	26.83	5474.54
FWA-MW51	1690600.74	3207577.13	5501.88	5501.81	34.00	2	6/28/2010	26.02	5475.86
FWA-MW52	1690146.06	3207609.14	5517.80	5517.73	44.30	2	6/28/2010	18.97	5498.83

**Table 3  
Monitoring Well Water Level Measurements  
Site 10, Buckley AFB, CO**

Well ID	Northing (ft)	Easting (ft)	Top of Casing Elevation (ft)	Ground Elevation (ft)	Well Depth (ft bgs)	Well Diameter (inches)	Date	Depth to Water (ft) from TOC	Water Table Elevation (ft)
FWA-TW53	1689547.70	3207372.44	5534.79	5532.78	58.30	2	6/28/2010	28.92	5505.87
FWA-TW57	1689901.49	3207267.35	5526.55	5524.49	28.50	2	6/28/2010	21.12	5505.43
FWA-TW58	1689893.64	3207684.72	5525.50	5522.85	53.50	2	6/28/2010	18.41	5507.09
FWA-TW62	1690349.80	3206336.30	5517.99	5515.54	35.00	2	6/28/2010	34.53	5483.46
FWA-TW63	1690340.48	3206291.95	NA	5517.53	40.00	2	6/28/2010	NA	NA
FWA-TW64	1690332.92	3206243.46	5518.29	5515.28	37.00	2	6/28/2010	NA	NA
FWA-TW65	1690154.83	3206274.60	5524.98	5521.03	36.00	2	6/28/2010	30.44	5494.54
FWA-TW66	1690271.89	3206352.43	5519.85	5517.74	50.00	2	6/28/2010	NA	NA
FWA-TW67	1690326.76	3206268.88	5518.68	5516.32	50.00	2	6/28/2010	29.63	5489.05
FWA-TW68	1690315.52	3206350.76	NA	NA	50.00	2	6/28/2010	33.38	NA
USCWTP-MW1	1690067.22	3206735.88	5529.74	5527.30	20.04	2	6/28/2010	21.83	5507.91
<b>Sparge Trench Monitoring Wells</b>									
PW-13	1689936.30	3205652.20	5533.61	5531.57	27.10	2	6/28/2010	22.16	5511.45
PW-14	1689929.00	3206023.60	5535.13	5532.67	26.80	2	6/28/2010	23.14	5511.99
PW-15	1689928.80	3206195.20	5533.82	5530.93	26.40	2	6/28/2010	21.26	5512.56
PW-17	1689948.40	3206573.20	5532.35	5529.65	27.00	2	6/28/2010	20.80	5511.55
PW-18	1689947.50	3206802.40	5531.25	5528.93	27.20	2	6/28/2010	20.55	5510.70
<b>Source Area Monitoring Wells</b>									
PW-19	1689890.80	3206121.90	5538.27	5536.15	30.10	2	6/28/2010	26.27	5512.00
PW-20	1689891.40	3206263.20	5539.73	5537.63	32.90	2	6/28/2010	28.96	5510.77
PW-21	1689833.80	3206162.70	5540.69	5538.66	34.80	2	6/28/2010	30.02	5510.67
PW-22	1689766.80	3206142.00	5541.39	5539.27	36.60	2	6/28/2010	28.43	5512.96

**Notes:**

- FDA Former Depot Area
- FWA Former Warehouse Area
- USCWTP Upper Sand Creek Water Treatment Plant
- ft Feet
- bgs Below Ground Surface
- NA Not Available
- ^ Well was not located
- Well completed in lower groundwater regime

**APPENDIX A**  
**ITSI FIELD SAMPLING DOCUMENTATION**  
**(Provided on CD)**

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Troll 9000  
7/8/2010

Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Whitney Littleton  
Company Name ITS  
Project Name Buckley AFB  
Site Name Site 10

**Pump Information:**

Pump Model/Type GEOSUB SS  
Tubing Type POLY  
Tubing Diameter 0.38 [in]  
Tubing Length 36 [ft]  
Pump placement from TOC 32 [ft]

**Well Information:**

Well ID FWA-DPT-12  
Well diameter 1.5 [in]  
Well total depth 32.79 [ft]  
Depth to top of screen 21 [ft]  
Screen length 120 [in]  
Depth to Water 29.66 [ft]

**Pumping information:**

Final pumping rate 250 [mL/min]  
Flowcell volume 1402.86 [mL]  
Calculated Sample Rate 337 [sec]  
Sample rate 337 [sec]  
Stabilized drawdown 10.2 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1 +/-10 %	+/-0.03 +/-3 %	+/-0.1 +/-10 %	+/-0.1 +/-10 %	+/-0.1 +/-10 %
Last 5 Readings	13:48:54	64.15	7.44	5.08	733.15	8.23	94.80
	13:54:34	65.31	7.45	5.16	438.47	8.10	97.49
	14:00:12	66.70	7.45	5.26	317.66	7.99	102.84
	14:05:52	67.61	7.46	5.33	198.57	7.93	107.49
	14:11:31	69.32	7.75	0.00	-0.46	7.09	116.85
Variance in last 3 readings	14:00:12	1.38	0.00	0.10	-120.81	-0.12	5.34
	14:05:52	0.92	0.01	0.07	-119.09	-0.06	4.65
	14:11:31	1.70	0.30	-5.33	-199.03	-0.84	9.36

**Notes:** Well located 500 ft west of FWA-DPT19.



Troll 9000  
7/8/2010

Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Whitney Littleton  
Company Name ITS  
Project Name Buckley AFB  
Site Name Site 10

**Pump Information:**

Pump Model/Type GEOSUB SS  
Tubing Type POLY  
Tubing Diameter 0.38 [in]  
Tubing Length 56 [ft]  
Pump placement from TOC 51 [ft]

**Well Information:**

Well ID FWA-DPT-18  
Well diameter 1.5 [in]  
Well total depth 51.99 [ft]  
Depth to top of screen 40 [ft]  
Screen length 120 [in]  
Depth to Water 33.35 [ft]

**Pumping information:**

Final pumping rate 250 [mL/min]  
Flowcell volume 1848.9 [mL]  
Calculated Sample Rate 444 [sec]  
Sample rate 444 [sec]  
Stabilized drawdown 10.2 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1 +/-10 %	+/-0.03 +/-3 %	+/-0.1 +/-10 %	+/-0.1 +/-10 %	+/-0.1 +/-10 %
Last 5 Readings	12:07:08	63.03	7.05	4.17	317.24	2.12	127.52
	12:14:35	61.13	7.07	4.05	1699.70	2.48	118.86
	12:22:01	61.74	7.06	4.05	861.00	2.19	117.26
	12:29:28	61.63	7.06	4.06	480.96	2.14	115.69
	12:36:55	61.07	7.06	4.03	521.96	2.20	113.60
Variance in last 3 readings	12:22:01	0.60	-0.01	0.00	-838.71	-0.29	-1.60
	12:29:28	-0.11	0.00	0.01	-380.04	-0.05	-1.57
	12:36:55	-0.56	0.00	-0.03	41.00	0.06	-2.09

**Notes:** Well located 200 ft south east of FWA-MW33 and 30 ft west of eastern property fence.



Troll 9000  
7/8/2010

Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Whitney Littleton  
Company Name ITS  
Project Name Buckley AFB  
Site Name Site 10

**Pump Information:**

Pump Model/Type GEOSUB SS  
Tubing Type POLY  
Tubing Diameter 0.38 [in]  
Tubing Length 26 [ft]  
Pump placement from TOC 21.5 [ft]

**Well Information:**

Well ID FWA-DPT-19  
Well diameter 1.5 [in]  
Well total depth 22.06 [ft]  
Depth to top of screen 10 [ft]  
Screen length 120 [in]  
Depth to Water 19.1 [ft]

**Pumping information:**

Final pumping rate 250 [mL/min]  
Flowcell volume 1179.85 [mL]  
Calculated Sample Rate 284 [sec]  
Sample rate 284 [sec]  
Stabilized drawdown 10.2 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1 +/-10 %	+/-0.03 +/-3 %	+/-0.1 +/-10 %	+/-0.1 +/-10 %	+/-0.1 +/-10 %
Last 5 Readings	10:38:15	58.13	7.33	4.96	203.58	6.42	70.91
	10:42:59	58.39	7.08	4.98	139.73	2.97	110.40
	10:47:46	60.29	7.07	5.06	76.09	2.86	186.41
	10:52:31	59.28	7.11	4.98	54.20	3.18	161.83
	10:57:17	59.86	7.14	5.01	66.12	3.34	154.56
Variance in last 3 readings	10:47:46	1.90	-0.01	0.08	-63.64	-0.11	76.00
	10:52:31	-1.01	0.04	-0.08	-21.89	0.32	-24.58
	10:57:17	0.58	0.02	0.03	11.92	0.16	-7.27

**Notes:** Well located 400 ft north of FDA-MW22 and 30 ft west of eastern fence line.



Troll 9000  
7/9/2010

Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Whitney Littleton  
Company Name ITS  
Project Name Buckley AFB  
Site Name Site 10

**Pump Information:**

Pump Model/Type GEOSUB SS  
Tubing Type POLY  
Tubing Diameter 0.38 [in]  
Tubing Length 34 [ft]  
Pump placement from TOC 30 [ft]

**Well Information:**

Well ID FWA-DPT-8  
Well diameter 1.5 [in]  
Well total depth 31.39 [ft]  
Depth to top of screen 20 [ft]  
Screen length 120 [in]  
Depth to Water 22.64 [ft]

**Pumping information:**

Final pumping rate 250 [mL/min]  
Flowcell volume 1358.26 [mL]  
Calculated Sample Rate 326 [sec]  
Sample rate 326 [sec]  
Stabilized drawdown 10.2 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1 +/-10 %	+/-0.03 +/-3 %	+/-0.1 +/-10 %	+/-0.1 +/-10 %	+/-0.1 +/-10 %
Last 5 Readings	10:11:47	68.89	7.28	4.27	55.93	7.26	184.97
	10:17:15	71.15	7.27	4.38	57.31	7.10	188.73
	10:22:44	72.59	7.27	4.46	46.63	6.99	188.68
	10:28:11	73.34	7.28	4.50	18.03	6.93	187.69
	10:54:01	87.20	7.91	0.00	-0.59	5.95	169.05
Variance in last 3 readings	10:22:44	1.44	0.00	0.08	-10.67	-0.11	-0.05
	10:28:11	0.75	0.00	0.04	-28.61	-0.06	-0.99
	10:54:01	13.86	0.63	-4.50	-18.62	-0.98	-18.64

**Notes:** Well located 400 ft west FWA-DPT9. Device stopped recording parms after fourth reading. Had to reset device and sampled after first reading after reset.



Troll 9000  
7/8/2010

Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Whitney Littleton  
Company Name ITS  
Project Name Buckley AFB  
Site Name Site 10

**Pump Information:**

Pump Model/Type GEOSUB SS  
Tubing Type POLY  
Tubing Diameter 0.38 [in]  
Tubing Length 37 [ft]  
Pump placement from TOC 33 [ft]

**Well Information:**

Well ID FWA-DPT-9  
Well diameter 1.5 [in]  
Well total depth 34.29 [ft]  
Depth to top of screen 22 [ft]  
Screen length 120 [in]  
Depth to Water 26.83 [ft]

**Pumping information:**

Final pumping rate 250 [mL/min]  
Flowcell volume 1425.17 [mL]  
Calculated Sample Rate 343 [sec]  
Sample rate 343 [sec]  
Stabilized drawdown 10.2 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1 +/-10 %	+/-0.03 +/-3 %	+/-0.1 +/-10 %	+/-0.1 +/-10 %	+/-0.1 +/-10 %
Last 5 Readings	15:41:16	62.75	7.53	4.27	227.71	7.69	126.43
	15:47:03	63.34	7.51	4.31	93.06	7.76	121.08
	15:52:49	64.12	7.48	4.35	48.47	7.76	119.85
	15:58:34	64.81	7.46	4.40	37.98	7.83	118.67
	16:04:20	66.29	7.48	4.45	50.02	8.00	118.04
Variance in last 3 readings	15:52:49	0.78	-0.02	0.04	-44.60	0.00	-1.23
	15:58:34	0.69	-0.02	0.04	-10.49	0.07	-1.18
	16:04:20	1.48	0.02	0.05	12.04	0.17	-0.63

**Notes:** Well located 500 ft west of FWA-DPT12.



Troll 9000  
6/30/2010

Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Charles VanHeuvelen  
Company Name ITS  
Project Name Buckley AFB  
Site Name Site 10

**Pump Information:**

Pump Model/Type GEOSUB SS  
Tubing Type POLY  
Tubing Diameter 0.38 [in]  
Tubing Length 59 [ft]  
Pump placement from TOC 55 [ft]

**Well Information:**

Well ID FDA-MW22  
Well diameter 2 [in]  
Well total depth 57.41 [ft]  
Depth to top of screen 44 [ft]  
Screen length 120 [in]  
Depth to Water 39.47 [ft]

**Pumping information:**

Final pumping rate 500 [mL/min]  
Flowcell volume 1915.8 [mL]  
Calculated Sample Rate 230 [sec]  
Sample rate 120 [sec]  
Stabilized drawdown 5.52 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0	+/-0	+/-0	+/-0	+/-0
Last 5 Readings	13:52:49	58.43	6.72	4.31	73.90	2.03	25.25
	13:54:50	58.41	6.72	4.33	80.01	1.96	25.04
	13:56:52	58.57	6.72	4.34	102.14	1.93	25.25
	13:58:53	58.63	6.72	4.33	60.97	1.93	25.38
	14:00:54	58.51	6.72	4.29	47.11	1.91	25.38
Variance in last 3 readings	13:56:52	0.16	0.00	0.01	22.13	-0.02	0.21
	13:58:53	0.06	0.00	-0.01	-41.17	0.00	0.13
	14:00:54	-0.12	0.00	-0.04	-13.86	-0.02	0.00

**Notes:**



Troll 9000  
6/30/2010

Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Charles VanHeuvelen/Brooks Dillard  
Company Name ITS  
Project Name BUCKLEY AFB  
Site Name SITE 10

**Pump Information:**

Pump Model/Type GEOSUB  
Tubing Type POLY  
Tubing Diameter 0.38 [in]  
Tubing Length 53 [ft]  
Pump placement from TOC 49 [ft]

**Well Information:**

Well ID FDA-MW23  
Well diameter 2 [in]  
Well total depth 51.51 [ft]  
Depth to top of screen 39 [ft]  
Screen length 120 [in]  
Depth to Water 29.77 [ft]

**Pumping information:**

Final pumping rate 500 [mL/min]  
Flowcell volume 1781.99 [mL]  
Calculated Sample Rate 214 [sec]  
Sample rate 120 [sec]  
Stabilized drawdown 22.56 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0	+/-0	+/-0	+/-0	+/-0
Last 5 Readings	12:09:31	58.40	6.96	5.15	21.01	9.55	77.80
	12:11:36	58.30	6.96	5.17	39.89	9.39	77.76
	12:13:40	58.34	6.96	5.18	29.63	9.36	77.47
	12:15:44	58.43	6.96	5.19	50.71	9.17	77.22
	12:17:48	58.40	6.96	5.21	58.87	9.06	76.92
Variance in last 3 readings	12:13:40	0.04	0.00	0.01	-10.26	-0.03	-0.30
	12:15:44	0.08	0.00	0.01	21.08	-0.19	-0.25
	12:17:48	-0.03	0.00	0.02	8.16	-0.11	-0.29

**Notes:**



Troll 9000  
6/30/2010

Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Charles VanHeuvelen  
Company Name ITS  
Project Name Buckley AFB  
Site Name Site 10

**Pump Information:**

Pump Model/Type GEOSUB SS  
Tubing Type POLY  
Tubing Diameter 0.38 [in]  
Tubing Length 42 [ft]  
Pump placement from TOC 38 [ft]

**Well Information:**

Well ID FDA-MW26  
Well diameter 2 [in]  
Well total depth 40.2 [ft]  
Depth to top of screen 27.5 [ft]  
Screen length 120 [in]  
Depth to Water 26.67 [ft]

**Pumping information:**

Final pumping rate 500 [mL/min]  
Flowcell volume 1536.67 [mL]  
Calculated Sample Rate 185 [sec]  
Sample rate 120 [sec]  
Stabilized drawdown 1.56 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0	+/-0	+/-0	+/-0	+/-0
Last 5 Readings	11:41:28	56.90	7.01	4.62	114.61	3.40	48.36
	11:43:28	56.94	7.01	4.63	91.52	3.40	48.27
	11:45:31	56.91	7.01	4.63	79.72	3.39	48.27
	11:47:32	56.91	7.01	4.63	76.05	3.40	48.01
	11:49:32	56.98	7.02	4.64	40.87	3.40	47.75
Variance in last 3 readings	11:45:31	-0.03	0.00	0.00	-11.80	-0.02	0.00
	11:47:32	0.00	0.00	0.00	-3.68	0.02	-0.26
	11:49:32	0.07	0.00	0.01	-35.17	-0.01	-0.26

**Notes:**



Troll 9000  
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Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Charles VanHeuvelen/Brooks Dillard  
 Company Name ITS  
 Project Name BUCKLEY AFB  
 Site Name SITE 10

**Pump Information:**

Pump Model/Type GEOSUB  
 Tubing Type POLY  
 Tubing Diameter 0.38 [in]  
 Tubing Length 37 [ft]  
 Pump placement from TOC 33 [ft]

**Well Information:**

Well ID FDA-MW27  
 Well diameter 2 [in]  
 Well total depth 35.11 [ft]  
 Depth to top of screen 22 [ft]  
 Screen length 120 [in]  
 Depth to Water 25.03 [ft]

**Pumping information:**

Final pumping rate 500 [mL/min]  
 Flowcell volume 1425.17 [mL]  
 Calculated Sample Rate 172 [sec]  
 Sample rate 120 [sec]  
 Stabilized drawdown 2.64 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0	+/-0	+/-0	+/-0	+/-0
Last 5 Readings	17:02:55	57.85	7.18	4.22	44.28	5.70	54.92
	17:04:59	58.00	7.17	4.22	24.41	5.64	55.19
	17:07:04	57.79	7.17	4.21	17.30	5.56	55.47
	17:09:09	57.72	7.16	4.20	18.71	5.51	56.00
	17:11:12	57.70	7.15	4.20	13.84	5.51	56.80
Variance in last 3 readings	17:07:04	-0.20	0.00	-0.01	-7.11	-0.07	0.28
	17:09:09	-0.07	0.00	-0.01	1.41	-0.05	0.54
	17:11:12	-0.02	-0.01	0.00	-4.86	0.00	0.80

**Notes:**



Troll 9000  
7/7/2010

Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Charles VanHeuvelen  
Company Name ITS  
Project Name Buckley AFB  
Site Name Site 10

**Pump Information:**

Pump Model/Type GEOSUB SS  
Tubing Type POLY  
Tubing Diameter 0.38 [in]  
Tubing Length 35 [ft]  
Pump placement from TOC 32 [ft]

**Well Information:**

Well ID FDA-MW28  
Well diameter 2 [in]  
Well total depth 32.45 [ft]  
Depth to top of screen 20 [ft]  
Screen length 120 [in]  
Depth to Water 31.49 [ft]

**Pumping information:**

Final pumping rate 250 [mL/min]  
Flowcell volume 1380.56 [mL]  
Calculated Sample Rate 332 [sec]  
Sample rate 332 [sec]  
Stabilized drawdown 10.2 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1 +/-10 %	+/-0.03 +/-3 %	+/-0.1 +/-10 %	+/-0.1 +/-10 %	+/-0.1 +/-10 %
Last 5 Readings	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00
	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00
	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00
	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00
	14:37:42	69.92	8.31	0.00	1839.30	6.96	-10.09
Variance in last 3 readings	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00
	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00
	14:37:42	69.92	8.31	0.00	1839.30	6.96	-10.09

**Notes:** Well located 250 ft north of 6th ave and 600 ft west of road extending from Aspen base gate.  
Well purged dry on 7/7/10.



Troll 9000  
6/29/2010

Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Charles VanHeuvelen/Brooks Dillard  
 Company Name ITS  
 Project Name BUCKLEY AFB  
 Site Name SITE 10

**Pump Information:**

Pump Model/Type GEOSUB  
 Tubing Type POLY  
 Tubing Diameter 0.38 [in]  
 Tubing Length 38 [ft]  
 Pump placement from TOC 34 [ft]

**Well Information:**

Well ID FWA-MW32  
 Well diameter 2 [in]  
 Well total depth 36.4 [ft]  
 Depth to top of screen 24 [ft]  
 Screen length 120 [in]  
 Depth to Water 28.51 [ft]

**Pumping information:**

Final pumping rate 500 [mL/min]  
 Flowcell volume 1447.47 [mL]  
 Calculated Sample Rate 174 [sec]  
 Sample rate 120 [sec]  
 Stabilized drawdown 4.92 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0	+/-0	+/-0	+/-0	+/-0
Last 5 Readings	14:21:46	56.77	7.39	4.96	81.68	8.06	67.58
	14:23:49	56.73	7.39	4.96	86.04	8.09	67.89
	14:25:53	57.34	7.39	5.00	90.54	8.01	68.76
	14:27:59	57.38	7.39	5.01	93.68	7.99	69.63
	14:30:03	57.22	7.39	5.00	82.61	7.97	70.12
Variance in last 3 readings	14:25:53	0.62	0.00	0.04	4.50	-0.09	0.87
	14:27:59	0.04	0.00	0.00	3.14	-0.02	0.87
	14:30:03	-0.16	0.00	-0.01	-11.07	-0.02	0.49

**Notes:**



Troll 9000  
7/6/2010

Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Whitney Littleton/Brooks Dillard  
Company Name ITS  
Project Name BUCKLEY AFB  
Site Name SITE 10

**Pump Information:**

Pump Model/Type GEOSUB  
Tubing Type POLY  
Tubing Diameter 0.38 [in]  
Tubing Length 69 [ft]  
Pump placement from TOC 65 [ft]

**Well Information:**

Well ID FDA-MW33  
Well diameter 2 [in]  
Well total depth 67.11 [ft]  
Depth to top of screen 55 [ft]  
Screen length 120 [in]  
Depth to Water 33.12 [ft]

**Pumping information:**

Final pumping rate 500 [mL/min]  
Flowcell volume 2138.82 [mL]  
Calculated Sample Rate 257 [sec]  
Sample rate 120 [sec]  
Stabilized drawdown 26.76 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0	+/-0	+/-0	+/-0	+/-0
Last 5 Readings	10:26:52	60.70	7.21	3.14	10.09	0.40	-126.44
	10:28:55	60.76	7.22	3.13	8.92	0.38	-128.46
	10:31:00	60.07	7.23	3.11	5.74	0.40	-128.47
	10:33:04	60.64	7.23	3.14	5.34	0.42	-126.30
	10:35:09	61.29	7.24	3.15	4.50	0.47	-121.82
Variance in last 3 readings	10:31:00	-0.69	0.01	-0.02	-3.18	0.02	-0.01
	10:33:04	0.56	0.01	0.03	-0.40	0.02	2.17
	10:35:09	0.65	0.01	0.01	-0.84	0.05	4.48

**Notes:**



Troll 9000  
7/6/2010

Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Whitney Littleton/Brooks Dillard  
Company Name ITS  
Project Name BUCKLEY AFB  
Site Name SITE 10

**Pump Information:**

Pump Model/Type GEOSUB  
Tubing Type POLY  
Tubing Diameter 0.38 [in]  
Tubing Length 73 [ft]  
Pump placement from TOC 69.5 [ft]

**Well Information:**

Well ID FDA-MW34  
Well diameter 2 [in]  
Well total depth 71.42 [ft]  
Depth to top of screen 65 [ft]  
Screen length 60 [in]  
Depth to Water 42.82 [ft]

**Pumping information:**

Final pumping rate 500 [mL/min]  
Flowcell volume 2228.03 [mL]  
Calculated Sample Rate 268 [sec]  
Sample rate 120 [sec]  
Stabilized drawdown 35.64 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0	+/-0	+/-0	+/-0	+/-0
Last 5 Readings	11:55:16	59.55	6.45	4.28	117.04	0.00	-80.52
	11:57:21	59.92	6.45	4.24	119.14	-0.01	-80.32
	11:59:24	59.21	6.45	4.23	95.19	0.00	-80.02
	12:01:29	59.45	6.44	4.24	72.44	0.00	-80.59
	12:03:34	59.89	6.44	4.26	80.47	-0.01	-80.68
Variance in last 3 readings	11:59:24	-0.71	-0.01	-0.02	-23.95	0.01	0.29
	12:01:29	0.24	-0.01	0.02	-22.75	0.00	-0.56
	12:03:34	0.44	0.00	0.02	8.03	-0.01	-0.09

**Notes:**



Troll 9000  
7/6/2010

Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Whitney Littleton/Brooks Dillard  
Company Name ITS1  
Project Name BUCKLEY AFB  
Site Name SITE 10

**Pump Information:**

Pump Model/Type GEOSUB  
Tubing Type POLY  
Tubing Diameter 0.38 [in]  
Tubing Length 67 [ft]  
Pump placement from TOC 63 [ft]

**Well Information:**

Well ID FDA-MW35  
Well diameter 2 [in]  
Well total depth 65.2 [ft]  
Depth to top of screen 52 [ft]  
Screen length 120 [in]  
Depth to Water 41.29 [ft]

**Pumping information:**

Final pumping rate 500 [mL/min]  
Flowcell volume 2094.22 [mL]  
Calculated Sample Rate 252 [sec]  
Sample rate 120 [sec]  
Stabilized drawdown 14.16 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0	+/-0	+/-0	+/-0	+/-0
Last 5 Readings	14:26:29	59.61	6.73	4.74	103.83	3.30	-64.35
	14:28:33	59.51	6.72	4.74	72.30	3.40	-62.82
	14:30:39	59.58	6.72	4.73	65.06	3.36	-62.03
	14:32:42	59.49	6.71	4.73	54.91	3.37	-61.36
	14:34:46	59.46	6.70	4.73	46.18	3.38	-60.72
Variance in last 3 readings	14:30:39	0.06	-0.01	-0.01	-7.24	-0.04	0.80
	14:32:42	-0.08	-0.01	0.00	-10.15	0.01	0.67
	14:34:46	-0.03	0.00	0.00	-8.73	0.01	0.63

**Notes:** BLACK WATER AND SEDIMENT CAME UP INITIALLY...SMELLED LIKE CARBON



Troll 9000  
6/29/2010

Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Charles VanHeuvelen/Brooks Dillard  
Company Name ITS  
Project Name BUCKLEY AFB  
Site Name SITE 10

**Pump Information:**

Pump Model/Type GEOSUB  
Tubing Type POLY  
Tubing Diameter 0.38 [in]  
Tubing Length 36 [ft]  
Pump placement from TOC 32 [ft]

**Well Information:**

Well ID FWA-MW36  
Well diameter 2 [in]  
Well total depth 34.35 [ft]  
Depth to top of screen 21 [ft]  
Screen length 120 [in]  
Depth to Water 27.6 [ft]

**Pumping information:**

Final pumping rate 500 [mL/min]  
Flowcell volume 1402.86 [mL]  
Calculated Sample Rate 169 [sec]  
Sample rate 120 [sec]  
Stabilized drawdown 1.08 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0	+/-0	+/-0	+/-0	+/-0
Last 5 Readings	16:14:28	58.78	7.22	4.59	4.74	7.88	57.84
	16:16:32	58.81	7.22	4.59	3.78	7.87	58.16
	16:18:36	58.59	7.22	4.58	2.50	7.91	58.35
	16:20:41	58.69	7.22	4.58	2.04	7.94	58.54
	16:22:45	58.41	7.22	4.57	2.39	7.89	58.82
Variance in last 3 readings	16:18:36	-0.22	0.00	0.00	-1.28	0.04	0.19
	16:20:41	0.10	0.00	0.00	-0.46	0.03	0.19
	16:22:45	-0.28	0.00	-0.01	0.35	-0.05	0.28

**Notes:**



Troll 9000  
6/29/2010

Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Charles VanHeuvelen/Brooks Dillard  
 Company Name ITS  
 Project Name BUCKLEY AFB  
 Site Name SITE 10

**Pump Information:**

Pump Model/Type GEOSUB  
 Tubing Type POLY  
 Tubing Diameter 0.38 [in]  
 Tubing Length 37 [ft]  
 Pump placement from TOC 33 [ft]

**Well Information:**

Well ID FWA-MW37  
 Well diameter 2 [in]  
 Well total depth 35.29 [ft]  
 Depth to top of screen 17 [ft]  
 Screen length 180 [in]  
 Depth to Water 19.63 [ft]

**Pumping information:**

Final pumping rate 500 [mL/min]  
 Flowcell volume 1425.17 [mL]  
 Calculated Sample Rate 172 [sec]  
 Sample rate 120 [sec]  
 Stabilized drawdown 15.36 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0	+/-0	+/-0	+/-0	+/-0
Last 5 Readings	12:50:45	57.21	7.46	3.01	119.68	7.71	75.01
	12:52:48	57.45	7.46	3.03	92.23	7.67	74.72
	12:54:52	57.77	7.45	3.06	71.91	7.66	74.95
	12:56:57	58.24	7.45	3.11	61.55	7.63	75.48
	12:59:02	58.68	7.44	3.17	57.78	7.64	76.24
Variance in last 3 readings	12:54:52	0.32	0.00	0.04	-20.32	-0.01	0.23
	12:56:57	0.48	-0.01	0.04	-10.35	-0.03	0.53
	12:59:02	0.44	-0.01	0.06	-3.77	0.00	0.75

**Notes:**



Troll 9000  
6/30/2010

Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Charles VanHeuvelen  
Company Name ITS  
Project Name Buckley AFB  
Site Name Site 10

**Pump Information:**

Pump Model/Type GEOSUB SS  
Tubing Type POLY  
Tubing Diameter 0.38 [in]  
Tubing Length 35 [ft]  
Pump placement from TOC 30 [ft]

**Well Information:**

Well ID FWA-MW38  
Well diameter 2 [in]  
Well total depth 32.7 [ft]  
Depth to top of screen 15 [ft]  
Screen length 180 [in]  
Depth to Water 22.45 [ft]

**Pumping information:**

Final pumping rate 500 [mL/min]  
Flowcell volume 1380.56 [mL]  
Calculated Sample Rate 166 [sec]  
Sample rate 120 [sec]  
Stabilized drawdown 9.84 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0	+/-0	+/-0	+/-0	+/-0
Last 5 Readings	9:29:52	56.50	7.37	3.58	18.50	8.34	77.79
	9:31:53	56.24	7.36	3.57	13.60	8.32	76.59
	9:33:55	57.09	7.35	3.62	31.15	8.28	76.21
	9:35:56	57.76	7.35	3.63	25.47	8.22	76.34
	9:37:57	58.45	7.35	3.66	17.47	8.17	76.38
Variance in last 3 readings	9:33:55	0.85	-0.01	0.05	17.54	-0.04	-0.38
	9:35:56	0.67	0.00	0.01	-5.68	-0.06	0.13
	9:37:57	0.68	0.00	0.03	-7.99	-0.05	0.04

**Notes:**



Troll 9000  
7/2/2010

Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Charles VanHeuvelen/Brooks Dillard  
Company Name ITS  
Project Name BUCKLEY AFB  
Site Name SITE 10

**Pump Information:**

Pump Model/Type GEOSUB  
Tubing Type POLY  
Tubing Diameter 0.38 [in]  
Tubing Length 65 [ft]  
Pump placement from TOC 59 [ft]

**Well Information:**

Well ID FDA-MW39  
Well diameter 2 [in]  
Well total depth 61.91 [ft]  
Depth to top of screen 49 [ft]  
Screen length 120 [in]  
Depth to Water 28.56 [ft]

**Pumping information:**

Final pumping rate 500 [mL/min]  
Flowcell volume 2049.62 [mL]  
Calculated Sample Rate 246 [sec]  
Sample rate 120 [sec]  
Stabilized drawdown 56.88 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0	+/-0	+/-0	+/-0	+/-0
Last 5 Readings	14:43:28	61.90	7.69	23408.95	199.29	2.89	-38.90
	14:45:33	61.98	7.68	23419.70	194.77	2.88	-37.57
	14:47:37	62.33	7.68	23452.54	343.45	2.88	-37.22
	14:49:41	62.92	7.67	23593.76	1192.17	2.85	-37.23
	14:51:45	63.32	7.67	23613.78	2741.77	2.75	-37.58
Variance in last 3 readings	14:47:37	0.35	0.00	32.84	148.67	-0.01	0.36
	14:49:41	0.58	-0.01	141.22	848.72	-0.02	-0.02
	14:51:45	0.40	0.00	20.02	1549.60	-0.11	-0.35

**Notes:** COND/TURB NEVER SETTLED SO SAMPLED AFTER 45 MIN PURGE TIME



Troll 9000  
7/1/2010

Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Charles VanHeuvelen/Brooks Dillard  
 Company Name ITS  
 Project Name BUCKLEY AFB  
 Site Name SITE 10

**Pump Information:**

Pump Model/Type GEOSUB  
 Tubing Type POLY  
 Tubing Diameter 0.38 [in]  
 Tubing Length 46 [ft]  
 Pump placement from TOC 42.67 [ft]

**Well Information:**

Well ID FDA-MW49  
 Well diameter 2 [in]  
 Well total depth 43.67 [ft]  
 Depth to top of screen 30.7 [ft]  
 Screen length 120 [in]  
 Depth to Water 37.81 [ft]

**Pumping information:**

Final pumping rate 500 [mL/min]  
 Flowcell volume 1625.88 [mL]  
 Calculated Sample Rate 196 [sec]  
 Sample rate 120 [sec]  
 Stabilized drawdown 7.08 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0	+/-0	+/-0	+/-0	+/-0
Last 5 Readings	10:31:52	60.24	7.07	5.07	8.23	1.19	-3.60
	10:33:57	60.32	7.07	5.08	7.72	1.17	-4.33
	10:36:01	60.08	7.07	5.07	6.68	1.17	-4.79
	10:38:04	59.97	7.07	5.05	6.98	1.16	-5.22
	10:40:09	59.88	7.07	5.04	6.11	1.16	-5.68
Variance in last 3 readings	10:36:01	-0.24	0.00	-0.01	-1.04	0.00	-0.47
	10:38:04	-0.11	0.00	-0.02	0.30	0.00	-0.42
	10:40:09	-0.09	0.00	0.00	-0.88	0.00	-0.47

**Notes:** REACHED 45 MIN PURGE TIME WITH ORP AT A NEGATIVE VALUE SO SAMPLED



Troll 9000  
7/2/2010

Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Charles VanHeuvelen/Brooks Dillard  
 Company Name ITS  
 Project Name BUCKLEY AFB  
 Site Name SITE 10

**Pump Information:**

Pump Model/Type GEOSUB  
 Tubing Type POLY  
 Tubing Diameter 0.38 [in]  
 Tubing Length 77 [ft]  
 Pump placement from TOC 70 [ft]

**Well Information:**

Well ID FWA-MW41  
 Well diameter 2 [in]  
 Well total depth 73.6 [ft]  
 Depth to top of screen 60 [ft]  
 Screen length 120 [in]  
 Depth to Water 30.9 [ft]

**Pumping information:**

Final pumping rate 250 [mL/min]  
 Flowcell volume 2317.24 [mL]  
 Calculated Sample Rate 557 [sec]  
 Sample rate 120 [sec]  
 Stabilized drawdown 154.8 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0	+/-0	+/-0	+/-0	+/-0
Last 5 Readings	11:29:34	61.97	7.11	31217.22	17.69	0.77	-48.98
	11:31:38	62.75	7.12	31822.12	21.03	0.82	-45.09
	11:33:41	62.06	7.14	31497.96	26.59	0.97	-41.07
	11:35:46	62.57	7.15	31746.59	29.92	1.06	-38.59
	11:37:51	63.69	7.16	32041.49	119.51	1.08	-36.11
Variance in last 3 readings	11:33:41	-0.69	0.02	-324.16	5.57	0.15	4.02
	11:35:46	0.51	0.01	248.62	3.33	0.09	2.48
	11:37:51	1.12	0.00	294.90	89.59	0.02	2.48

**Notes:** COND NEVER SETTLED SO SAMPLED AFTER 45 MIN PURGE TIME



Troll 9000  
7/7/2010

Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Whitney Littleton/Brooks Dillard  
Company Name ITS  
Project Name BUCKLEY AFB  
Site Name SITE 10

**Pump Information:**

Pump Model/Type GEOSUB  
Tubing Type POLY  
Tubing Diameter 0.38 [in]  
Tubing Length 50 [ft]  
Pump placement from TOC 46 [ft]

**Well Information:**

Well ID FWA-MW42  
Well diameter 2 [in]  
Well total depth 48.02 [ft]  
Depth to top of screen 30 [ft]  
Screen length 180 [in]  
Depth to Water 17.98 [ft]

**Pumping information:**

Final pumping rate 500 [mL/min]  
Flowcell volume 1715.09 [mL]  
Calculated Sample Rate 206 [sec]  
Sample rate 120 [sec]  
Stabilized drawdown 42.48 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0	+/-0	+/-0	+/-0	+/-0
Last 5 Readings	9:49:00	56.17	7.25	5.39	12.07	0.35	-13.29
	9:51:04	56.18	7.25	5.39	12.27	0.34	-17.79
	9:53:08	56.14	7.25	5.39	12.46	0.34	-21.64
	9:55:13	56.07	7.25	5.38	11.57	0.34	-25.16
	9:57:17	56.10	7.25	5.39	9.78	0.34	-28.07
Variance in last 3 readings	9:53:08	-0.04	0.00	0.00	0.19	0.00	-3.86
	9:55:13	-0.07	0.00	0.00	-0.89	0.00	-3.51
	9:57:17	0.03	0.00	0.01	-1.79	0.00	-2.91

**Notes:**



Troll 9000  
6/30/2010

Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Charles VanHeuvelen/Brooks Dillard  
Company Name ITS  
Project Name BUCKLEY AFB  
Site Name SITE 10

**Pump Information:**

Pump Model/Type GEOSUB  
Tubing Type POLY  
Tubing Diameter 0.38 [in]  
Tubing Length 54 [ft]  
Pump placement from TOC 50 [ft]

**Well Information:**

Well ID FWA-MW43  
Well diameter 2 [in]  
Well total depth 52.84 [ft]  
Depth to top of screen 35 [ft]  
Screen length 180 [in]  
Depth to Water 31.42 [ft]

**Pumping information:**

Final pumping rate 500 [mL/min]  
Flowcell volume 1804.3 [mL]  
Calculated Sample Rate 217 [sec]  
Sample rate 120 [sec]  
Stabilized drawdown 33.84 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0	+/-0	+/-0	+/-0	+/-0
Last 5 Readings	14:29:47	59.22	7.12	5.33	1479.00	3.84	28.97
	14:31:50	59.19	7.12	5.34	1494.60	3.85	29.52
	14:33:54	59.07	7.11	5.35	1315.68	3.87	30.33
	14:35:59	59.65	7.10	5.36	1141.91	3.87	31.32
	14:38:04	59.17	7.10	5.33	1144.66	3.89	31.91
Variance in last 3 readings	14:33:54	-0.12	-0.01	0.01	-178.92	0.01	0.81
	14:35:59	0.58	-0.01	0.02	-173.78	0.00	0.99
	14:38:04	-0.48	-0.01	-0.03	2.75	0.02	0.59

**Notes:** REACHED 45 MIN PURGE TIME WITH TURBIDITY ABOVE 100 SO SAMPLED



Troll 9000  
6/29/2010

Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Charles VanHeuvelen/Brooks Dillard  
Company Name ITS  
Project Name BUCKLEY AFB  
Site Name SITE 10

**Pump Information:**

Pump Model/Type GEOSUB  
Tubing Type POLY  
Tubing Diameter 0.38 [in]  
Tubing Length 32.5 [ft]  
Pump placement from TOC 28.5 [ft]

**Well Information:**

Well ID FWA-MW47  
Well diameter 2 [in]  
Well total depth 30.47 [ft]  
Depth to top of screen 18.7 [ft]  
Screen length 120 [in]  
Depth to Water 18.93 [ft]

**Pumping information:**

Final pumping rate 500 [mL/min]  
Flowcell volume 1324.81 [mL]  
Calculated Sample Rate 159 [sec]  
Sample rate 120 [sec]  
Stabilized drawdown 43.92 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0	+/-0	+/-0	+/-0	+/-0
Last 5 Readings	11:40:32	58.32	7.28	3.28	47.85	5.64	93.38
	11:42:36	59.08	7.28	3.33	42.42	5.56	92.06
	11:44:41	59.69	7.29	3.37	38.47	5.44	91.08
	11:46:45	59.90	7.30	3.39	28.93	5.39	89.85
	11:48:49	60.61	7.30	3.41	27.98	5.32	88.54
Variance in last 3 readings	11:44:41	0.61	0.00	0.04	-3.95	-0.12	-0.98
	11:46:45	0.21	0.01	0.02	-9.54	-0.05	-1.23
	11:48:49	0.70	0.00	0.02	-0.95	-0.07	-1.31

**Notes:**



Troll 9000  
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Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Whitney Littleton  
Company Name ITS  
Project Name Buckley AFB  
Site Name Site 10

**Pump Information:**

Pump Model/Type GEOSUB SS  
Tubing Type POLY  
Tubing Diameter 0.38 [in]  
Tubing Length 56 [ft]  
Pump placement from TOC 50 [ft]

**Well Information:**

Well ID FWA-MW50  
Well diameter 2 [in]  
Well total depth 54.8 [ft]  
Depth to top of screen 43.7 [ft]  
Screen length 120 [in]  
Depth to Water 26.83 [ft]

**Pumping information:**

Final pumping rate 250 [mL/min]  
Flowcell volume 1848.9 [mL]  
Calculated Sample Rate 444 [sec]  
Sample rate 444 [sec]  
Stabilized drawdown 24.12 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1 +/-10 %	+/-0.03 +/-3 %	+/-0.1 +/-10 %	+/-0.1 +/-10 %	+/-0.1 +/-10 %
Last 5 Readings	13:19:09	60.35	7.09	2.76	186.14	0.05	-196.40
	13:26:37	59.80	7.08	2.76	62.85	0.01	-199.83
	13:34:03	59.79	7.08	2.79	36.52	-0.01	-199.47
	13:41:30	59.76	7.07	2.82	17.85	-0.02	-197.54
	13:48:59	59.79	7.07	2.84	12.29	-0.03	-193.65
Variance in last 3 readings	13:34:03	-0.01	-0.01	0.03	-26.33	-0.01	0.36
	13:41:30	-0.03	-0.01	0.03	-18.67	-0.01	1.94
	13:48:59	0.04	0.00	0.02	-5.56	-0.01	3.89

**Notes:** Well located near green metal fence pos t(flush mt) 6 ft west of FWA-MW51.



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Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Whitney Littleton  
Company Name ITS  
Project Name Buckley AFB  
Site Name Site 10

**Pump Information:**

Pump Model/Type GEOSUB SS  
Tubing Type POLY  
Tubing Diameter 0.38 [in]  
Tubing Length 35 [ft]  
Pump placement from TOC 30 [ft]

**Well Information:**

Well ID FWA-MW51  
Well diameter 2 [in]  
Well total depth 33.51 [ft]  
Depth to top of screen 23.7 [ft]  
Screen length 120 [in]  
Depth to Water 25.96 [ft]

**Pumping information:**

Final pumping rate 250 [mL/min]  
Flowcell volume 1380.56 [mL]  
Calculated Sample Rate 332 [sec]  
Sample rate 332 [sec]  
Stabilized drawdown 24.12 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1 +/-10 %	+/-0.03 +/-3 %	+/-0.1 +/-10 %	+/-0.1 +/-10 %	+/-0.1 +/-10 %
Last 5 Readings	11:42:44	59.90	7.35	5.77	63.02	6.33	55.54
	11:48:18	61.41	7.35	5.87	33.42	6.22	53.10
	11:53:54	63.15	7.35	6.01	25.74	6.12	51.42
	11:59:28	64.20	7.35	6.10	21.99	6.06	48.99
	12:05:02	65.54	7.35	6.19	9.45	5.99	47.12
Variance in last 3 readings	11:53:54	1.74	0.00	0.14	-7.68	-0.10	-1.68
	11:59:28	1.05	0.00	0.09	-3.75	-0.06	-2.42
	12:05:02	1.35	0.00	0.09	-12.54	-0.07	-1.87

**Notes:** Well located near green metal fence post (flush mt) approximately 350 ft east of eastern property fence and 450 ft north of 6th ave.



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Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Charles VanHeuvelen  
Company Name ITS  
Project Name Buckley AFB  
Site Name Site 10

**Pump Information:**

Pump Model/Type GEOSUB SS  
Tubing Type POLY  
Tubing Diameter 0.38 [in]  
Tubing Length 45 [ft]  
Pump placement from TOC 41 [ft]

**Well Information:**

Well ID FWA-MW52  
Well diameter 2 [in]  
Well total depth 43.81 [ft]  
Depth to top of screen 34 [ft]  
Screen length 120 [in]  
Depth to Water 18.93 [ft]

**Pumping information:**

Final pumping rate 250 [mL/min]  
Flowcell volume 1603.58 [mL]  
Calculated Sample Rate 385 [sec]  
Sample rate 120 [sec]  
Stabilized drawdown 24.12 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0	+/-0	+/-0	+/-0	+/-0
Last 5 Readings	14:57:08	57.58	7.27	3.17	48.98	2.76	-11.00
	14:59:10	57.47	7.27	3.17	37.32	2.62	-15.15
	15:01:12	57.86	7.26	3.19	38.30	2.48	-17.38
	15:03:12	58.22	7.25	3.20	33.73	2.41	-18.15
	15:05:14	58.79	7.25	3.22	31.44	2.34	-18.58
Variance in last 3 readings	15:01:12	0.39	-0.01	0.02	0.98	-0.14	-2.23
	15:03:12	0.36	-0.01	0.01	-4.57	-0.07	-0.77
	15:05:14	0.57	0.00	0.02	-2.29	-0.07	-0.43

**Notes:** Well located near green metal fence post (flush mt).



Troll 9000  
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Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Whitney Littleton  
Company Name ITS  
Project Name Buckley AFB  
Site Name Site 10

**Pump Information:**

Pump Model/Type GEOSUB SS  
Tubing Type POLY  
Tubing Diameter 0.38 [in]  
Tubing Length 65 [ft]  
Pump placement from TOC 57 [ft]

**Well Information:**

Well ID FWA-TW53  
Well diameter 2 [in]  
Well total depth 60.49 [ft]  
Depth to top of screen 48 [ft]  
Screen length 120 [in]  
Depth to Water 28.79 [ft]

**Pumping information:**

Final pumping rate 250 [mL/min]  
Flowcell volume 2049.62 [mL]  
Calculated Sample Rate 492 [sec]  
Sample rate 492 [sec]  
Stabilized drawdown 24.12 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1 +/-10 %	+/-0.03 +/-3 %	+/-0.1 +/-10 %	+/-0.1 +/-10 %	+/-0.1 +/-10 %
Last 5 Readings	11:02:43	56.71	7.10	4.67	224.07	1.57	56.44
	11:10:59	57.19	7.11	4.68	112.87	1.78	44.68
	11:19:14	57.54	7.11	4.68	39.71	1.32	32.24
	11:27:30	58.14	7.11	4.73	26.93	1.16	22.15
	11:35:44	58.33	7.13	4.71	24.67	1.14	16.45
Variance in last 3 readings	11:19:14	0.35	0.00	0.00	-73.16	-0.46	-12.44
	11:27:30	0.59	0.00	0.05	-12.78	-0.16	-10.09
	11:35:44	0.19	0.01	-0.02	-2.26	-0.02	-5.70

**Notes:** Well located 10 ft north of Winterpark Ave. and 200 ft west of rv storage gate.



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Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Whitney Littleton/Brooks Dillard  
Company Name ITS  
Project Name BUCKLEY AFB  
Site Name SITE 10

**Pump Information:**

Pump Model/Type GEOSUB  
Tubing Type POLY  
Tubing Diameter 0.38 [in]  
Tubing Length 33 [ft]  
Pump placement from TOC 29.5 [ft]

**Well Information:**

Well ID FWA-TW57  
Well diameter 2 [in]  
Well total depth 30.45 [ft]  
Depth to top of screen 18.2 [ft]  
Screen length 120 [in]  
Depth to Water 21.11 [ft]

**Pumping information:**

Final pumping rate 500 [mL/min]  
Flowcell volume 1335.96 [mL]  
Calculated Sample Rate 161 [sec]  
Sample rate 120 [sec]  
Stabilized drawdown 8.64 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0	+/-0	+/-0	+/-0	+/-0
Last 5 Readings	11:00:02	55.18	7.09	4.45	218.72	3.74	26.57
	11:02:06	55.13	7.07	4.45	99.92	3.87	26.02
	11:04:10	55.18	7.06	4.45	53.51	3.91	25.97
	11:06:14	55.19	7.05	4.46	27.97	3.89	26.15
	11:08:19	55.30	7.05	4.47	14.81	3.87	26.41
Variance in last 3 readings	11:04:10	0.05	-0.01	0.01	-46.41	0.05	-0.04
	11:06:14	0.01	-0.01	0.01	-25.54	-0.02	0.17
	11:08:19	0.11	0.00	0.01	-13.16	-0.02	0.26

**Notes:**



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Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Whitney Littleton  
Company Name ITS  
Project Name Buckley AFB  
Site Name Site 10

**Pump Information:**

Pump Model/Type GEOSUB SS  
Tubing Type POLY  
Tubing Diameter 0.38 [in]  
Tubing Length 60 [ft]  
Pump placement from TOC 50 [ft]

**Well Information:**

Well ID FWA-TW58  
Well diameter 2 [in]  
Well total depth 56.41 [ft]  
Depth to top of screen 43.2 [ft]  
Screen length 120 [in]  
Depth to Water 18.26 [ft]

**Pumping information:**

Final pumping rate 250 [mL/min]  
Flowcell volume 1938.11 [mL]  
Calculated Sample Rate 466 [sec]  
Sample rate 466 [sec]  
Stabilized drawdown 24.12 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1 +/-10 %	+/-0.03 +/-3 %	+/-0.1 +/-10 %	+/-0.1 +/-10 %	+/-0.1 +/-10 %
Last 5 Readings	17:31:27	58.03	7.15	5.48	0.04	4.58	-4.89
	17:39:16	59.03	7.16	5.54	0.03	4.25	-2.33
	17:47:05	59.36	7.16	5.53	0.02	4.24	2.31
	17:54:54	59.48	7.16	5.58	0.01	4.13	4.98
	17:58:31	59.69	7.15	5.59	0.01	4.09	6.44
Variance in last 3 readings	17:47:05	0.33	0.00	-0.01	-0.01	-0.01	4.64
	17:54:54	0.12	-0.01	0.04	0.00	-0.11	2.67
	17:58:31	0.21	0.00	0.01	0.00	-0.04	1.46

**Notes:** Well located 200 ft east of pavement edge behind concrete berm and south of northern Buckley AFB perimeter fence 100 ft.



Troll 9000  
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Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Charles VanHeuvelen  
Company Name ITS  
Project Name Buckley AFB  
Site Name Site 10

**Pump Information:**

Pump Model/Type GEOSUB SS  
Tubing Type POLY  
Tubing Diameter 0.38 [in]  
Tubing Length 42 [ft]  
Pump placement from TOC 38 [ft]

**Well Information:**

Well ID FWA-TW65  
Well diameter 2 [in]  
Well total depth 40.08 [ft]  
Depth to top of screen 26 [ft]  
Screen length 120 [in]  
Depth to Water 30.43 [ft]

**Pumping information:**

Final pumping rate 500 [mL/min]  
Flowcell volume 1536.67 [mL]  
Calculated Sample Rate 185 [sec]  
Sample rate 120 [sec]  
Stabilized drawdown 9.96 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0	+/-0	+/-0	+/-0	+/-0
Last 5 Readings	9:50:18	60.40	7.30	5.88	432.36	4.93	43.53
	9:52:18	60.15	7.30	5.88	411.89	4.81	38.66
	9:54:18	60.68	7.29	5.90	353.66	4.76	36.22
	9:56:21	63.41	7.31	6.10	413.54	4.76	36.99
	9:58:21	62.75	7.32	6.07	297.68	4.78	36.22
Variance in last 3 readings	9:54:18	0.53	-0.01	0.02	-58.24	-0.05	-2.44
	9:56:21	2.73	0.02	0.20	59.88	0.00	0.77
	9:58:21	-0.66	0.00	-0.04	-115.86	0.03	-0.77

**Notes:** Well lost head, couldn't raise last 2' of water column w/ pump @ max flow rate



Troll 9000  
7/1/2010

Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Charles VanHeuvelen  
Company Name ITS  
Project Name Buckley AFB  
Site Name Site 10

**Pump Information:**

Pump Model/Type GEOSUB SS  
Tubing Type POLY  
Tubing Diameter 0.38 [in]  
Tubing Length 40 [ft]  
Pump placement from TOC 36 [ft]

**Well Information:**

Well ID FWA-TW67  
Well diameter 2 [in]  
Well total depth 38.53 [ft]  
Depth to top of screen 29 [ft]  
Screen length 252 [in]  
Depth to Water 29.67 [ft]

**Pumping information:**

Final pumping rate 250 [mL/min]  
Flowcell volume 1492.07 [mL]  
Calculated Sample Rate 359 [sec]  
Sample rate 180 [sec]  
Stabilized drawdown 18.48 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0	+/-0	+/-0	+/-0	+/-0
Last 5 Readings	11:07:36	61.24	5.15	8.42	284.27	-0.07	21.76
	11:10:38	61.10	5.16	8.49	310.81	-0.07	19.33
	11:13:39	61.73	5.16	8.60	273.58	-0.07	18.95
	11:16:41	65.40	5.17	9.07	222.47	-0.07	15.58
	11:19:19	67.13	5.18	9.33	219.65	-0.06	18.53
Variance in last 3 readings	11:13:39	0.63	0.01	0.11	-37.22	0.00	-0.38
	11:16:41	3.67	0.01	0.48	-51.11	0.00	-3.37
	11:19:19	1.73	0.01	0.25	-2.82	0.02	2.95

**Notes:** Well lost head, cannot pump w/ max flow rate. Mod fermentation smell



Troll 9000  
7/1/2010

Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Charles VanHeuvelen  
Company Name ITS  
Project Name Buckley AFB  
Site Name Site 10

**Pump Information:**

Pump Model/Type GEOSUB SS  
Tubing Type POLY  
Tubing Diameter 0.38 [in]  
Tubing Length 28.5 [ft]  
Pump placement from TOC 26 [ft]

**Well Information:**

Well ID PW-13  
Well diameter 2 [in]  
Well total depth 27.46 [ft]  
Depth to top of screen 15 [ft]  
Screen length 120 [in]  
Depth to Water 22.14 [ft]

**Pumping information:**

Final pumping rate 250 [mL/min]  
Flowcell volume 1235.6 [mL]  
Calculated Sample Rate 297 [sec]  
Sample rate 120 [sec]  
Stabilized drawdown 0.6 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0	+/-0	+/-0	+/-0	+/-0
Last 5 Readings	13:20:14	56.97	8.18	3.50	44.25	8.72	-14.97
	13:22:15	56.76	8.19	3.49	31.56	8.67	-15.14
	13:24:16	56.60	8.19	3.49	27.12	8.69	-15.48
	13:26:18	56.59	8.20	3.49	25.32	8.72	-15.56
	13:28:20	56.58	8.20	3.49	20.19	8.71	-15.48
Variance in last 3 readings	13:24:16	-0.16	0.01	-0.01	-4.44	0.01	-0.34
	13:26:18	-0.02	0.01	0.00	-1.80	0.03	-0.08
	13:28:20	-0.01	0.00	0.00	-5.13	-0.02	0.09

**Notes:** Protective casing labeled FWA-MW4



Troll 9000  
7/1/2010

Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Charles VanHeuvelen/Brooks Dillard  
 Company Name ITS  
 Project Name BUCKLEY AFB  
 Site Name SITE 10

**Pump Information:**

Pump Model/Type GEOSUB  
 Tubing Type POLY  
 Tubing Diameter 0.38 [in]  
 Tubing Length 28 [ft]  
 Pump placement from TOC 25.72 [ft]

**Well Information:**

Well ID PW-14  
 Well diameter 2 [in]  
 Well total depth 26.72 [ft]  
 Depth to top of screen 14 [ft]  
 Screen length 120 [in]  
 Depth to Water 22.68 [ft]

**Pumping information:**

Final pumping rate 500 [mL/min]  
 Flowcell volume 1224.45 [mL]  
 Calculated Sample Rate 147 [sec]  
 Sample rate 120 [sec]  
 Stabilized drawdown 0.72 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0	+/-0	+/-0	+/-0	+/-0
Last 5 Readings	14:00:15	64.64	8.27	3.23	3.99	7.85	-13.99
	14:02:18	64.77	8.27	3.24	3.34	7.78	-12.81
	14:04:23	64.91	8.27	3.25	3.30	7.87	-12.18
	14:06:27	64.88	8.27	3.25	3.41	7.87	-11.64
	14:08:32	64.02	8.28	3.21	2.79	7.95	-11.36
Variance in last 3 readings	14:04:23	0.14	0.00	0.01	-0.04	0.08	0.62
	14:06:27	-0.03	0.00	0.00	0.11	0.01	0.54
	14:08:32	-0.86	0.00	-0.04	-0.62	0.08	0.28

**Notes:**



Troll 9000  
7/1/2010

Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Charles VanHeuvelen  
Company Name ITS  
Project Name Buckley AFB  
Site Name Site 10

**Pump Information:**

Pump Model/Type GEOSUB SS  
Tubing Type POLY  
Tubing Diameter 0.38 [in]  
Tubing Length 27 [ft]  
Pump placement from TOC 25 [ft]

**Well Information:**

Well ID PW-15  
Well diameter 2 [in]  
Well total depth 26.56 [ft]  
Depth to top of screen 14 [ft]  
Screen length 120 [in]  
Depth to Water 21.26 [ft]

**Pumping information:**

Final pumping rate 250 [mL/min]  
Flowcell volume 1202.15 [mL]  
Calculated Sample Rate 289 [sec]  
Sample rate 120 [sec]  
Stabilized drawdown 0.6 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0	+/-0	+/-0	+/-0	+/-0
Last 5 Readings	16:10:55	57.74	8.20	2.94	19.72	9.03	-40.32
	16:12:56	57.44	8.20	2.93	19.56	9.09	-39.11
	16:14:57	57.28	8.20	2.92	16.26	9.10	-37.94
	16:16:58	56.98	8.21	2.91	20.22	9.11	-36.68
	16:19:00	57.03	8.21	2.92	20.24	9.16	-35.38
Variance in last 3 readings	16:14:57	-0.17	0.00	-0.01	-3.30	0.01	1.17
	16:16:58	-0.29	0.00	-0.01	3.95	0.01	1.26
	16:19:00	0.05	0.00	0.00	0.03	0.05	1.30

**Notes:** + Pressure @ cap



Troll 9000  
7/1/2010

Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Charles VanHeuvelen/Brooks Dillard  
 Company Name ITS  
 Project Name BUCKLEY AFB  
 Site Name SITE 10

**Pump Information:**

Pump Model/Type GEOSUB  
 Tubing Type POLY  
 Tubing Diameter 0.38 [in]  
 Tubing Length 28.5 [ft]  
 Pump placement from TOC 25.42 [ft]

**Well Information:**

Well ID PW-17  
 Well diameter 2 [in]  
 Well total depth 26.92 [ft]  
 Depth to top of screen 14 [ft]  
 Screen length 120 [in]  
 Depth to Water 20.28 [ft]

**Pumping information:**

Final pumping rate 500 [mL/min]  
 Flowcell volume 1235.6 [mL]  
 Calculated Sample Rate 149 [sec]  
 Sample rate 120 [sec]  
 Stabilized drawdown 0.36 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0	+/-0	+/-0	+/-0	+/-0
Last 5 Readings	15:54:51	55.08	8.30	3.34	72.84	9.02	-12.87
	15:56:56	55.65	8.27	3.35	62.72	8.97	-10.95
	15:59:00	55.30	8.27	3.33	45.07	9.14	-9.28
	16:01:04	54.96	8.26	3.31	42.54	9.03	-8.72
	16:03:08	54.90	8.25	3.33	45.09	9.00	-7.69
Variance in last 3 readings	15:59:00	-0.35	-0.01	-0.02	-17.65	0.17	1.67
	16:01:04	-0.34	0.00	-0.01	-2.53	-0.11	0.56
	16:03:08	-0.06	-0.01	0.02	2.56	-0.03	1.03

**Notes:**



Troll 9000  
7/6/2010

Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Whitney Littleton/Brooks Dillard  
 Company Name ITS  
 Project Name BUCKLEY AFB  
 Site Name SITE 10

**Pump Information:**

Pump Model/Type GEOSUB  
 Tubing Type POLY  
 Tubing Diameter 0.38 [in]  
 Tubing Length 29 [ft]  
 Pump placement from TOC 25.5 [ft]

**Well Information:**

Well ID PW-18  
 Well diameter 2 [in]  
 Well total depth 26.48 [ft]  
 Depth to top of screen 15 [ft]  
 Screen length 120 [in]  
 Depth to Water 20 [ft]

**Pumping information:**

Final pumping rate 500 [mL/min]  
 Flowcell volume 1246.75 [mL]  
 Calculated Sample Rate 150 [sec]  
 Sample rate 120 [sec]  
 Stabilized drawdown 0.24 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0	+/-0	+/-0	+/-0	+/-0
Last 5 Readings	16:19:12	54.44	8.20	4.28	133.98	9.40	-21.97
	16:21:15	54.30	8.20	4.28	99.11	9.42	-21.19
	16:23:19	54.25	8.21	4.28	92.05	9.41	-20.40
	16:25:24	54.43	8.20	4.29	94.99	9.40	-19.35
	16:27:29	54.26	8.21	4.27	86.34	9.42	-18.64
Variance in last 3 readings	16:23:19	-0.06	0.00	0.00	-7.05	-0.01	0.79
	16:25:24	0.18	0.00	0.01	2.94	-0.01	1.05
	16:27:29	-0.18	0.00	-0.01	-8.65	0.02	0.71

**Notes:**



Troll 9000  
7/7/2010

Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Whitney Littleton  
Company Name ITS  
Project Name Buckley AFB  
Site Name Site 10

**Pump Information:**

Pump Model/Type GEOSUB SS  
Tubing Type POLY  
Tubing Diameter 0.38 [in]  
Tubing Length 34 [ft]  
Pump placement from TOC 31 [ft]

**Well Information:**

Well ID PW-20  
Well diameter 2 [in]  
Well total depth 32.97 [ft]  
Depth to top of screen 21 [ft]  
Screen length 120 [in]  
Depth to Water 28.73 [ft]

**Pumping information:**

Final pumping rate 250 [mL/min]  
Flowcell volume 1358.26 [mL]  
Calculated Sample Rate 326 [sec]  
Sample rate 326 [sec]  
Stabilized drawdown 10.2 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1 +/-10 %	+/-0.03 +/-3 %	+/-0.1 +/-10 %	+/-0.1 +/-10 %	+/-0.1 +/-10 %
Last 5 Readings	13:02:38	58.74	6.75	4.30	28.11	0.77	-34.16
	13:08:05	59.41	6.71	4.32	18.55	0.51	-41.30
	13:13:33	60.11	6.63	4.36	18.55	0.32	-49.64
	13:19:01	62.75	6.58	4.45	14.43	0.26	-52.43
	13:24:30	63.79	6.59	4.54	14.70	0.60	-51.19
Variance in last 3 readings	13:13:33	0.70	-0.07	0.04	0.00	-0.19	-8.34
	13:19:01	2.65	-0.05	0.10	-4.12	-0.06	-2.79
	13:24:30	1.04	0.00	0.08	0.27	0.34	1.23

**Notes:**

Well located 250 ft east of sparge trench blower shed and 150 ft from northern base boundary fence. Well pumped dry before parms stabilized, no sample collected on 7/7/10 rather sample collected on 7/8/10 after allowing well to recharge.



Troll 9000  
7/1/2010

Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Charles VanHeuvelen  
Company Name ITS  
Project Name Buckley AFB  
Site Name Site 10

**Pump Information:**

Pump Model/Type GEOSUB SS  
Tubing Type POLY  
Tubing Diameter 0.38 [in]  
Tubing Length 36 [ft]  
Pump placement from TOC 33 [ft]

**Well Information:**

Well ID PW-21  
Well diameter 2 [in]  
Well total depth 34.92 [ft]  
Depth to top of screen 23 [ft]  
Screen length 120 [in]  
Depth to Water 22.14 [ft]

**Pumping information:**

Final pumping rate 250 [mL/min]  
Flowcell volume 1402.86 [mL]  
Calculated Sample Rate 337 [sec]  
Sample rate 120 [sec]  
Stabilized drawdown 10.2 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0	+/-0	+/-0	+/-0	+/-0
Last 5 Readings	14:31:01	61.51	6.70	3.44	91.55	0.02	-145.49
	14:33:02	61.46	6.70	3.45	90.16	0.01	-148.06
	14:35:03	61.41	6.70	3.44	94.32	-0.01	-148.74
	14:37:03	61.18	6.70	3.43	92.37	-0.01	-149.00
	14:39:05	61.46	6.70	3.44	92.78	-0.02	-147.28
Variance in last 3 readings	14:35:03	-0.05	0.00	-0.01	4.16	-0.01	-0.68
	14:37:03	-0.23	0.00	-0.01	-1.95	-0.01	-0.25
	14:39:05	0.28	0.00	0.01	0.41	-0.01	1.71

**Notes:**



Troll 9000  
7/7/2010

Low-Flow System  
ISI Low-Flow Log

**Project Information:**

Operator Name Whitney Littleton/Brooks Dillard  
Company Name ITS  
Project Name BUCKLEY AFB  
Site Name SITE 10

**Pump Information:**

Pump Model/Type GEOSUB  
Tubing Type POLY  
Tubing Diameter 0.38 [in]  
Tubing Length 38 [ft]  
Pump placement from TOC 35.5 [ft]

**Well Information:**

Well ID PW-22  
Well diameter 2 [in]  
Well total depth 36.42 [ft]  
Depth to top of screen 24 [ft]  
Screen length 120 [in]  
Depth to Water 28.29 [ft]

**Pumping information:**

Final pumping rate 500 [mL/min]  
Flowcell volume 1447.47 [mL]  
Calculated Sample Rate 174 [sec]  
Sample rate 120 [sec]  
Stabilized drawdown 8.4 [in]

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [F]	pH [pH]	Cond [mS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0	+/-0	+/-0	+/-0	+/-0
Last 5 Readings	12:58:46	57.66	6.55	3.01	144.51	-0.01	-146.28
	13:00:51	57.27	6.55	3.02	69.79	-0.02	-149.29
	13:02:56	57.15	6.55	3.01	58.76	-0.03	-150.71
	13:05:00	57.16	6.54	3.05	47.55	-0.04	-152.09
	13:07:03	57.25	6.54	3.09	33.92	-0.04	-154.07
Variance in last 3 readings	13:02:56	-0.12	0.00	-0.01	-11.03	-0.01	-1.42
	13:05:00	0.01	0.00	0.04	-11.20	-0.01	-1.38
	13:07:03	0.09	0.00	0.04	-13.63	0.00	-1.98

**Notes:** INITIAL PURGE CAME UP BLACK/GREY AND SMELLED OF CARBON



# FIELD ACTIVITY REPORT

Project: Buckley AFB Site 10 GW Sampling	Date: 6/29/2010	Page	of
Client: USACE	Contract No.: W91238-06-0022	Project No.:	07030.0007.100501A
Work Description: GW levels/Sampling/Training			
Subcontractors/Visitors: N/A			
Weather: hot, mid 90's F, no breeze, v. low humidity			

## DESCRIPTION OF FIELD ACTIVITIES AND EVENTS

0800 Arrive @ ITSI trailer, safety meeting, calibrate in-situ, discuss w/ W.Littleton abt. well id/loc PW-13 (FWA-MW4)?, load truck

0930 Double check loc. of well PW-13 along sparge trench

1002 Start measuring water levels

1055 Start sampling FWA-MW47, VOC's only

1225 Start sampling FWA-MW37, VOC's only - @ sample time (well in parameters) pump control box overheated, switched to extra, wait 10 min - sample

1340 Start @ FWA-MW38, cannot access due to lock seized

1345 Start sampling FDA-MW32, VOC's only (no well cap)

1500 Drive to ITSI trailer to store samples in refrigerator, locate sample labels, pump IDW water to barrel on pallet

1550 Start sampling FDA-MW36, VOC's only

1645 Start sampling FDA-MW27, VOC & DUP

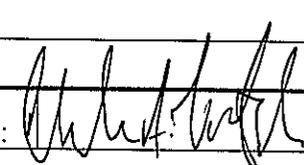
1735 Drive to gas station for ice, back to ITSI trailer, C-O-C, pack cooler

1845 Depart Buckley AFB for FedEx location Alameda/225 (last pickup 5:30 PM), drive to DIA FedEx station

1925 Drop off samples @ FedEx DIA (last pickup 8:30 PM)

2000 Pick up Ford truck @ Alameda/225 FedEx, drive home

Note: All samples pumped @ 500ml/min & decon between ea. well

Prepared by: Charles VanHeovenen	Signature: 	Date: 6/29/2010
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B. Piccola



6/29/2010



# FIELD ACTIVITY REPORT

Project: Buckley AFB Site 10 GW Sampling	Date: 6/30/2010	Page 1 of 1
Client: USACE	Contract No.: W91238-06-0022	Project No.: 07030.0007.100501A
Work Description: GW Sampling		
Subcontractors/Visitors:		
Weather: hot mid 90's F, 10-20 mph wind from SE		

## DESCRIPTION OF FIELD ACTIVITIES AND EVENTS

0730 Arrive @ Buckley ITS1 trailer, take out garbage, work on paperwork (scan C-O-C, SCL, FedEx), load trucks, calibrate in-situ, pump remainder of IDW to barrel, speak w/ Paul S, safety meeting, work w/ Sprint aircard for computer

0940 out lock (Master, v. difficult) FWA-MW38, VOC (Brooks D. & I worked on 1<sup>st</sup> well together) → DTW 22.45

1055 Start sampling FDA-MW26, VOC

1215 Help Brooks sample FDA-MW23, VOC, bio, w/ MEE

1255 Start sampling FDA-MW22, VOC, bio

1440 Pick up Brook's purge water, drive to ITS1 trailer to pump barrel, while pumping barrel the proactive 1.5" pump quit working, switched to SS geo

1550 Return to Site 10, N. 6<sup>th</sup>

1605 Set up @ USCWTP-MW1, 0.45' of water column - NO SAMPLE

1615 Pick up ice @ gas station, package ice bags, pack samples, C-O-C (4 bags)

1800 Drive for more ice @ gas station (2+)

1820 Return, finish packing sampling, scan C-O-C/FedEx label wk on daily rept. & aircard

1900 Depart loc.

Note: All samples pumped @ 500 ml/min & decon between ea. well

Prepared by: Charles VanHeuvelen	Signature:	Date: 6/30/2010
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# FIELD ACTIVITY REPORT

Project: Buckley AFB Site 10 GW Sampling		Date: 06-30-2010	Page 1 of 2
Client: USACE	Contract No.: W91238-06-0022		Project No.: 07030.0007.100501A
Work Description: MONITOR WELL SAMPLING		B. DILLARD	
Subcontractors/Visitors:			
Weather: SUNNY, WARM, CLEAR			
DESCRIPTION OF FIELD ACTIVITIES AND EVENTS			
1055 - FDA - MW23			
1115			
DTW: 29.77			
TD: 51.51			
FLOW: 31.65			
SDD: 22.56			
SAMPLE @: 49' / 1230			
FINAL: 37.33		PV: 15-G	
STOP: 1245			
1330: FWA - MW43			
DTW: 31.42		NOTE: COULD NOT GET	
TD: 52.84		TURBIDITY TO SETTLE SO	
FLOW: 34.24		WAITED 45 MINUTES AND	
SDD: 33.84		THEN SAMPLED - ALL OTHER	
SAMPLE @: 50' / 1445		PARAMETERS WERE UNDER	
(DTW) FINAL: 45.45		LIMITS.	
STOP: 1523		PV: 10-G	
1530: FWA - MW49			
DTW: 37.78		TD: 43.67	
FLOW:		NOTE: GIVEN LOW	
SDD:		LEVEL OF WATER WAS	
SAMPLE @:		TOLD TO MOVE TO	
FINAL DTW:		NEXT LOCATION. STILL	
STOP:		ADDED TUBING TO THIS	
		PV: LOCATION.	
Prepared by:	B. DILLARD	Signature:	
		Date:	06-30-2010



# FIELD ACTIVITY REPORT

Project: Buckley AFB Site 10 GW Sampling	Date: 06-30-10	Page 2 of 2
Client: USACE	Contract No.: W91238-06-0022	Project No.: 07030.0007.100501A
Work Description: MONITOR WELL SAMPLING		
Subcontractors/Visitors:		B. DILLARD
Weather: SUNNY, WINDY, WARM, CLEAR		

## DESCRIPTION OF FIELD ACTIVITIES AND EVENTS

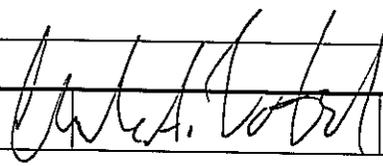
1605 - FDA - MW13 -> SOUNDED WELL AND IT ONLY HAD 1" OF WATER BEFORE T.D. VERIFIED DEPTH OF REFUSAL MATCHED WELL SPECS AND MOVED ON TO NEXT LOCATION PER CHARLES.

1615 - FDA - MW28 -> SAME NOTE AS ABOVE BUT ONLY 1 FOOT OF WATER IN THIS LOCATION. PER CHARLES, HOLDING HIM FINISH HIS WELL (LAST OF DAY).

Prepared by: B. DILLARD	Signature:	Date: 06-30-2010
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# FIELD ACTIVITY REPORT

Project: Buckley AFB Site 10 GW Sampling	Date: 7/1/2010	Page	of
Client: USACE	Contract No.: W91238-06-0022	Project No.:	07030.0007.100501A
Work Description: GW Sampling			
Subcontractors/Visitors:			
Weather: hot, mid 90's F, slight breeze from N. 0-5 mph, late afternoon clouds			
DESCRIPTION OF FIELD ACTIVITIES AND EVENTS			
0730 Arrive @ Buckley ITS trailer, email w. Littleton GW elevations, dailies, C-O-C, SLC, Fedex, H&S meeting, load trucks			
0920 Start sampling FWA-TW65, full samp ste, 500ml/min			
1000 lost head, would not pump @ max flow rate → NO SAMPLE			
0950 troubleshoot Brooks' In-Situ, "com failure" - re-align batteries			
1030 Start sampling FWA-TW67, full samp ste, (lowered flow rate) 250ml/min, lost head - NO SAMPLE, purge water mod + fermentation smell			
1150 Pickup Brooks' purge water, help label MS/MSD bottles, decon			
1210 Drive to wells S. of 6 <sup>th</sup> along sponge trench, drop off sample @ trailer fridge			
1240 PW-13 (labeled FWA-MW4 on protective csg), VOC MS/MSD 250ml/min			
1410 Start sampling PW-21, full ste, 250 ml/min, lost hd. - NO SAMPLE			
1515 Start sampling PW-15, full ste, 250 ml/min (+) pressure @ well			
1520-40 Speak w/ W. Littleton abt. progress & questions batt. purchase OK'd f/ floska mt. wells in E. field			
1725 Arrive @ trailer, start packing samples, C-O-C, icebags equipment blank			
1800 Drive to pickup more ziplocks / 1820 Return			
1900 Brooks drive to pickup more ice			
1930 Return / Call Fedex abt "holding plane" - too late for delivery, store samples on ice			
2000 Depart loc.			
2030 Pickup battery @ Walmart			
Prepared by:		Signature: CHARLES VANHELVELED	Date: 7/1/2010



# FIELD ACTIVITY REPORT

Project: Buckley AFB Site 10 GW Sampling	Date: 07-01-10	Page 1 of 2
Client: USACE	Contract No.: W91238-06-0022	Project No.: 07030.0007.100501A
Work Description: MONITOR WELL SAMPLING		
Subcontractors/Visitors:		
Weather: SUNNY, WARM, CLEAR		

## DESCRIPTION OF FIELD ACTIVITIES AND EVENTS

0715 - ARRIVE AT OFFICE TRAILER ON BASE AND TAKE WATER LEVEL MEASUREMENTS FOR SENDING TO WHITNEY. ALSO CALIBRATE EQUIPMENT, LOAD VEHICLE, AND PREP'D FOR SAMPLING.

0915 - ARRIVE AT FDA-MW49. WATER TABLE ONLY PRESENT WITH 5' DEPTH SO WILL MONITOR WATER LEVEL CAREFULLY DURING PUMPING.

### FDA-MW49

DTW: 37.81      TD: 43.67  
 Flow: 38.49      SSD: 7.08      PV: 12-G  
 SAMPLE @: 42.5' / 1100      FINAL: 37.93      STOP: 1213

- NOTE: RECEIVED COM-1 CONNECTION ERROR AFTER SEVERAL MINUTES OF PUMPING AND A LACK OF SAMPLES OCCURRING AT DESIGNATED INTERVALS. CHECKED ALL CONNECTIONS AND SWAPPED BATTERIES. RESTARTED DEVICE AND IS NOW FUNCTIONING. RESTART PUMP AND REINPUT DATA FOR SECOND ATTEMPT.

- 1027: ORP IS NOT STABILIZING AND NOW SHOWS A NEGATIVE VALUE WITH > 400% CHANGES BETWEEN SAMPLING INTERVALS. WILL WAIT ENTIRE 45 MINUTES BEFORE SAMPLING PER CHARLES, TURBIDITY, ALTHOUGH LESS THAN 100 IS STILL SHOWING > 10% CHANGES AS WELL. NOTE THAT THIS WELL IS LOCATED WITHIN AN EXISTING PLUME DELINEATION.

- 1200: WATER LEVEL STEADY THROUGHOUT SO SAMPLED MS(MSD) IN THIS LOCATION. FINISHED LABELING AND WILL NOW DECON.

1224 - RETURNS TO OFFICE TRAILER, LOADED SAMPLES IN FRIDGE, THEN LEFT BASE TO PICK UP LUNCH TO BRING BACK TO SITE AND RESEARCH RECEIPT ISSUE AT CIRCLE (K).

Prepared by: B. DILLARD	Signature:	Date: 07-01-10
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# FIELD ACTIVITY REPORT

Project: Buckley AFB Site 10 GW Sampling	Date: 07-01-10	Page 2 of 2
Client: USACE	Contract No.: W91238-06-0022	Project No.: 07030.0007.100501A
Work Description: MONITOR WELL SAMPLING		
Subcontractors/Visitors:		
Weather: SUNNY PARTLY CLOUDY, BREEZY		

## DESCRIPTION OF FIELD ACTIVITIES AND EVENTS

1300- RETURNED TO BASE AND BEGAN SETUP ON PW-14.

### PW-14

DTW: 22.68 TD: 26.72

FLOW: 22.62 SSD: 0.72 PV: 12-G

SAMPLE @ : 26 / 1425 FINAL: 22.65 STOP: 1518

NOTE: TAKING DUPLICATE SAMPLE HERE PER CHARLES.

1526- ARRIVE AT PW-17

### PW-17

DTW: 20.28 TD: 26.92

FLOW: 20.31 SSD: 0.36 PV: 7-G

SAMPLE @ : 25 / 1615 FINAL: 20.36 STOP: 1711

NOTE: TOOK DUPLICATE HERE PER CHARLES.

1725- LEFT BASE TO PICK UP 15 BAGS OF ICE FOR SAMPLE SHIPPING.

1745- BACK AT BASE MAKING ICE BAGS, PACKING SAMPLES, CHAIN, ETC.

1900- LEFT BASE TO GET MORE ICE (10 BAGS) GIVEN 15 WAS NOT ENOUGH.

1930- CALLED FEDEX TO SEE IF THEY WOULD LET US DROP SAMPLES A LITTLE LATER THAN 2030 SINCE PACKING IS NOT COMPLETE - THEY SAID 'NO' AND THAT EVEN IF WE DROPPED IT OFF RIGHT AT CLOSE TIME, SAMPLES WOULD NOT SHIP TILL END OF DAY.

2000- STOPPED PACKING AND CALLED IT A DAY.

2015- OFF BASE - END OF DAY.

Prepared by: B. DILLARD	Signature:	Date: 07-01-10
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## FIELD ACTIVITY REPORT

Project: Buckley AFB Site 10 GW Sampling	Date: 07-02-10	Page 1 of 2
Client: USACE	Contract No.: W91238-06-0022	Project No.: 07030.0007.100501A
Work Description: MONITOR WELL SAMPLING		
Subcontractors/Visitors:		
Weather: SUNNY, CLEAR, WARM		

### DESCRIPTION OF FIELD ACTIVITIES AND EVENTS

0725 - ARRIVE ON BASE. BEGIN TO SET UP AND PLAN FOR DAY. PAPERWORK CATCH UP AND TIMESHEET IN ADVANCE OF HOLIDAY. EQUIPMENT CALIBRATION. EMPTIED 55-G DRUM OF PURGE WATER.

1002 - LEFT BASE FOR FIRST WELL OF DAY, FWA-MW41.  
 1002 - ARRIVED AT FWA-MW41.

#### FWA-MW41

DTW: 30.90      TD: 73.60  
           : 43.90      SSD: 154.80      PV: 7-G

SAMPLE @ : 70' / 1145      FINAL: 61.09      STOP: 1214

- NOTE: PUMP WOULD NOT START AT 3' ABOVE TD SO PULLED IT UP 3' TO 6' ABOVE TD AND GOT IT STARTING. THEN DROPPED IT BACK DOWN TO 3' ABOVE TD. PER CHARLES, SET PARAMETER FEET FOR FLOW RATE TO 250 ML FROM 500 ML BEFORE STARTING SAMPLING/READINGS ON PDA.

- 1139 - CONDUCTIVITY NEVER SETTLED INTO ACCEPTABLE RANGE SO WAITED FULL 45 MINUTE PURGE TIME AND SAMPLED. ALL OTHER PARAMETERS WERE SUCCESSIVELY IN-LINE WITH GOALS.

1230 - DEPARTED BRIEFLY TO PICK UP LUNCH, THEN DROPPED CHARLES BACK AT SITE WHILE I THEN WENT TO CORRECT MY TIMESHEET IN THE MOBILE TRAILER. ALSO CALLED T. LACKMAN ABOUT SCHEDULE CHANGES FOR OMAHA/ARLINGTON PROJECT WORK. ON BASE @ 1300.

1330 - LEFT BASE TO RETURN TO SAMPLING.

1347 - ARRIVE AT FDA-MW39 AND BEGIN SETUP.

↪ NEXT PAGE

Prepared by:	B. DILLARD	Signature:		Date:	07-02-10
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## FIELD ACTIVITY REPORT

Project: Buckley AFB Site 10 GW Sampling	Date: 07-02-10	Page 2 of 2
Client: USACE	Contract No.: W91238-06-0022	Project No.: 07030.0007.100501A
Work Description: MONITOR WELL SAMPLING		
Subcontractors/Visitors:		
Weather: MOSTLY CLOUDY, OCCASSIONAL LIGHT TO MODERATE RAINFALL		

### DESCRIPTION OF FIELD ACTIVITIES AND EVENTS

FDA-MW39

DTW: 28.56

TD: 61.91

: 33.30

SPD: 56.88

PI: 6.5-G

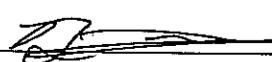
SAMPLE@: 59/1555

FINAL: 56.27

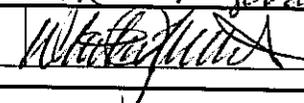
STOP: 1528

NOTE: CONDUCTIVITY AND TURBIDITY DID NOT STABILIZE WITHIN 45 MINUTES SO SAMPLED WELL AFTER 45 MINUTES REACHED.

- 1530: PER CHARLES, HOMING BACK TO TRAILER TO MAKE BAGS OF ICE AND PACK REMAINING SAMPLES IN PREP FOR DROP OFF TO FEDEX BEFORE 8:15 PM. WILL LIKELY HAVE UP TO (10) COOLERS OF SAMPLES (!).
- 1545: ARRIVE AT OFFICE AND COMPLETELY UNLOAD MY RENTAL VEHICLE GIVEN I'M RETURNING IT WHEN WE DROP SAMPLES. WILL NOW BEGIN BAGGING ICE AND PACKING SAMPLES.
- 1559: RECEIVED CALL FROM W. LITTLETON WHO ADVISED ME TO KEEP MY RENTAL CAR THROUGH THE WEEKEND AND BRING IT ON TUESDAY MORNING FOR SAMPLING.
- 1630: LEFT BASE TO BUY ICE AND ZIPLOC BAGS. RETURNED AT 1700 AND CONTINUED MAKING ICE BAGS FOR COOLERS AND PACKING SAMPLES.
- 1900: LOADING COOLERS INTO VEHICLE FOR TRIP TO FEDEX
- 2000: RETURNED FROM FEDEX - END OF DAY.

Prepared by:	B. DILLARD	Signature:		Date:	07-02-10
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## FIELD ACTIVITY REPORT

Project: Buckley AFB Site 10 GW Sampling	Date: 7/6/2010	Page 1 of 2
Client: USACE	Contract No.: W91238-06-0022	Project No.: 07030.0007.100501A
Work Description: Site 10 GW Sampling		
Subcontractors/Visitors:		
Weather: Sunny, 80's, 5-10 mph wind from NE		
<b>DESCRIPTION OF FIELD ACTIVITIES AND EVENTS</b>		
0730 Arrive @ Lakewood office to pick up field truck, site keys, and field paper work.		
0800 Depart for Lakewood office.		
0850 Arrive <sup>from</sup> @ Buckley field trailer. Confirm samples that shipped on 7/2. B. Dillard calibrating In Situ devices. Gathered all equipment for sampling. Hammered steel drum flush on the bottom in order for it to ride in pickup bed as mobile purge water container.		
1000 Depart for well FWA-MW51		
1010 Drop off tubing @ FDA-MW53 for B. Dillard.		
1020 Arrive near FWA-MW51. Well is approx 400' east of property fence. All equipment including car battery for pump controller power being moved to well head.		
1050 Take water level and begin purging FWA-MW51. DTW 25.94' TD 33.51' (used speed of 43 w/GeoSubSS)		
1130 Begin purging FWA-MW51 (control box) and recording field parameters.		
1209 Sample FWA-MW51 for VOCs. A total of 3 VOA vials were collected. Final DTW <del>27.10'</del> 28.31'.		
1215 Decoring pump and water level <sup>with</sup> indicator. Purged approx. 3 gals.		
1230 Mob equipment to FWA-MW50 (approx 6' west of FWA-MW50).		
1240 Take water level and begin purging FWA-MW50 DTW 26.83' TD 54.80' (used speed of 43 w/GeoSubSS controller) Well has slight hydrocarbon odor.		
1255 Begin purging FWA-MW50 and recording field parameters.		
1350 Sample FWA-MW50 for VOCs. Total of 3 VOA vials collected.		
1420 Mob to trailer to place samples in refrigerator.		
1435 Arrive @ trailer & place samples in refrigerator.		
Prepared by:	Whitney Littleton	Signature:  Date: 7/6/2010





# FIELD ACTIVITY REPORT

Project: Buckley AFB Site 10 GW Sampling	Date: 07-06-10	Page 1 of 3
Client: USACE	Contract No.: W91238-06-0022	Project No.: 07030.0007.100501A
Work Description: MONITOR WELL SAMPLING		
Subcontractors/Visitors:		
Weather: SUNNY, CLEAR, WARM		

## DESCRIPTION OF FIELD ACTIVITIES AND EVENTS

0750 - AT CIRCLE K TO BUY ICE FOR SAMPLE COOLERS AND WATER FOR DAY. ON BASE AT 0810 - BEGIN PREPING FOR SAMPLING, LOADING VEHICLE, AND CALIBRATING PDAS WHILE WAITING FOR W. LITTLETON TO ARRIVE.

0844 - QUICK CAL RESULTS FOR UNIT 1:  
 PH → SLOPE = -56.83    OFFSET = 407.29  
 ORP → OFFSET = -12.56    KCELL = 0.338

0852 - QUICK CAL RESULTS FOR UNIT 2:  
 PH → -57.09 = SLOPE    OFFSET = 399.05  
 ORP → -13.66 ≠ OFFSET    KCELL = 0.345

0930 - LEFT MOBILE OFFICE FOR FIRST WELL OF DAY.  
 0943 - ARRIVE AT FDA-MW33

### FDA-MW33

DTW: 33.12    TD: 67.11  
           : 35.35    SDD: 26.76    PV: 3-G  
 SAMPLE @: 65/1040    FINAL: 49.29    STOP: 1104  
 NOTE: GOOD FLOW RATE AND PARAMETER STABILIZATION SO TOOK DUPLICATE SAMPLE IN THIS LOCATION (VOC'S ONLY).

1109 - ARRIVE AT FDA-MW34

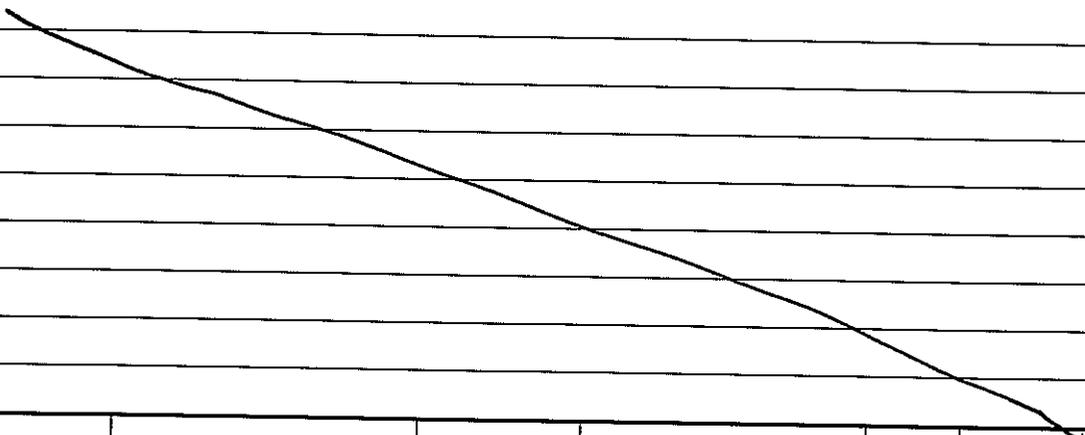
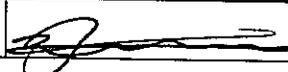
### FDA-MW34

DTW: 42.82    TD: 71.42  
           : 45.79    SDD: 35.64    PV: 6-G  
 SAMPLE @: 70/1205    FINAL: 53.49    STOP: 1236  
 NOTE: GOOD FLOW RATE AND PARAMETER STABILIZATION SO TOOK DUPLICATE SAMPLE HERE IN PLUME (VOC'S ONLY).

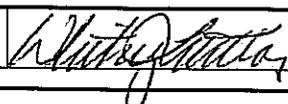
Prepared by: B. DILLARD	Signature:	Date: 07-06-10
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## FIELD ACTIVITY REPORT

Project: Buckley AFB Site 10 GW Sampling		Date: 07-06-2010	Page 3 of 3
Client: USACE	Contract No.: W91238-06-0022	Project No.: 07030.0007.100501A	
Work Description: MONITOR WELL SAMPLING			
Subcontractors/Visitors:			
Weather: OVERCAST, WINDY, OCCASSIONAL RAIN			
DESCRIPTION OF FIELD ACTIVITIES AND EVENTS			
1710 - ARRIVE AT FWA-MW17, NO TUBING SO HAVE TO DRIVE BACK TO W. LITTLETON TO PICK UP. BACK AT WELL AT 1720.			
<u>FWA-MW17</u>			
DTW: 25.57		TD: 28.18	
: 27.00		SDD: 17.16	
SAMPLE @:	FINAL:	PV:	<del>STOP</del> FINAL: 1803
- 1727: STARTING TO RAIN HARD SO WAITING TO SET UP UNTIL RAIN SETTLES. RESUMED AT 1740.			
- 1750: WELL PUMPED DRY. PER W. LITTLETON WILL CHECK TOMORROW TO SEE IF WE CAN FILL 3 VOAS FOR VOCS.			
1810 - BACK AT OFFICE TRAILER TO UNLOAD VEHICLE AND PUT SAMPLES IN FRIDGE, CATCH UP SAMPLE LOG AND NOTES, ETC.			
1850 - W. LITTLETON ARRIVES BACK AT OFFICE TRAILER. GOING TO LEAVE TRUCK HERE AND GIVE HIM A RIDE BACK TO OFFICE PER HIS REQUEST.			
2000 - RETURNED TO HOTEL AFTER DROPPING OFF WHITNEY. END OF DAY.			
			
Prepared by:	B. DILLARD	Signature:	
		Date:	07-06-10

## FIELD ACTIVITY REPORT

Project: Buckley AFB Site 10 GW Sampling	Date: 7/7/2010	Page 1 of 2
Client: USACE	Contract No.: W91238-06-0022	Project No.: 07030.0007.100501A
Work Description: Sampling site 10 wells		
Subcontractors/Visitors:		
Weather: Overcast, drizzle off and on, low 60's		
DESCRIPTION OF FIELD ACTIVITIES AND EVENTS		
0730 Depart home to pick up nitriles and distilled water.		
0800 Arrive @ trailer. Containerize purge water. Calibrate In situ logger. Refresh decon water.		
0845 B. Dillard departs for first well. W Littleton to geotech to pick up a 500' roll of poly tubing		
1000 W. Littleton back onsite. To trailer to pick up sample containers, decon buckets, and purge water drum.		
1010 W. Littleton mob to FWA-TW53 to take water level and begin purging Begin DTW 28.79' TD 60.49'		
1037 Begin purging and recording stabilization params @ FWA-TW53 Using speed of 37 w/ GeoSub 55 control box		
1136 ORP, DO, and turbidity are not stabilizing. 45 mins of purging has occurred though so sample is collected for VOCs @ FWA-TW53. 3 VOCs collected. Final DTW 41.02' Final purge vol ~ 4 gals		
1150 Deconing equipment.		
1205 Mobbing to <del>FWA-TW53</del> PW-20		
1220 Arrive @ PW-20. Setting up to purge well and record water level. Begin DTW 28.73' TD 32.97'		
1240 Begin purging and recording stabilization parameters @ PW-20 Using speed of 37 w/ GeoSub 55 control box		
1330 PW-20 went dry prior to param stabilization. No sample collected. Will return in 24 hrs to check water column and availability to collect sample. Purged ~ 3.5 gals. Deconing equipment.		
1350 Mob to FDA-MW28 to check on amount of water.		
1410 Measured DTW 31.49' TD 32.45'. Plan to purge well dry, record initial readings and sample tomorrow if well recharges. Called D. Schwarzweller to confirm		
1435 Start purging FDA-MW28		
Prepared by: Whitney Littleton	Signature: 	Date: 7/7/10



# FIELD ACTIVITY REPORT

Project: Buckley AFB Site 10 GW Sampling	Date: 07/07/2010	Page 2 of 2
Client: USACE	Contract No.: W91238-06-0022	Project No.: 07030.0007.100501A
Work Description: <u>Site 10 GW Sampling</u>		
Subcontractors/Visitors:		
Weather:		

## DESCRIPTION OF FIELD ACTIVITIES AND EVENTS

1430 Well went dry after initial stabilization param readings

1440 Deconing equipment

1500 offsite to get ice for sample shipments

1520 Back onsite w/ ice. Finalizing sample shipment prep and completing Chain of custody forms

~~1745 Samples are packed, COCs complete in~~

1530 P. Schwanzwetter onsite w/ coolers and trip blanks. Paul has tested Proactive pump and we should be able to use it for 1.5" DPT wells tomorrow

1745 Samples are packed, COCs complete, off to FedEx

1830 Arrive @ Fed Ex DIA location.

1835 offsite to home

1920 Arrive @ home

Prepared by: <u>Whitney Littleton</u>	Signature: <u>[Signature]</u>	Date: <u>7/7/10</u>
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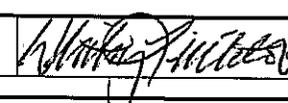
## FIELD ACTIVITY REPORT

Project: Buckley AFB Site 10 GW Sampling		Date: 07-07-2010	Page 1 of 2
Client: USACE	Contract No.: W91238-06-0022	Project No.: 07030.0007.100501A	
Work Description: MONITOR WELL SAMPLING			
Subcontractors/Visitors:			
Weather: OVERCAST, COOL, OCCASIONAL LIGHT DRIZZLE			
DESCRIPTION OF FIELD ACTIVITIES AND EVENTS			
0715 - ARRIVE AT CIRCLE K TO PURCHASE WATER AND ICE. RECEIVED CALL FROM W. LITTLETON - HE WILL PICK UP NITRILE GLOVES AND BE ON BASE CLOSER TO 8AM. SO PICKED UP BREAKFAST.			
0740 - ENTER BASE, DRIVE TO OFFICE TRAILER AND BEGIN SETUP, PREP FOR SAMPLING, CALIBRATE EQUIPMENT, ETC.			
0800 - W. LITTLETON ARRIVES AT OFFICE TRAILER. PLAN FOR DAY.			
0845 - ARRIVE AT FWA-MW42			
<u>FWA-MW42</u>			
DTW: 17.98		TD: 48.02	
: 21.52		SDD: 42.48	PV: 8-G
SAMPLE @: 46'   1005	FINAL: 25.25	STOP: 1035	
1038 - ARRIVE AT FWA-TW57			
<u>FWA-TW57</u>			
DTW: 21.11		TD: 30.45	
: 21.83		SDD: 8.64	PV: 4.5-G
SAMPLE @: 29.5'   1120	FINAL: 22.58	STOP: 1145	
NOTE: GOOD WELL -> STABILIZED WITHIN 7 INTERVALS.			
1155 - ARRIVE BACK AT OFFICE TRAILER TO DUMP DECON BUCKETT, PUT SAMPLES IN FRIDGE, AND EAT LUNCH. W. LITTLETON LEFT SITE ~ 0900 BUT HAS NOT RETURNED YET. HE NEEDED TO PICK UP EXTRA TUBING AND SAMPLE COOLERS FOR SHIPPING. PER PHONE CALL, W. LITTLETON BACK ON SITE AFTER 10AM.			
1210 - PER WHITNEY, WILL GO TO PW-22 NEXT.			
Prepared by:	B. DILLARD	Signature:	
		Date:	07-07-10

## FIELD ACTIVITY REPORT

Project: Buckley AFB Site 10 GW Sampling	Date: 07-07-10	Page 2 of 2
Client: USACE	Contract No.: W91238-06-0022	Project No.: 07030.0007.100501A
Work Description: MONITOR WELL SAMPLING		
Subcontractors/Visitors:		
Weather: OVERCAST, COOL, OCCASIONAL LIGHT DRIZZLE		
DESCRIPTION OF FIELD ACTIVITIES AND EVENTS		
1233 - ARRIVE AT PW-22		
PW-22		
DTW: 28.29	TD: 36.42	
: 28.99	SDD: 8.4	PV: 5-6
SAMPLE @: 29.02 <sup>35.5/</sup> 1320	FINAL: 29.02	STOP: 1400
1255 - WATER CAME UP BLACK/GREY WITH CARBON SMELL.		
1329 - WATER WAS OFF-GASING WHICH MADE IT IMPOSSIBLE TO GET A VOA FILLED WITHOUT AIR INSIDE. WATER APPEARED LIGHT BROWN/COPPER AND THE PURGE BUCKET HAD BUBBLES (SOAP-LIKE) AND A VISIBLE FHERN ALONG THE SURFACE. THIS MATERIAL WAS NOT COMING UP UNTIL PARAMETER STABILIZATION SO WAS NOT PRESENT IN WELL INITIALLY. TOOK PICTURE OF PURGE BUCKET WATER.		
1402 - RETURNED TO FWA-MW <sup>17</sup> <del>42</del> TO ATTEMPT IMMEDIATE SAMPLE GIVEN IT WENT DRY IMMEDIATELY YESTERDAY, TOO QUICKLY TO EVEN GET PARAMETERS. DTW = 26.92 TD = 28.18. WAS ABLE TO SAMPLE FOR VOCs AND WELL IMMEDIATELY DRIED UP AFTERWARDS. STOP = 1433		
1440 - ARRIVE AT FDA-MW <sup>18</sup> 13. NO WATER PRESENT (~1"). SOUNDING WAS SIMULTANEOUS WITH TD, SO WENT TO FDA-MW15.		
1446 - ARRIVE AT FDA-MW15. 1.40' OF WATER IN WELL SO PER WHITNEY, WILL PURGE FULLY AND ATTEMPT TO SAMPLE TOMORROW. 1456 - 1 GALLON PURGED IN LESS THAN 1 MINUTE THEN PUMP BECAME UNRESPONSIVE. WILL HEAD BACK TO MOBILE OFFICE NOW TO PACK SAMPLES PER WHITNEY.		
1800 - MADE ICE BAGS, PACKED SAMPLES, ETC. THEN LEFT BASE. END OF DAY.		
Prepared by:	B. DILLARD	Signature: 
		Date: 07-07-10

## FIELD ACTIVITY REPORT

Project: Buckley AFB Site 10 GW Sampling	Date: 7/8/2010	Page 1 of 2
Client: USACE	Contract No.: W91238-06-0022	Project No.: 07030.0007.100501A
Work Description: Sampling Site 10 monitoring wells		
Subcontractors/Visitors:		
Weather: Foggy, 60's, no wind		
<b>DESCRIPTION OF FIELD ACTIVITIES AND EVENTS</b>		
0735 Arrive @ job trailer. Evaluate sampling plan for the day w/ B. Dillard.		
0800 Call Charles VanHeuvelen to confirm that no sample was collected from FWA-TW67. There was no sample collected so parameters need to be taken again in order to collect a sample 24 hrs after well has been purged dry.		
0830 Decoupling Proactiv 1.5" pump. Transferring decou and purge water to staged drums.		
0910 Depart for FWA-TW62 to drop taking off for B. Dillard		
0944 Arrive @ FWA-DPT19 and collect water level DTW 19.10' TD 22.06' - Using 1.5" Proactive w/ reducing valve		
1015 Begin recording stabilization params. Lost head.		
1020 P. Schwarzeveller called to see how things were going.		
1035 Restart pumping/purging FWA-DPT19 and recording stabilization params		
1100 Lost head again. Will purge dry and sample in 24 hrs. Final DTW 21.50 purged ~ 3.5 gals		
1105 Decoupling pump and water level meter		
1120 Moving to FWA-DPT18		
1135 Collect water level @ FWA-DPT18 DTW 33.35' TD 51.99' SD 44'		
Quite a bit of sediment on water level probe		
1154 Begin purging FWA-DPT18. Extremely turbid.		
1240 Collect sample FWA-DPT18-07082010 for VOCs analysis 3 VOAs collected. Samples very turbid. Final DTW 34.01' Total purged 3 gals		
1245 Decoupling pump and water level meter		
1304 Moving to FWA-DPT12		
Prepared by: Whitney Littleton	Signature: 	Date: 7/8/2010

FIELD ACTIVITY REPORT

Project: Buckley AFB Site 10 GW Sampling	Date: 7/8/2010	Page 2 of 2
Client: USACE	Contract No.: W91238-06-0022	Project No.: 07030.0007.100501A
Work Description: Site 10 GW Sampling		
Subcontractors/Visitors:		
Weather: Upper 70's, partly cloudy, 5-10 mph wind from NW		
DESCRIPTION OF FIELD ACTIVITIES AND EVENTS		
1310 Arrive @ FWA-DPT12. Recording water level. DTW 29.66' TD 32.79' SD 32'		
1332 Begin purging FWA-DPT12		
1410 Collect sample FWA-DPT12-07082010 for VOC analysis. 3 VOA's collected Final DTW 31.80' purged 2.5 gal. B. Dillard assisting.		
1415 Decoring pump and water level meter		
1425 Moving to FWA-DPT9		
1430 Arrive @ FWA-DPT9, Recording water level. DTW 26.83' TD <del>34.29</del> 34.29 SD 32'		
1445 Begin purging FWA-DPT9		
1510 Killed truck battery. Ran to personal vehicle to get jumper cables.		
1535 Return w/ cables, jumpstart pickup and continue sample for parameter stabilization		
1605 Collect sample FWA-DPT9 for VOC analysis. 3 VOAs collected Final DTW 28.34 purged 4 gals		
1610 Decoring pump and water level.		
1619 Moving to FWA-DPT8		
1622 Arrive @ FWA-DPT8, recording water level DTW <del>26.66</del> 22.69 TD 31.58'		
1640 Having difficulty pulling water.		
1645 Pulling pump and decoring.		
1655 Return to trailer, place samples in refrigerator.		
<del>1710 Offsite</del>		
1705 Collect equipment blank 2 from Proactive pump.		
1710 Offsite		
Prepared by: Whitney Littleton	Signature: Whitney Littleton	Date: 7/8/2010

# FIELD ACTIVITY REPORT

Project: Buckley AFB Site 10 GW Sampling	Date: 07-08-10	Page 1 of 3
Client: USACE	Contract No.: W91238-06-0022	Project No.: 07030.0007.100501A
Work Description: MONITOR WELL SAMPLING		
Subcontractors/Visitors:		
Weather: OVERCAST, COOL, FOGGY		

## DESCRIPTION OF FIELD ACTIVITIES AND EVENTS

0705 - STOPPED AT CIRCLE K TO PICK UP ICE AND GATORADE AND ON BASE AT OFFICE TRAILER BY 0705. CALIBRATED EQUIPMENT AND PREP'D FOR SAMPLING.

0740 - W. LITTLETON ARRIVES AT OFFICE TRAILER. PLAN FOR DAY.

0815 - PER WHITNEY, WILL START WITH WELLS FWA-TW62 AND FWA-TW68. GOING TO GRAB FOOD QUICKLY BEFORE STARTING FIRST WELL. OFF BASE AT 0820.

0845 - ARRIVE AT FWA-TW62. CALLED WHITNEY ABOUT TROUBLE IDENTIFYING ADJACENT WELLS GIVEN SEA OF PVC PIPES, NONE OF WHICH ARE LABELED. HE WILL ASSIST LATER.

### FWA-TW62

DTW: 34.75

TD: 37.47

:

SDD:

PV: 12 OZ

SAMPLE @:

FINAL:

STDP:

- 0915 - TUBING NOT LONG ENOUGH SO WAITING FOR WHITNEY TO BRNG A NEW SUPPLY TO WELL LOCATION. DARN IT
- 0925 - WHITNEY ARRIVES WITH TUBING SO RESUME ACTIVITIES.
- 0945 - WELL WENT DRY IMMEDIATELY, ONLY PURGED 12 OZ. AND COULD NOT GET ANY MORE OUT - PUMP WENT UNRESPONSIVE. CONFIRMED WITH WHITNEY WHO TOLD ME TO MOVE SOUTH TO NEXT WELL (FWA-TW68).

### FWA-TW68

DTW: 33.31

TD: 40.11

: 37.41

SDD:

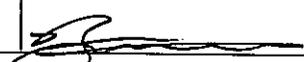
PV:

SAMPLE @:

FINAL:

STDP:

NOTE: CONFUSION OVER WELL LOCATION AND SPECS DELAYED ↻

Prepared by:	B. DILLARD	Signature:		Date:	07-08-10
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FIELD ACTIVITY REPORT

Project: Buckley AFB Site 10 GW Sampling	Date: 07-08-10	Page 2 of 3
Client: USACE	Contract No.: W91238-06-0022	Project No.: 07030.0007.100501A
Work Description: MONITOR WELL SAMPLING		
Subcontractors/Visitors:		
Weather: OVERCAST, COOL		

DESCRIPTION OF FIELD ACTIVITIES AND EVENTS

NOTE CONT'D -> START OF THIS WELL. BEGAN PUMPING AT 1030.

-1034: WELL WENT DRY BEFORE I COULD EVEN CALCULATE STABILIZED DRAW DOWN. WILL PURGE FDA-TW67 PER WHITNEY, NEXT.

1050 - PER WHITNEY, AFTER PURGING FDA-TW67, WILL GO BACK TO FDA-MW28 AND PW-20 TO PURGE AND IMMEDIATELY SAMPLE.

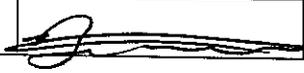
1110 - ATTEMPTED TO PURGE FDA-TW67 AND COULD NOT ESTABLISH LIFT OR GET ANY FLOW. PUMP WAS NOT DETECTED. PULLED PUMP OUT, TESTED IT IN DECON BUCKET, PUT IT BACK DOWN AND HAD SAME THING OCCUR. TRIED IT AT ALL LEVELS WITHIN 1.4' COLUMN OF WATER. CALLED WHITNEY WHO SAID TO MOVE ON TO FDA-MW28 FOR ATTEMPT AN IMMEDIATE SAMPLE.

1134 - ARRIVE AT FDA-MW28 AND SOUNDED WELL - 0.85' OF WATER PRESENT SO WILL CHECK LEVEL LATER THIS AFTERNOON IN HOPES OF GREATER RECHARGE AFTER YESTERDAY'S FULL PURGE.

1153 - ARRIVE AT PW-20. DTW = 30.70 TD = 32.98 SO WILL ATTEMPT PURGE WITH IMMEDIATE SAMPLE. SAMPLED @ 32.50' / 1205. WAS ABLE TO SAMPLE VOCs, MEE, AND AMBER VOA<sub>s</sub> FOR TOC. WELL PURGED DRY AFTER THAT SO UNABLE TO FILL ANY POLY'S. STOP = 1250. ~~PER~~ MEE

1305 - STOPPED BACK AT OFFICE TRAILER TO DROP SAMPLES AND PURGE WATER, CHECK WORK EMAIL (ANSWERED ONE), AND THEN LEFT TO JOIN WHITNEY AT LOW FLOW WELLS PER HIS INSTRUCTION ARRIVING AT 1338. WITH WHITNEY FOR REMAINDER OF SAMPLING SO PLEASE REFER TO HIS NOTES.

VDA'S HAD OFF-GASING SO HAVE AIR INSIDE

Prepared by: B. DILLARD	Signature: 	Date: 07-08-10
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# FIELD ACTIVITY REPORT

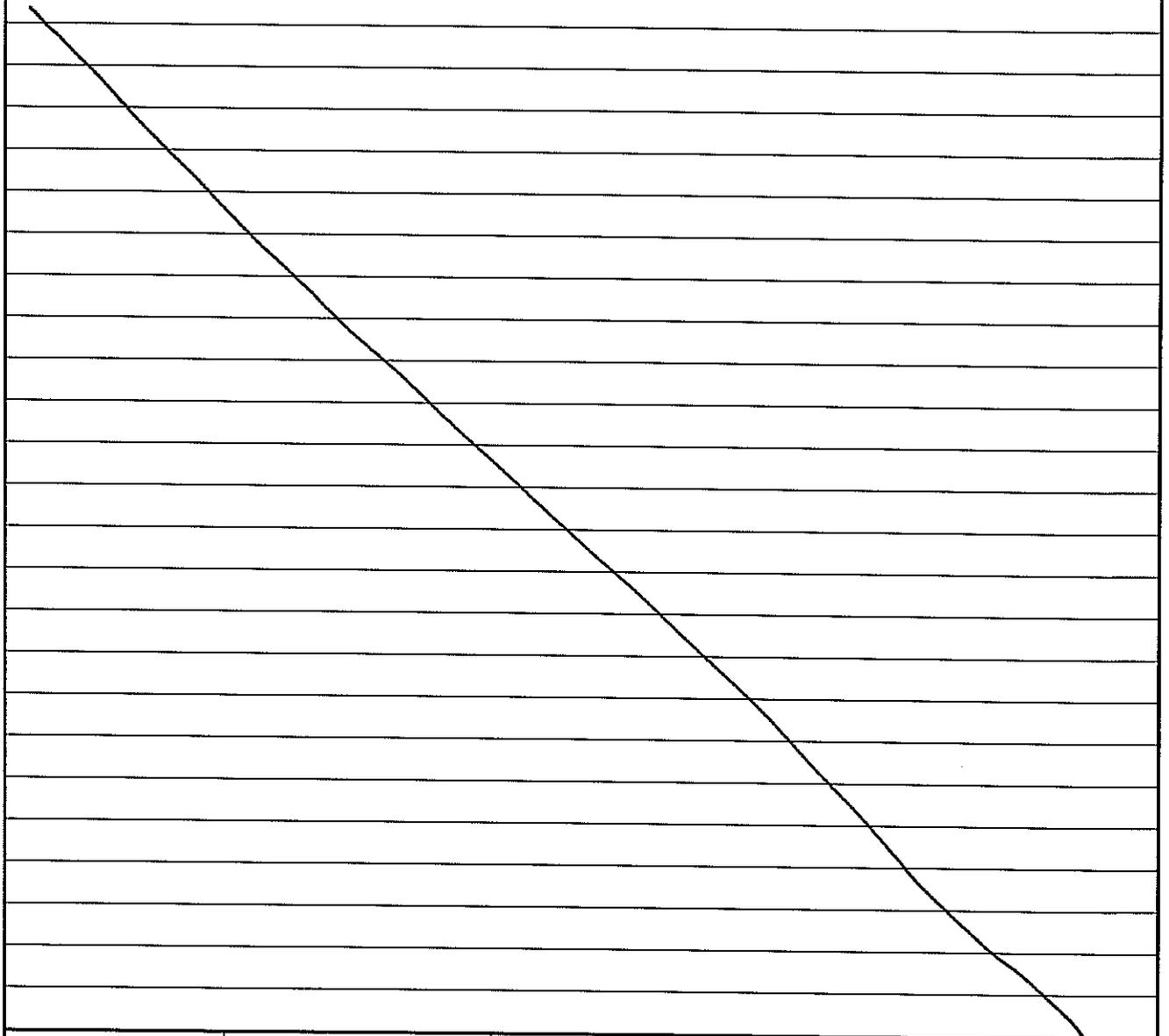
Project: Buckley AFB Site 10 GW Sampling	Date: 07-08-10	Page 3 of 3
Client: USACE	Contract No.: W91238-06-0022	Project No.: 07030.0007.100501A
Work Description: MONITOR WELL SAMPLING		
Subcontractors/Visitors:		
Weather: OVERCAST, COOL, SLIGHT RAIN.		

## DESCRIPTION OF FIELD ACTIVITIES AND EVENTS

1620 - DEPART WHITNEY AND ARRIVE AT FDA-MW15. WILL ATTEMPT PURGE AND IMMEDIATE SAMPLE. DTW = 29.33 TD = 30.48 SAMPLED FOR VOCs ONLY (WANT DAY) AT 1645. STOP = 1656

1705 - WHITNEY OFF BASE FOR DAY. RETURNED TO MOBILE OFFICE, UNLOADED AND ENDED DAY.

1730 - OFF BASE - END OF DAY.



Prepared by: R. DILLARD	Signature:	Date: 07-08-10
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# FIELD ACTIVITY REPORT

Project: Buckley AFB Site 10 GW Sampling	Date: 07-09-10	Page 1 of 1
Client: USACE	Contract No.: W91238-06-0022	Project No.: 07030.0007.100501A
Work Description: MONITOR WELL SAMPLING		
Subcontractors/Visitors:		
Weather: SUNNY, COOL, CLEAR		

## DESCRIPTION OF FIELD ACTIVITIES AND EVENTS

0650 - AT CIRCLE K TO BUY ICE FOR SAMPLE COOLERS.

0705 - ARRIVE AT MOBILE OFFICE AND BEGIN SETUP, PREP, AND CALIBRATION.

0720 - CALL FROM W. LITTLETON WHO IS IN STOP AND GO TRAFFIC AND MAY BE LATE.

0920 - ARRIVE AT FDA-MW28 TO ATTEMPT PUMP WITH IMMEDIATE SAMPLE. DTW = 31.56 TD = 32.46. PURGED 1/2-GALLON AND SAMPLED FOR VOCs AT 0940. STOP = 0955

1020 - ARRIVE AT FWA-MW67, 68, AND 62.

FWA-MW<sup>TW</sup>67 HAD ~3' OF WATER

FWA-MW<sup>TW</sup>62 HAD < 1' OF WATER

FWA-MW<sup>TW</sup>68 HAD ~4' OF WATER ← WILL ATTEMPT PUMP/SAMPLE

L > DTW = 34.97 TD = 39.85

L > SAMPLED AT 39.5' / 1100

L > FILLED ALL VOAS AND 3 LARGE POLY'S THEN WENT DRY

1040 - RETURN TO MOBILE OFFICE AND FULLY UNLOAD, TAKE EQUIPMENT BLANK, AND PREP FOR SAMPLE SHIPMENT.

1220 - LEAVE TO GRAB LUNCH.

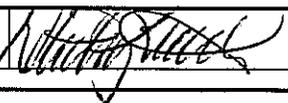
1300 - RETURN FROM LUNCH AND BEGIN FILLING OUT CHAINS, PACKING SAMPLES.

1615 - LEFT FOR FEDEX TO DELIVER SAMPLES (ONE COOLER).

1715 - RETURN TO HOTEL - END OF DAY.

Prepared by:	B. DILLARD	Signature: 	Date: 07-09-10
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## FIELD ACTIVITY REPORT

Project: Buckley AFB Site 10 GW Sampling	Date: 7/9/2010	Page 1 of 2
Client: USACE	Contract No.: W91238-06-0022	Project No.: 07030.0007.100501A
Work Description: Sampling Site 10 wells		
Subcontractors/Visitors:		
Weather: 70's, light breeze (5mph) from SW, clear		
DESCRIPTION OF FIELD ACTIVITIES AND EVENTS		
0745 W. Littleton arrive @ trailer; B. Dillard already onsite.		
0800 Confirming thru days activities B. Dillard calibrating In situ devices, Consolidating IDW.		
0900 Mob to FWA-DPT8.		
0915 Arrive @ FWA-DPT8, collecting water level DTW 22.64' TD 31.39' SD 30'		
0935 Begin purging FWA-DPT8.		
0945 In situ device not calculating purge recording parms. Trying to reset.		
0956 Resume purging FWA-DPT8		
1015 Made call to P. Schwarzweller to ask if he could call geotech to have bailers waiting so <del>that</del> FWA-DPT17 and wells w/ nominal water could be sampled		
1026 Sample FWA-DPT8-07092010 collected for VOC analysis, 3 vial vials collected & place on ice in cooler. Purged 2 sals.		
1036 Received phone call from P. Schwarzweller regarding B. Dillard's status to travel to Ostult, NE project		
1045 Decoring pump and water level meter.		
1050 Mobing to collect sample from FWA-DPT19. Well was purged dry yesterday, 7/8.		
1056 Arrive @ FWA-DPT19. DTW <del>20.00</del> <sup>19.06</sup> TD 22.00 SD 20' <del>19'</del>		
1059 Sample FWA-DPT19-07092010 collected for VOC analysis, 3 vial vials collected & place on ice in cooler. No purge as well was purged dry yesterday (7/8/10)		
1110 Decoring pump and water level meter.		
1120 Mobing to trailer to drop off samples.		
1140 Consolidating purge water and decan water in steel drums		
Prepared by:	Whitney Littleton	Signature: 
		Date: 7/9/10



# FIELD ACTIVITY REPORT

Project: Buckley AFB Site 10 GW Sampling	Date: 7/9/2010	Page 2 of 2
Client: USACE	Contract No.: W91238-06-0022	Project No.: 07030.0007.100501A
Work Description: Site 10 GW Sampling		
Subcontractors/Visitors:		
Weather: 80's, light breeze (5-10 mph) from SW, clear		

## DESCRIPTION OF FIELD ACTIVITIES AND EVENTS

1140 cont. and packing up Geotech pumps, control boxes, inverters, & water level meter

1220 Mob to Geotech to pick up bailers and return equipment.

1250 Arrive @ Geotech, Mob back to job trailer.

1315 Stop to pick up ice for sample shipment.

1330 Arrive @ job trailer.

1336 Mob to sample FWA-DPT17.

1356 Arrive @ FWA-DPT17. Taking water level reading,  
 $0.04 \times 8.02' = 0.3208 \times 3 = 0.96 \text{ gal}$

DTW 34' TD 42.02' SD 40'

1430 Bailed 0.96 gals and collected sample FWA-DPT17-07092010 for VOCs analysis.  
 3 vial vials collected and placed on ice in cooler

1440 Mob back to trailer.

1456 Transfer samples to refrigerator.

1512 Take equipment blank 2 from Proactive pumps.

1520 Prepping samples for shipment.

1600 Samples packed, B. Dillard to Fed Ex.  
 off site

WML

Prepared by: Whitney Littleton	Signature:	Date: 7/9/10
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## TAILGATE SAFETY MEETING

Date: 6/29/2010 Time: 0915 Page: 1 of 1  
 Customer: USACE Project: Buckley AFB Contract #: W91238-06-0022 Proj. #: 07030.0007.100501A  
 Site 10 GW Sampling

Work Description: water levels/GW Sampling

**EMERGENCY PROCEDURES**

Emergency Contact: Local Emergency Dispatch Emergency Number: 911  
 Hospital/Clinic: University of Colorado Hospital Address: 12605 E. 16<sup>th</sup> Ave. Aurora, CO 80045  
 Evacuation Procedures: Follow directions in figures section of Site Specific Health & Safety Plan

**OTHER EMERGENCY CONTACTS**

Name	Phone	Name	Phone
Paul Schwarzweller	303-591-6977	Randy Thompson	720-234-3900
Kelly Ruder	303-808-4937	Whitney Littleton	303-356-6384

**SITE HAZARDS**

Physical Hazards	Chemical Hazards (include chemical products)
Slips, trips, and falls, heat exposure, ticks, stinging and biting insects, snakes, and rodents	Chlorinated Volatile Organic Compounds in Groundwater (PCE, TCE)

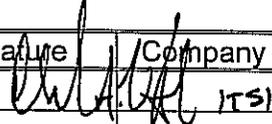
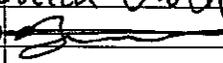
**SITE ENTRY REQUIREMENTS**

Check-In Procedures: Entry Authorization List (EAL) at the base gate.  
 Training Requirements: ITSI Safety Orientation, OSHA 40-hr HAZWOPER  
 Minimum PPE Required: Steel-Toed Boots, Safety Vest, Safety Glasses  
 Special Precautions: None

**TODAY'S SPECIFIC SAFETY ISSUES**

Today's work: water levels/GW Sampling  
 Specific safety issues/work practices: heat stress/hydration

**ATTENDEES**

Name (print)	Signature	Company	Name (print)	Signature	Company
Charles Van Heuvelen		ITSI			
Brooks Dilbeck		ITSI			

**MEETING CONDUCTED BY**

Health & Safety Officer: Paul Schwarzweller   
 Name (printed) Signature  
 Site Superintendent: \_\_\_\_\_  
 Name (printed) Signature

## TAILGATE SAFETY MEETING

Date: 6/30/2010 Time: 0920 Page: 1 of 1  
 Customer: USACE Project: Buckley AFB Contract #: W91238-06-0022 Proj. #: 07030.0007.100501A  
 Site 10 GW  
Sampling

Work Description: GW Sampling

### EMERGENCY PROCEDURES

Emergency Contact: Local Emergency Dispatch Emergency Number: 911  
 Hospital/Clinic: University of Colorado Hospital Address: 12605 E. 16<sup>th</sup> Ave. Aurora, CO 80045  
 Evacuation Procedures: Follow directions in figures section of Site Specific Health & Safety Plan

### OTHER EMERGENCY CONTACTS

Name	Phone	Name	Phone
Paul Schwarzweller	303-591-6977	Randy Thompson	720-234-3900
Kelly Ruder	303-808-4937	Whitney Littleton	303-356-6384

### SITE HAZARDS

Physical Hazards	Chemical Hazards (include chemical products)
Slips, trips, and falls, heat exposure, ticks, stinging and biting insects, snakes, and rodents	Chlorinated Volatile Organic Compounds in Groundwater (PCE, TCE)

### SITE ENTRY REQUIREMENTS

Check-In Procedures: Entry Authorization List (EAL) at the base gate.  
 Training Requirements: ITSI Safety Orientation, OSHA 40-hr HAZWOPER  
 Minimum PPE Required: Steel-Toed Boots, Safety Vest, Safety Glasses  
 Special Precautions: None

### TODAY'S SPECIFIC SAFETY ISSUES

Today's work: GW Sampling  
 Specific safety issues/work practices: Fire Hazard/Danger, no cigs in grass/brush

### ATTENDEES

Name (print)	Signature	Company	Name (print)	Signature	Company
Charles VanHeuvelen		ITSI			
Brooks Dillards		ITSI			

### MEETING CONDUCTED BY

Health & Safety Officer: Paul Schwarzweller   
 Name (printed) Signature  
 Site Superintendent: \_\_\_\_\_  
 Name (printed) Signature

## TAILGATE SAFETY MEETING

Date: 7/1/2010 Time: 0825 Page: 1 of 1  
 Customer: USACE Project: Buckley AFB Contract #: W91238-06-0022 Proj. #: 07030.0007.100501A  
 Site 10 GW Sampling

Work Description: GW Sampling

### EMERGENCY PROCEDURES

Emergency Contact: Local Emergency Dispatch Emergency Number: 911  
 Hospital/Clinic: University of Colorado Hospital Address: 12605 E. 16<sup>th</sup> Ave. Aurora, CO 80045  
 Evacuation Procedures: Follow directions in figures section of Site Specific Health & Safety Plan

### OTHER EMERGENCY CONTACTS

Name	Phone	Name	Phone
Paul Schwarzweller	303-591-6977	Randy Thompson	720-234-3900
Kelly Ruder	303-808-4937	Whitney Littleton	303-356-6384

### SITE HAZARDS

Physical Hazards	Chemical Hazards (include chemical products)
Slips, trips, and falls, heat exposure, ticks, stinging and biting insects, snakes, and rodents	Chlorinated Volatile Organic Compounds in Groundwater (PCE, TCE)

### SITE ENTRY REQUIREMENTS

Check-In Procedures: Entry Authorization List (EAL) at the base gate.  
 Training Requirements: ITSI Safety Orientation, OSHA 40-hr HAZWOPER  
 Minimum PPE Required: Steel-Toed Boots, Safety Vest, Safety Glasses  
 Special Precautions: None

### TODAY'S SPECIFIC SAFETY ISSUES

Today's work: GW Sampling  
 Specific safety issues/work practices: watch for prairie dog holes, v. about. & twisting ankle

### ATTENDEES

Name (print)	Signature	Company	Name (print)	Signature	Company
Charles VanHewelen		ITSI			
Brooks Duss		ITSI			

### MEETING CONDUCTED BY

Health & Safety Officer: Paul Schwarzweller   
 Name (printed) Signature  
 Site Superintendent: \_\_\_\_\_  
 Name (printed) Signature

## TAILGATE SAFETY MEETING

Date: 7/2/2010 Time: 0950 Page: 1 of 1  
 Customer: USACE Project: Buckley AFB Contract #: W91238-06-0022 Proj. #: 07030.0007.100501A  
Site 10 GW Sampling

Work Description: GW Sampling

### EMERGENCY PROCEDURES

Emergency Contact: Local Emergency Dispatch Emergency Number: 911  
 Hospital/Clinic: University of Colorado Hospital Address: 12605 E. 16<sup>th</sup> Ave. Aurora, CO 80045  
 Evacuation Procedures: Follow directions in figures section of Site Specific Health & Safety Plan

### OTHER EMERGENCY CONTACTS

Name	Phone	Name	Phone
Paul Schwarzweller	303-591-6977	Randy Thompson	720-234-3900
Kelly Ruder	303-808-4937	Whitney Littleton	303-356-6384

### SITE HAZARDS

Physical Hazards	Chemical Hazards (include chemical products)
Slips, trips, and falls, heat exposure, ticks, stinging and biting insects, snakes, and rodents	Chlorinated Volatile Organic Compounds in Groundwater (PCE, TCE)

### SITE ENTRY REQUIREMENTS

Check-In Procedures: Entry Authorization List (EAL) at the base gate.  
 Training Requirements: ITSI Safety Orientation, OSHA 40-hr HAZWOPER  
 Minimum PPE Required: Steel-Toed Boots, Safety Vest, Safety Glasses  
 Special Precautions: None

### TODAY'S SPECIFIC SAFETY ISSUES

Today's work: GW Sampling  
 Specific safety issues/work practices: Sun Exposure - use sunblock - keep hydrated

### ATTENDEES

Name (print)	Signature	Company	Name (print)	Signature	Company
Charles VanHouderland		ITSI			
BROOKS DILLARD		ITSI			

### MEETING CONDUCTED BY

Health & Safety Officer: Paul Schwarzweller   
 Name (printed) Signature  
 Site Superintendent: \_\_\_\_\_  
 Name (printed) Signature

## TAILGATE SAFETY MEETING

Date: 7/6/2010 Time: 0900 Page: 1 of 1  
 Customer: USACE Project: Buckley AFB Contract #: W91238-06-0022 Proj. #: 07030.0007.100501A  
 Site 10 GW Sampling

Work Description: Site 10 GW sampling

### EMERGENCY PROCEDURES

Emergency Contact: Local Emergency Dispatch Emergency Number: 911  
 Hospital/Clinic: University of Colorado Hospital Address: 12605 E. 16<sup>th</sup> Ave. Aurora, CO 80045  
 Evacuation Procedures: Follow directions in figures section of Site Specific Health & Safety Plan

### OTHER EMERGENCY CONTACTS

Name	Phone	Name	Phone
Paul Schwarzweiler	303-591-6977	Randy Thompson	720-234-3900
Kelly Ruder	303-808-4937	Whitney Littleton	303-356-6384

### SITE HAZARDS

Physical Hazards	Chemical Hazards (include chemical products)
Slips, trips, and falls, heat exposure, ticks, stinging and biting insects, snakes, and rodents	Chlorinated Volatile Organic Compounds in Groundwater (PCE, TCE)

### SITE ENTRY REQUIREMENTS

Check-In Procedures: Entry Authorization List (EAL) at the base gate.  
 Training Requirements: ITSI Safety Orientation, OSHA 40-hr HAZWOPER  
 Minimum PPE Required: Steel-Toed Boots, Safety Vest, Safety Glasses  
 Special Precautions: None

### TODAY'S SPECIFIC SAFETY ISSUES

Today's work: Site 10 GW Sampling  
 Specific safety issues/work practices: Temp will be hot today. Hydrate and use sun screen.

### ATTENDEES

Name (print)	Signature	Company	Name (print)	Signature	Company
Whitney Littleton		ITSI			
Brooks Dill		ITSI			

### MEETING CONDUCTED BY

Health & Safety Officer: Paul Schwarzweiler   
 Name (printed) Signature  
 Site Superintendent: \_\_\_\_\_  
 Name (printed) Signature

## TAILGATE SAFETY MEETING

Date: 7/7/2010 Time: 0800 Page: 1 of 1  
 Customer: USACE Project: Buckley AFB Contract #: W91238-06-0022 Proj. #: 07030.0007.100501A  
 Site 10 GW Sampling

Work Description: Site 10 GW Sampling

### EMERGENCY PROCEDURES

Emergency Contact: Local Emergency Dispatch Emergency Number: 911  
 Hospital/Clinic: University of Colorado Hospital Address: 12605 E. 16<sup>th</sup> Ave. Aurora, CO 80045  
 Evacuation Procedures: Follow directions in figures section of Site Specific Health & Safety Plan

### OTHER EMERGENCY CONTACTS

Name	Phone	Name	Phone
Paul Schwarzweiler	303-591-6977	Randy Thompson	720-234-3900
Kelly Ruder	303-808-4937	Whitney Littleton	303-356-6384

### SITE HAZARDS

Physical Hazards	Chemical Hazards (include chemical products)
Slips, trips, and falls, heat exposure, ticks, stinging and biting insects, snakes, and rodents	Chlorinated Volatile Organic Compounds in Groundwater (PCE, TCE)

### SITE ENTRY REQUIREMENTS

Check-In Procedures: Entry Authorization List (EAL) at the base gate.  
 Training Requirements: ITSI Safety Orientation, OSHA 40-hr HAZWOPER  
 Minimum PPE Required: Steel-Toed Boots, Safety Vest, Safety Glasses  
 Special Precautions: None

### TODAY'S SPECIFIC SAFETY ISSUES

Today's work: Sampling Site 10 wells  
 Specific safety issues/work practices: Slips trips & falls

### ATTENDEES

Name (print)	Signature	Company	Name (print)	Signature	Company
Whitney Littleton		ITSI			
Kelly Ruder		ITSI			

### MEETING CONDUCTED BY

Health & Safety Officer: Paul Schwarzweiler   
 Name (printed) \_\_\_\_\_ Signature \_\_\_\_\_  
 Site Superintendent: \_\_\_\_\_  
 Name (printed) \_\_\_\_\_ Signature \_\_\_\_\_

## TAILGATE SAFETY MEETING

Date: 7/8/2010 Time: 0750 Page: 1 of 1  
 Customer: USACE Project: Buckley AFB Contract #: W91238-06-0022 Proj. #: 07030.0007.100501A  
 Site 10 GW  
 Sampling

Work Description: Sampling Site 10 GW

### EMERGENCY PROCEDURES

Emergency Contact: Local Emergency Dispatch Emergency Number: 911  
 Hospital/Clinic: University of Colorado Hospital Address: 12605 E. 16<sup>th</sup> Ave. Aurora, CO 80045  
 Evacuation Procedures: Follow directions in figures section of Site Specific Health & Safety Plan

### OTHER EMERGENCY CONTACTS

Name	Phone	Name	Phone
Paul Schwarzweller	303-591-6977	Randy Thompson	720-234-3900
Kelly Ruder	303-808-4937	Whitney Littleton	303-356-6384

### SITE HAZARDS

Physical Hazards	Chemical Hazards (include chemical products)
Slips, trips, and falls, heat exposure, ticks, stinging and biting insects, snakes, and rodents	Chlorinated Volatile Organic Compounds in Groundwater (PCE, TCE)

### SITE ENTRY REQUIREMENTS

Check-In Procedures: Entry Authorization List (EAL) at the base gate.  
 Training Requirements: ITSI Safety Orientation, OSHA 40-hr HAZWOPER  
 Minimum PPE Required: Steel-Toed Boots, Safety Vest, Safety Glasses  
 Special Precautions: None

### TODAY'S SPECIFIC SAFETY ISSUES

Today's work: Sample Site 10 Monitoring  
 Specific safety issues/work practices: Be aware of biological surroundings, prairie dogs & burrows, mosquitoes, snakes, and bees.

### ATTENDEES

Name (print)	Signature	Company	Name (print)	Signature	Company
Whitney Littleton	<i>[Signature]</i>	ITSI			
Brooks Dumas	<i>[Signature]</i>	ITSI			

### MEETING CONDUCTED BY

Health & Safety Officer: Paul Schwarzweller *[Signature]*  
 Name (printed) Signature  
 Site Superintendent: \_\_\_\_\_  
 Name (printed) Signature



# TAILGATE SAFETY MEETING

Date: 7/9/2010 Time: 0830 Page: 1 of 1  
 Customer: USACE Project: Buckley AFB Contract #: W91238- Proj. 07030.0007.100501A  
Site 10 GW 06-0022 #:  
Sampling

Work Description: Site 10 GW Sampling

## EMERGENCY PROCEDURES

Emergency Contact: Local Emergency Emergency Number: 911  
Dispatch  
 Hospital/Clinic: University of Colorado Address: 12605 E. 16<sup>th</sup> Ave.  
Hospital Aurora, CO 80045  
 Evacuation Procedures: Follow directions in figures section of Site Specific Health & Safety Plan

## OTHER EMERGENCY CONTACTS

Name	Phone	Name	Phone
Paul Schwarzweller	303-591-6977	Randy Thompson	720-234-3900
Kelly Ruder	303-808-4937	Whitney Littleton	303-356-6384

## SITE HAZARDS

Physical Hazards	Chemical Hazards (include chemical products)
Slips, trips, and falls, heat exposure, ticks, stinging and biting insects, snakes, and rodents	Chlorinated Volatile Organic Compounds in Groundwater (PCE, TCE)

## SITE ENTRY REQUIREMENTS

Check-In Procedures: Entry Authorization List (EAL) at the base gate.  
 Training Requirements: ITSI Safety Orientation, OSHA 40-hr HAZWOPER  
 Minimum PPE Required: Steel-Toed Boots, Safety Vest, Safety Glasses  
 Special Precautions: None

## TODAY'S SPECIFIC SAFETY ISSUES

Today's work: Sampling Site 10 monitoring wells  
 Specific safety issues/work practices: Heat exposure, drink fluids

## ATTENDEES

Name (print)	Signature	Company	Name (print)	Signature	Company
Whitney Littleton		ITSI			
Brooks Dumas		ITSI			

## MEETING CONDUCTED BY

Health & Safety Officer: Paul Schwarzweller   
 Name (printed) Signature  
 Site Superintendent: \_\_\_\_\_  
 Name (printed) Signature

**APPENDIX B**  
**LABORATORY ANALYTICAL RESULTS**

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# **ANALYTICAL DATA QUALITY REPORT**

**Site 10 – Former Warehouse Area**

**Buckley Air Force Base, Colorado**

**DRAFT FINAL**

*Prepared for:*

**United States Army Corps of Engineers – Omaha District**

1616 Capitol Avenue, Suite 9000

Omaha, NE 68102-9000

Contract: W91238-06-D-0022

Task Order: DK06

*Prepared by:*

**Innovative Technical Solutions, Inc.**

3333 South Wadsworth Blvd, Suite 220

Lakewood, CO 80227

**November 2010**

# **SIGNATURE PAGE**

## **ANALYTICAL DATA QUALITY REPORT**

**Site 10 – Former Warehouse Area**

**Buckley Air Force Base, Colorado**

**DRAFT FINAL**

*Prepared for:*

**United States Army Corps of Engineers – Omaha District**

1616 Capitol Avenue, Suite 9000

Omaha, NE 68102-9000

Contract: W91238-06-D-0022

Task Order: DK06

*Prepared by:*

**Innovative Technical Solutions, Inc.**

3333 South Wadsworth Blvd., Suite 220

Lakewood, CO 80227

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Eric Middleditch  
Project Chemist

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Randy Thompson  
Project Manager

**November 2010**

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## ATTACHMENTS

- Attachment A Data Assessment Reports
- Attachment B Analytical Laboratory Reports (Provided on CD)

## **ABBREVIATIONS AND ACRONYMS**

°C	Degrees Celsius
ADQR	Analytical Data Quality Report
COC	Chain-of-Custody
CRI	Contract Required Quantitation Limit Check Standard
DoD	Department of Defense
DQO	Data Quality Objective
ELAP	Environmental Laboratory Accreditation Program
EPA	U.S. Environmental Protection Agency
ITSI	Innovative Technical Solutions, Inc.
LCS	Laboratory Control Sample
MDL	Method Detection Limit
ML	Method Quantitation Limit
MS/MSD	Matrix Spike/Matrix Spike Duplicate
NELAP	National Environmental Laboratory Accreditation Program
PARCC	Precision, Accuracy, Representativeness, Completeness, and Comparability
QAPP	Quality Assurance Project Plan
QC	Quality Control
QRT	Qualified Results Table
RPD	Relative Percent Difference
RL	Reporting Limit
SDG	Sample Delivery Group

## **1.0 INTRODUCTION**

This Analytical Data Quality Report (ADQR) was prepared for the Environmental Restoration Program, Groundwater Monitoring at Buckley Air Force Base (AFB), Aurora, Colorado.

This ADQR summarizes the overall quality, and establishes and documents the usability of the data collected in support of the summer 2010 sampling event for the Environmental Restoration Program at the Site 10 – Former Warehouse Area. The collected data were reconciled with the project data quality objectives (DQOs) listed in the Site-Specific Quality Assurance Project Plan (QAPP), provided with the *Groundwater Sampling Work Plan, Site 10-Former Warehouse Area, Buckley Air Force Base, Colorado*, (Innovative Technical Solutions, Inc. [ITSI], 2010).

## 2.0 ANALYTICAL PROGRAM

Accutest Laboratories Southeast (Accutest), in Orlando, Florida, was selected as the primary analytical laboratory for the summer 2010 sampling event. Accutest participates in and is certified by the National Environmental Laboratory Accreditation Program (NELAP) and the Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP).

Soil sample analyses were conducted in accordance with the requirements specified in the following guidance documents:

- *Test Methods for Evaluating Solid Waste, SW-846 Physical/Chemical Methods* (U.S. Environmental Protection Agency [EPA], 1996).
- Site-Specific QAPP, provided with the *Groundwater Sampling Work Plan, Site 10 – Former Warehouse Area, Buckley Air Force Base, Colorado*.
- *Basewide QAPP, Buckley AFB, Aurora, Colorado, Final Rev.1*, (URS Group, Inc., 2004).

The specific analytical methods used for this project were:

- Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) Method SW8260B
- Dissolved Gases by RSK-175
- Metals by EPA Method SW6010B
- Alkalinity by Standard Method (SM)2320B
- Anions by EPA Method SW9056
- Nitrate-Nitrite by SM18 4500NO3E
- Sulfide by SM20 4500S F
- Total Organic Carbon (TOC) by EPA Method SW9060A

Analytical data were automatically and manually validated by the ITSI Project Chemist according to the procedures specified in the QAPP. DQOs and validation procedures are specified in the QAPP. The following analytical quality control (QC) summaries were evaluated and used as the basis for qualifying data:

- Chain-of-Custody (COC);
- Technical holding time and temperature compliance;
- Method blank contamination;
- Field blank contamination;
- Laboratory control sample (LCS) accuracy;
- Matrix spike/matrix spike duplicate (MS/MSD) accuracy and precision;
- Surrogate accuracy;

- Serial Dilution;
- Contract required quantitation limit check standard (CRI);
- Field duplicate precision;
- Laboratory duplicate sample precision;
- Instrument performance.

This ADQR is comprised of results from Accutest sample delivery groups (SDGs) F74784, F74812, F74877, F74938, F74970 and F75011. A Level 3 verification was performed on the analytical data. The level 3 verification is equivalent to the S2AVEM level of validation as defined in the *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use*, (EPA, 2009). The laboratory reports received from Accutest are included in **Attachment B** of this ADQR.

## 2.1 Qualified Results

Qualified results are presented in the qualified results table (QRT) as part of **Attachment A** of this ADQR. The following qualifiers have been applied as appropriate to the data for Site 10 data reviewed for this ADQR. The descriptors listed below are the codes used to define the reasons for the qualifications. Final electronic data deliverables and QRTs contain the following validation data qualifiers and descriptors for Site 10 as appropriate:

### Data Qualifiers

- “J” denotes that the analyte was positively identified; the quantitation is an estimate.
- “UJ” denotes that the analyte was undetected; however, the associated reporting limit (RL) is estimated.

### Descriptors

- “H” indicated that the results are associated with a sample analyzed outside of the method-recommended holding time.
- “M” indicates that the MS and/or MSD recovery was outside the established criteria.
- “P” indicates that the primary and confirmation results were not in agreement
- “TR” indicates a trace level result that was reported between the RL and method detection limit (MDL).

(Note that a qualifier may be applied to a result for more than one reason. For example, a result that was associated with a sample/analysis performed outside of holding time, “H”, and thus was qualified as “J” may also be qualified due to a result reported between the RL and MDL, “TR”. Also, data qualifiers may be assigned a low bias symbolized by a “-” or high bias symbolized by a “+” following the qualifier.

This indicates that the result was biased high or low based how the anomaly affected the recovery of the analyte in the sample.

The following subsections discuss the quality of the data and reasons for qualifications. The qualified or rejected compounds discussed below are listed in the QRT.

### **Estimated Results (“J”) and Qualified Results (“UJ”)**

Out of 718 total results reported for the summer 2010 investigation, 45 results were qualified as estimated, “J”, and seven results were qualified as an estimated RL, “UJ”, for one or more QC issues (i.e., precision and accuracy).

### **Rejected Results**

Out of 718 total Site 10 results reported for the investigation, no results were rejected, “R”.

## **2.2 Estimated Low Concentrations**

Accutest reported analyte concentrations to the MDL. Trace concentrations detected between the RL and the MDL were qualified as estimated by the laboratory because of the increased quantitative uncertainty in the result as the concentration of the analyte approaches the MDL. The results for 35 compounds were qualified as estimated, “J”, due to concentrations measured between the MDL and the RL, “TR.”

Qualification of results as estimated due to low concentrations of analytes is expected due to the sensitivity of the analytical methodology used and the low concentrations of many analytes. Qualification for low concentrations is not due to method performance or analytical program issues. Results remain usable with qualification, and so data usability is not affected.

## **2.3 Holding Time and Preservation**

Extraction and analysis time limits and sample preservation are used to ensure that samples are representative of the site at the time of their collection. Eleven results required qualification due to holding time or preservation anomalies.

## **2.4 Blank Contamination**

Laboratory preparation blanks, trip blanks and equipment blanks were analyzed to measure laboratory and field contamination. No results were qualified due to laboratory or field contamination.

## **2.5 Laboratory Control Sample**

LCSs are synthetic samples spiked with the compounds of concern and prepared and analyzed using the same procedure as are used for the primary project samples. LCSs are analyzed at the frequency specified in the methods. LCSs are used to further monitor the analytical process and provide a measurement of accuracy. Out of 718 total results, no results were qualified due to LCS anomalies.

## **2.6 Matrix Spike and Matrix Spike Duplicate**

MS/MSDs are project samples spiked with the compounds of concern and prepared and analyzed using the same procedures as those used for the primary project samples to monitor the analytical process.

The QAPP stipulates that one in 20 primary project samples should be analyzed for MS analysis, representing a 5 percent frequency. The QAPP goal of one project MS/MSD pair for at least 20 primary project samples was met and exceeded.

Out of 718 total results, six results were qualified as estimated, “J”, due to a MS accuracy anomaly, “M”, and one result was qualified as an estimated RL, “UJ”, due to a MS/MSD accuracy anomaly. The results are usable as qualified. No results were rejected due to MS/MSD anomalies.

## **2.7 Surrogate**

Surrogate compounds are control compounds used to monitor the analytical process as specified in EPA methodology. Surrogates were reported for the VOC analysis. Out of 718 total results reported, no results were qualified due to surrogate anomalies.

## **2.8 Serial Dilution**

Serial dilutions were analyzed to check for interferences due to sample matrix. Out of 718 total results, no results were qualified or rejected due to a serial dilution anomaly.

## **2.9 Contract Required Quantitation Limit Check Standard**

CRIs were analyzed for the metal analysis to measure accuracy at the RL. There was no qualification of the data due to CRI recoveries.

## **2.10 Instrument Performance**

Instrument performance was evaluated using interference check standards. There were no anomalies that required qualification of the data due to instrument performance.

## **2.11 Analyte Identification and Quantitation**

The laboratory’s MDLs and RLs were reported for each method. The limits were reviewed against the QAPP method quantitation limits (MQLs). All RLs or MDLs met the MQLs.

Out of 718 total results reported, 35 results, or 4.9 percent of the data, were qualified estimated, “J”, due to the results being reported above the MDL but below the RL, “TR”. The estimated compounds are listed in the QRT. The estimated results remain useable with qualification. Data usability is not significantly affected.

The laboratory case narrative indicated that the primary and confirmation results for tetrachloroethene in sample FWA-TW68-07092010 were not in agreement, “P”. The higher of the two results was reported. The result for tetrachloroethene in the sample has been qualified as “J” for an estimated value.

## **2.12 Laboratory Sample Duplicates**

A laboratory sample duplicate is an aliquot taken from a selected parent project sample and analyzed using the same procedure as used for the parent project sample. Laboratory sample duplicates were analyzed for the dissolved gasses, metals and general chemistry methods to measure precision of the methods. The RPDs of the parent sample and laboratory sample duplicate were evaluated for the positive results greater than the RL. Out of 718 total results, no results were qualified due to precision anomalies.

### **3.0 FIELD PROCEDURES**

Field work was performed in 2010 on June 29 and 30 as well as July 1, 2, 6, 7, 8 and 9.

#### **3.1 Sample Shipment and Storage**

As samples were collected in the field, chemical preservation (as needed) and cooling were immediately initiated. Samples were collected over a period of two weeks from June 29, 2010 through July 9, 2010. The samples were shipped in coolers by Federal Express under proper custody within two days of collection. Samples were received at the laboratory within one day of shipment.

Cooler temperatures were checked as the coolers were received by the laboratories, with the exact temperatures noted on the COC. All coolers were received at temperatures below 6 degrees Celsius (°C). Upon receipt by the laboratory, samples were immediately stored under refrigeration and entered into the laboratory's data system. No results were qualified due to improper sample shipment or storage for this sampling event.

#### **3.2 Field Duplicates**

The QAPP stipulates that one field duplicate should be collected for every 10 primary project samples. The RPDs were evaluated for the positive results greater than the RL. Out of 528 primary and duplicate results, no results were qualified due to precision anomalies.

The QAPP goal of one field duplicate sample for each ten primary samples was met and exceeded for all analytical methods with the exception of dissolved gases.

## 4.0 CONCLUSIONS AND DATA USABILITY

The analytical methods used for this project were selected to provide quality data sufficient to meet DQOs and project sensitivity requirements. DQOs were reviewed in terms of the PARCC parameters: precision, accuracy representativeness, completeness, and comparability. The PARCC parameters are discussed in the subsections below.

### 4.1 Quality Control Samples

Field QC samples for this project included duplicate samples, trip blanks and equipment blanks. The duplicates were collected within the minimum frequency of one sample per 10 primary samples. Laboratory QC included precision and accuracy in the form of MS/MSD pairs, LCSs, surrogates, serial dilutions, CRIs and laboratory sample duplicates analyzed at the frequency indicated in the discussions of these methods in **Section 2.0**.

**Precision:** Precision is a measure of the repeatability of a single measurement. The precision of the data set was assessed by evaluating the RPD between primary and duplicate samples (e.g., field duplicate samples and spike duplicate samples). Out of 52 results, no results were qualified due to precision anomalies.

**Accuracy:** Accuracy is a measure of recovery of the actual concentration of a compound. The accuracy of the data set was assessed by the serial dilution, CRI, MS/MSD, LCS and surrogate percent recoveries. Out of 52 results qualified as estimated, “J”, or as an estimated RL, “UJ”, seven results were qualified due to MS/MSD recovery anomalies, “M”.

The data qualification due to one or more accuracy anomalies represents less than one percent of the data (7 out of 718total results). The estimated results remain useable with qualification.

**Representativeness:** Representativeness of the data set is determined by the degree to which the data represent the sample(s) submitted to the laboratory. Holding time, preservation, and blank results affect the representativeness of a sample.

Out of 52 results qualified as estimated, “J”, or as an estimated RL, “UJ”, eight results from one VOC sample and three results from one dissolved gas sample were qualified for holding time anomalies, “H”, due to insufficient preservation. Since the acid used to preserve the affected samples did not lower the pH to 2, which is required for a holding time of 14 days, the holding time was shortened to seven days. Due to the volatile nature of VOCs and dissolved gasses, the pH is taken prior to analysis, which these cases, exceeded the seven day holding time for unpreserved samples.

There were no target compounds detected in the method, trip blanks or equipment blanks, above the QAPP qualification limit of one-half the RL.

The data set, as qualified, are considered representative of the samples submitted to the laboratory.

**Comparability:** The analytical methods used for analysis affect the comparability of the data set. The methods used for this project are all standard, peer reviewed methods as determined by the QAPP. The specific methods are listed in **Section 2.0**. The analytical methods used provided units of measure and detection limits similar to past events at Buckley AFB.

**Completeness:** The completeness of the data set is determined by the number of acceptable primary results after data review. The results from the primary project samples were used in the calculation to determine the completeness of the data. Out of 528 primary project sample results, 52 or 9.8 percent were qualified for one or more reasons as an estimated value or an estimated RL. These estimated results can be used with qualification. Out of 528 primary results, no results were rejected. Therefore the completeness of this data set is 100 percent, which meets and exceeds the QAPP goal of 90 percent for samples.

## **4.2 Conclusion**

Site 10 data generated for the summer 2010 groundwater sampling event met the project DQOs. There were no major issues with the data. The data that was qualified as estimated or non-detect at the RL are of acceptable quality, and should be considered usable for their intended purposes.

## 5.0 REFERENCES

Innovative Technical Solutions, Inc. (ITSI), 2010, Site-Specific Quality Assurance Project Plan, *Groundwater Sampling Work Plan, Site 10-Former Warehouse Area, Buckley Air Force Base, Colorado*, June.

URS Group, Inc., 2004, *Basewide Quality Assurance Project Plan (QAPP), Buckley AFB, Aurora, Colorado, Final Rev.1*, March.

United States Army Corps of Engineers (USACE), 2005, Environmental Quality, *Guidance for Evaluating Performance Based Chemical Data, Engineer Manual*. EM 200-1-10. June 30.

United States Environmental Protection Agency (EPA), 1996. *Test Methods for Evaluation Soil Waste, SW-846 Physical/Chemical Methods*.

EPA, 2009, *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use*. 540-R-05-005. Prepared by the Office of Solid Waste and Emergency Response. January.

**ATTACHMENT A**  
**DATA ASSESSMENT REPORTS**

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## 1.0 CROSS REFERENCE OF SAMPLES VERIFIED

A Level 3 verification was performed on the analytical data presented in the laboratory Sample Delivery Group (SDG) indicated below. Data were reviewed as described in the Site-Specific Quality Assurance Project Plan (QAPP), provided with the *Groundwater Sampling Letter Work Plan, Site 10 – Former Warehouse Area, Buckley Air Force Base, Colorado*, (ITSI, 2010). The level 3 verification is equivalent to S2AVEM as defined in the *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use*, (EPA, 2009). This SDG contained data for the following method(s).

- Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) Method SW8260B.

The samples were analyzed by Accutest Laboratories of Orlando, Florida. The table below provides an analytical summary and cross reference for the sample(s) verified. A summary of all qualified data is provided in a qualified results table (QRT) as **Attachment A** of this Data Assessment Report (DAR).

**Table 1**  
**Analytical Summary and Cross Reference**

Field Sample Identification	Sample Type	Laboratory Sample ID	VOCs
FWA-MW47-06292010	WG	F74784-1	X
FWA-MW37-06292010	WG	F74784-2	X
FDA-MW32-06292010	WG	F74784-3	X
FDA-MW36-06292010	WG	F74784-4	X
FDA-MW27-06292010	WG PS	F74784-5	X
FDA-MW27-06292010DUP	WG FD	F74784-6	X
EQUIPMENTBLANK-06292010	EB	F74784-7	X
TB-06292010	TB	F74784-8	X

PS = Primary Sample  
 FD = Field Duplicate  
 EB = Equipment blank  
 TB = Trip blank  
 WG = Groundwater

## 2.0 LABORATORY REPORT

The comments and data qualifiers noted by the laboratory in the case narratives were reviewed. Anomalies resulting in qualification of the data are discussed in **Section 4.0**.

### **3.0 SAMPLE INTEGRITY**

The chain-of-custody (COC) was available for review. No sample receipt anomalies were reported that required data qualifier flags.

### **4.0 DATA EVALUATION**

This section addresses the data review results based on the Summary of Calibration and Quality Control (QC) Procedures and QAPP Worksheet #12, #15, #19, #25 and #28 for the individual methods listed in **Section 1.0** of this report. If qualification of the data was required, then a comment is included that describes the reason for qualification of the data, the data qualifier flag and the associated samples and analytes.

#### **4.1 VOCs by EPA Method SW8260B**

##### **4.1.1 Holding Times and Preservation**

The samples were analyzed within the recommended method holding time of 14 days. There were no anomalies that required qualification of the data.

##### **4.1.2 Initial and Continuing Calibration**

Initial and continuing calibrations were not reviewed at this level of validation.

##### **4.1.3 Blank Evaluation**

Preparation blanks, trip blanks and equipment blanks were analyzed to assess laboratory, shipment, collection, equipment and storage contamination. No target compounds were reported above QAPP control limit of one-half of the RL in any of the blanks.

##### **4.1.4 Laboratory Control Samples (LCS)**

An LCS was reported for each analytical batch. The results were reviewed for accuracy using the control limits listed in the QAPP for each compound. There were no anomalies that required qualification of the data.

##### **4.1.5 Matrix Spike (MS) and Matrix Spike Duplicate (MSD)**

Project MS/MSD pairs were reviewed for the analysis. If a project MS/MSD was not reported then the Relative Percent Differences (RPDs) of the non-project MS/MSD pair were reviewed to evaluate precision for the analysis. Percent recoveries and RPDs were compared to the accuracy control limits listed in the Basewide QAPP for each compound and 30 RPD for precision. There were no anomalies that required qualification of the data.

#### 4.1.6 Surrogates

Surrogate spike recoveries were reviewed against the QAPP control limits. There were no surrogate anomalies that required qualification of the data.

#### 4.1.7 Compound Quantitation and Identification

The laboratory RLs were compared to the QAPP limits and sample results were reviewed. There were no anomalies observed except as noted below.

- Sample results with trace concentrations, “TR”, reported below the RL but above the method detection limit (MDL), have been flagged “J” to indicate an estimated amount.

#### 4.1.8 Field Duplicate Samples

Field duplicate samples and the associated primary samples are identified in Table 1. The RPDs for the positive results were calculated and are listed in Table 2 below. The RPDs were within the QAPP criteria of less than 50.

**Table 2  
 Field Duplicate Sample and RPD Results**

Primary and Duplicate Samples	Lab ID	Analyte	Primary Sample Result (µg/L)	Duplicate Sample Result (µg/L)	RPD
FDA-MW27-06292010 /	F74784-5 /	Tetrachloroethene (PCE)	6.0	6.1	1.7
FDA-MW27-06292010DUP	F74784-6				

µg/L = Microgram per Liter

#### 4.1.9 Assessment for VOCs

No VOCs results were rejected. Based on the available information, the data are considered useable for their intended purpose.

## 5.0 RECOMMENDATIONS

There are no recommendations.

## **6.0 OVERALL ASSESSMENT FOR SDG**

There were no rejected analytical results in this SDG. Based on the available information, the data as qualified are considered useable for their intended purposes. The qualified data are summarized in the QRT in **Attachment A** of this DAR.

Attachment A: Qualified Results Table

**ATTACHMENT A**  
**QUALIFIED RESULTS TABLE**

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**Attachment A - Qualified Results Table**  
**Laboratory SDG F74784**  
**Site 10 - Former Warehouse Area, Buckley AFB, CO**

Lab Sample ID	Sample ID	Sample Collection Date	Type	Method	Parameter	Original Value	Qualifier	New Value	MDL	RL	Units	Reason
F74784-3	FDA-MW32-06292010	6/29/2010	WG-N	SW8260B	Trichloroethene (TCE)	0.32	J	0.32 J	0.24	1.0	UG/L	TR

**Matrix / Sample Type**

Matrix	Matrix Description	Sample Code	Sample Code Description
WG	GROUND WATER	N	Normal Environmental Sample

**Data Qualifier Definitions**

Flag	Description
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

**Reason and Comment Code Definitions**

Code	Description	Caption
TR	Trace Level Detect	Detect < RL

Attachment A – Data Assessment Report  
 Laboratory SDG F74812  
 Site 10 – Former Warehouse Area, Buckley AFB, CO  
 Collection Date June 30, 2010

## 1.0 CROSS REFERENCE OF SAMPLES VERIFIED

A Level 3 verification was performed on the analytical data presented in the laboratory Sample Delivery Group (SDG) indicated below. Data were reviewed as described in the Site-Specific Quality Assurance Project Plan (QAPP), provided with the *Groundwater Sampling Work Plan, Site 10 – Former Warehouse Area, Buckley Air Force Base, Colorado*, (ITSI, 2010). The level 3 verification is equivalent to S2AVEM as defined in the *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use*, (EPA, 2009). This SDG contained data for the following methods.

- Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) Method SW8260B
- Metals by EPA Method SW6010B
- Alkalinity by Standard Method (SM) 2320B
- Anions by EPA Method SW9056
- Nitrate-Nitrite by SM18 4500NO3E
- Sulfide by SM20 4500S F
- Total Organic Carbon (TOC) by EPA Method SW9060A

The samples were analyzed by Accutest Laboratories of Orlando, Florida. The table below provides an analytical summary and cross reference for the sample(s) verified. A summary of all qualified data is provided in a qualified results table (QRT) as **Attachment A** of this Data Assessment Report (DAR).

**Table 1**  
**Analytical Summary and Sample Cross Reference**

Field Sample Identification	Sample Type	Accutest Lab Sample ID	VOCs	Metals	Gen Chem*
FWA-MW38-06302010	WG	F74812-1	X	-	-
FDA-MW26-06302010	WG	F74812-2	X	-	-
FDA-MW22-06302010	WG	F74812-3	X	X	X
FDA-MW23-06302010	WG	F74812-4	X	X	X
FWA-MW43-06302010	WG	F74812-5	X	X	X
EQUIPMENTBLANK-06302010	EB	F74812-6	X	-	-
TB-06302010	TB	F74812-7	X	-	-

\*Gen Chem consists of Alkalinity, Anions, Nitrate-Nitrite, Sulfide, TOC  
 EB = Equipment Blank  
 WG = Groundwater  
 TB = Trip Blank

## **2.0 LABORATORY REPORT**

The comments and data qualifiers noted by the laboratory in the case narratives were reviewed. Anomalies resulting in qualification of the data are discussed in **Section 4.0**.

## **3.0 SAMPLE INTEGRITY**

The chain-of-custody (COC) was available for review. No sample receipt anomalies were reported that required data qualifier flags.

## **4.0 DATA EVALUATION**

This section addresses the data review results based on the Summary of Calibration and Quality Control (QC) Procedures and QAPP Worksheet #12, #15, #19, #25 and #28 for the individual methods listed in **Section 1.0** of this report. If qualification of the data was required, then a comment is included that describes the reason for qualification of the data, the data qualifier flag and the associated samples and analytes.

### **4.1 VOCs by EPA Method SW8260B**

#### **4.1.1 Holding Times and Preservation**

The samples were analyzed within the recommended method holding time of 14 days. There were no anomalies that required qualification of the data.

#### **4.1.2 Initial and Continuing Calibration**

Initial and continuing calibrations were not reviewed at this level of validation.

#### **4.1.3 Blank Evaluation**

Preparation blanks, trip blanks and equipment blanks were analyzed to assess laboratory, shipment, collection, equipment and storage contamination. No target compounds were reported above QAPP control limit of one-half of the reporting limit (RL) in any of the blanks.

#### **4.1.4 Laboratory Control Samples (LCS)**

An LCS was reported for each analytical batch. The results were reviewed for accuracy using the QAPP control limits listed for each compound. There were no anomalies that required qualification of the data.

#### **4.1.5 Matrix Spike (MS) and Matrix Spike Duplicate (MSD)**

Project MS/MSD pairs were reviewed for the analysis. If a project MS/MSD was not reported then the Relative Percent Differences (RPDs) of the non-project MS/MSD pair were reviewed to evaluate precision for the analysis. Percent recoveries and RPDs were compared to the QAPP control limits for accuracy listed for each compound and 30 for precision. There were no anomalies that required qualification of the data.

#### **4.1.6 Surrogates**

Surrogate spike recoveries were reviewed against the QAPP control limits. There were no surrogate anomalies that required qualification of the data.

#### **4.1.7 Compound Quantitation and Identification**

The laboratory RLs were compared to the QAPP limits and sample results were reviewed. There were no anomalies observed.

#### **4.1.8 Field Duplicate Samples**

There were no field duplicate samples in this SDG.

#### **4.1.9 Assessment for VOCs**

No VOCs results were rejected. Based on the available information, the data are considered useable for their intended purpose.

### **4.2 Metals by EPA Method SW6010B**

#### **4.2.1 Holding Times**

The samples were analyzed within the recommended holding time of 180 days.

#### **4.2.2 Initial and Continuing Calibration**

Initial and continuing calibrations were not reviewed at this level of validation.

#### **4.2.3 Blank evaluation**

Preparation blanks were prepared and analyzed to assess laboratory contamination. There were no compounds of concern above the reporting criteria found in the blanks.

#### **4.2.4 LCS**

An LCS was reported for each analytical batch. The results were reviewed against the laboratory control limits of 80 to 120 percent. There were no anomalies that required qualification of the data.

#### **4.2.5 MS/MSD**

Project MS/MSD pairs were reviewed for the analysis. If a project MS/MSD was not reported then the RPDs of the non-project MS/MSD pair were reviewed to evaluate precision for the analysis. Percent recoveries and RPDs were compared to the QAPP control limits of 80 to 120 percent for accuracy and 30 for precision. There were no anomalies that required qualification of the data.

#### **4.2.6 Laboratory Duplicate Samples**

Laboratory duplicate samples were reported for the analysis. The RPDs of laboratory duplicates were compared to the laboratory control limit of 30. There were no anomalies that required qualification of the data.

#### **4.2.7 Compound Quantitation and Identification**

The laboratory RLs were compared to the QAPP limits and sample results were reviewed. There were no anomalies that required qualification of the data except as noted below.

- Sample results with trace concentrations, “TR”, reported below the RL but above the method detection limit (MDL), have been flagged “J” to indicate an estimated amount.

#### **4.2.8 Field Duplicate Samples**

There were no field duplicate samples in this SDG.

#### **4.2.9 Assessment for Metals**

There were no rejected metals analytical results. Based on the available information, the data as qualified are considered useable for their intended purposes.

### **4.3 General Chemistry by various EPA and Standard Methods**

#### **4.3.1 Holding Times**

The samples were analyzed within the recommended holding times for each method.

#### **4.3.2 Initial and Continuing Calibration**

Initial and continuing calibrations were not reviewed at this level of validation.

#### **4.3.3 Blank evaluation**

Preparation blanks were prepared and analyzed to assess laboratory contamination. There were no compounds of concern above the reporting criteria found in the blanks.

#### **4.3.4 LCS**

An LCS was reported for each analytical batch. The results were reviewed against the laboratory control limits percent. There were no anomalies that required qualification of the data.

#### **4.3.5 MS/MSD**

Project MSs were not reported for the analysis. An LCS, which is discussed in **Section 4.3.4**, was used to evaluate accuracy.

#### **4.3.6 Laboratory Duplicate Samples**

Laboratory duplicate samples were reported for the analysis. The RPDs of laboratory sample duplicates were compared to the laboratory control limit of 20. There were no anomalies that required qualification of the data.

#### **4.3.7 Compound Quantitation and Identification**

The laboratory RLs were compared to the QAPP limits and sample results were reviewed. There were no anomalies that required qualification of the data except as noted below.

- Sample results with trace concentrations, “TR”, reported below the RL but above the MDL, have been flagged “J” to indicate an estimated amount.

#### **4.3.8 Field Duplicate Samples**

There were no field duplicate samples in this SDG.

#### **4.3.9 Assessment for General Chemistry**

There were no rejected metals analytical results. Based on the available information, the data as qualified are considered useable for their intended purposes.

## **5.0 RECOMMENDATIONS**

There are no recommendations.

## **6.0 OVERALL ASSESSMENT FOR SDG**

There were no rejected analytical results in this SDG. Based on the available information, the data as qualified are considered useable for their intended purposes. The qualified data are summarized in the QRT in **Attachment A** of this DAR.

Attachment A: Qualified Results Table

**ATTACHMENT A**  
**QUALIFIED RESULTS TABLE**

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**Attachment A - Qualified Results Table**  
**Laboratory SDG F74812**  
**Site 10 - Former Warehouse Area, Buckley AFB, CO**

Lab Sample ID	Sample ID	Sample Collection Date	Type	Method	Parameter	Original Value	Qualifier	New Value	MDL	RL	Units	Reason
F74812-3	FDA-MW22-06302010	6/30/2010	WG-N	A4500F	Sulfide	0.97	J	0.97 J	0.60	1.0	MG/L	TR
F74812-5	FWA-MW43-06302010	6/30/2010	WG-N	A4500F	Sulfide	0.61	J	0.61 J	0.60	1.0	MG/L	TR
F74812-3	FDA-MW22-06302010	6/30/2010	WG-N	SW6010B	Potassium	8840	J	8840 J	500	10000	UG/L	TR
F74812-4	FDA-MW23-06302010	6/30/2010	WG-N	SW6010B	Iron	271	J	271 J	35.0	300	UG/L	TR
F74812-4	FDA-MW23-06302010	6/30/2010	WG-N	SW6010B	Potassium	9210	J	9210 J	500	10000	UG/L	TR

**Matrix / Sample Type**

Matrix	Matrix Description	Sample Code	Sample Code Description
WG	GROUND WATER	N	Normal Environmental Sample

**Data Qualifier Definitions**

Flag	Description
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

**Reason and Comment Code Definitions**

Code	Description	Caption
TR	Trace Level Detect	Detect < RL

Attachment A – Data Assessment Report  
 Laboratory SDG F74877  
 Site 10 – Former Warehouse Area, Buckley AFB, CO  
 Collection Date July 1 and 2, 2010

## 1.0 CROSS REFERENCE OF SAMPLES VERIFIED

A Level 3 verification was performed on the analytical data presented in the laboratory Sample Delivery Group (SDG) indicated below. Data were reviewed as described in the Site-Specific Quality Assurance Project Plan (QAPP), provided with the *Groundwater Sampling Work Plan, Site 10 – Former Warehouse Area, Buckley Air Force Base, Colorado*, (ITSI, 2010). The level 3 verification is equivalent to S2AVEM as defined in the *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use*, (EPA, 2009). This SDG contained data for the following methods.

- Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) Method SW8260B
- Dissolved Gases by RSK-175
- Metals by EPA Method SW6010B
- Alkalinity by Standard Method (SM) 2320B
- Anions by EPA Method SW9056
- Nitrate-Nitrite by SM18 4500NO3E
- Sulfide by SM20 4500S F
- Total Organic Carbon (TOC) by EPA Method SW9060A

The samples were analyzed by Accutest Laboratories of Orlando, Florida. The table below provides an analytical summary and cross reference for the sample(s) verified. A summary of all qualified data is provided in a qualified results table (QRT) as **Attachment A** of this Data Assessment Report (DAR).

**Table 1**  
**Analytical Summary and Sample Cross Reference**

Field Sample Identification	Sample Type	Accutest Laboratory ID	VOCs	Dissolved Gases	Metals	Gen Chem*
FDA-MW49-07012010	WG	F74877-1	X	-	X	X
PW-13-07012010	WG	F74877-2	X	-	-	-
PW-14-07012010	WG PS	F74877-3	X	-	X	X
PW-14-07012010DUP	WG FD	F74877-4	X	-	X	X
PW-17-07012010	WG PS	F74877-5	X	-	X	X
PW-17-07012010DUP	WG FD	F74877-6	X	-	X	X
PW-15-07012010	WG	F74877-7	X	X	X	X
EQUIPMENTBLANK-07012010	EB	F74877-8	X	-	-	-
FWA-TW65-07022010	WG	F74877-9	X	X	X	X

Field Sample Identification	Sample Type	Accutest Laboratory ID	VOCs	Dissolved Gases	Metals	Gen Chem*
PW-21-07022010	WG	F74877-10	X	X	X	X
FWA-MW41-07022010	WG	F74877-11	X	-	-	-
FWA-MW52-07022010	WG	F74877-12	X	-	X	X
FDA-MW39-07022010	WG	F74877-13	X	-	-	-
EQUIPMENTBLANK-07022010	EB	F74877-14	X	-	-	-
TB-07022010	TB	F74877-15	X	-	-	-

\*Gen Chem = General Chemistry - consists of Alkalinity, Anions, Nitrate-Nitrite, Sulfide, TOC  
 WG = Groundwater  
 PS = Primary Sample  
 FD = Field Duplicate  
 EB = Equipment Blank  
 TB = Trip Blank

## 2.0 LABORATORY REPORT

The comments and data qualifiers noted by the laboratory in the case narratives were reviewed. Anomalies resulting in qualification of the data are discussed in **Section 4.0**.

## 3.0 SAMPLE INTEGRITY

The chain-of-custody (COC) was available for review. No sample receipt anomalies were reported that required data qualifier flags.

- Although it appears on the chain of custody, no unpreserved volume in a 500ml poly container was received by the laboratory for sample PW-21-07022010 (F74877-10). The laboratory was unable to analyze this sample for anions and alkalinity

## 4.0 DATA EVALUATION

This section addresses the data review results based on the Summary of Calibration and Quality Control (QC) Procedures and QAPP Worksheet #12, #15, #19, #25 and #28 for the individual methods listed in **Section 1.0** of this report. If qualification of the data was required, then a comment is included that describes the reason for qualification of the data, the data qualifier flag and the associated samples and analytes.

### 4.1 VOCs by EPA Method SW8260B

#### 4.1.1 Holding Times and Preservation

The samples were analyzed within the recommended method holding time of 14 days. There were no anomalies that required qualification of the data.

#### **4.1.2 Initial and Continuing Calibration**

Initial and continuing calibrations were not reviewed at this level of validation.

#### **4.1.3 Blank Evaluation**

Preparation blanks, trip blanks and equipment blanks were analyzed to assess laboratory, shipment, collection, equipment and storage contamination. No target compounds were reported above QAPP control limit of one-half of the reporting limit (RL) in any of the blanks.

#### **4.1.4 Laboratory Control Samples (LCS)**

An LCS was reported for each analytical batch. The results were reviewed for accuracy using the QAPP control limits listed for each compound. There were no anomalies that required qualification of the data.

#### **4.1.5 Matrix Spike (MS) and Matrix Spike Duplicate (MSD)**

Project MS/MSD pairs were reviewed for the analysis. If a project MS/MSD was not reported then the Relative Percent Differences (RPDs) of the non-project MS/MSD pair were reviewed to evaluate precision for the analysis. Percent recoveries and RPDs were compared to the QAPP control limits for accuracy listed for each compound and 30 for precision. There were no anomalies that required qualification of the data except as noted below.

- The MS and/or MSD recoveries of bromodichloromethane and tetrachloroethene were below the Basewide QAPP control limits, “M”. Since the LCS recoveries were acceptable, these compounds have been qualified as estimated “J-” or “UJ-” for an estimated value or RL with a low bias in the parent sample, PW-13-07012010 (F74877-2). Although bromodichloromethane did not recover in the MS, the percent recovery of the MSD was acceptable. Therefore, rejection, “R”, of the compound is not warranted.

#### **4.1.6 Surrogates**

Surrogate spike recoveries were reviewed against the QAPP control limits. There were no surrogate anomalies that required qualification of the data.

#### **4.1.7 Compound Quantitation and Identification**

The laboratory RLs were compared to the QAPP limits and sample results were reviewed. There were no anomalies observed except as noted below.

- Sample results with trace concentrations, “TR”, reported below the RL but above the method detection limit (MDL), have been flagged “J” to indicate an estimated amount.

#### 4.1.8 Field Duplicate Samples

Field duplicate samples and the associated primary samples are identified in **Table 1**. The RPDs for the compounds listed in **Table 2** were not calculable since the results for the field duplicate samples were non-detect. Since the associated primary sample results were less than five times (5X) the RL the RPD evaluation was not required.

**Table 2**  
**Field Duplicate Sample and RPD Results**

Primary and Duplicate Samples	Lab ID	Analyte	Primary Sample Result (µg/l)	Duplicate Sample Result (µg/l)	RPD
PW-14-07012010 / PW-14-07012010DUP	F74877-3 /	1,1-Dichloroethene	0.64	ND	NC*
	F74877-4	1,2-Dichloroethane	0.89	ND	NC*

\* RPD criteria not applicable - primary and duplicate sample results were both less than 5X the RL.

NC = Not calculable

ND = Not detected

µg/l = microgram per liter

#### 4.1.9 Laboratory Replicate Samples

The RPDs of laboratory replicates were compared to the laboratory control limits. There were no anomalies that required qualification of the data.

#### 4.1.10 Assessment for VOCs

No VOCs results were rejected. Based on the available information, the data as qualified are considered useable for their intended purpose.

### 4.2 Dissolved Gases by RSK-175

#### 4.2.1 Holding Times and Preservation

Preserved samples were analyzed within the recommended method holding time of 14 days. There were no anomalies that required qualification of the data except as noted below.

- Sample PW-21-07022010 (F74877-10) was analyzed five days past the recommended holding time, “H”, of seven days for unpreserved samples. The sample results were qualified “J-” for an estimated value with a low bias. Since the associated sample was analyzed within 12 days of collection, which is less than twice the analytical holding time of 7 days for unpreserved volume, the data are usable as qualified.

#### **4.2.2 Initial and Continuing Calibration**

Initial and continuing calibrations were not reviewed at this level of validation.

#### **4.2.3 Blank Evaluation**

Preparation blanks were prepared and analyzed to assess laboratory contamination. There were no compounds of concern above the reporting criteria found in the blanks.

#### **4.2.4 LCS**

An LCS was reported for each analytical batch. The results were reviewed for accuracy using the laboratory control limits listed for each compound. There were no anomalies that required qualification of the data.

#### **4.2.5 MS**

Project MSs were reviewed for the analysis. If a project MS was not reported then the LCS, which is discussed in **Section 4.2.4** was used to evaluate accuracy. Percent recoveries of the project MSs were compared to the laboratory control limits for accuracy. There were no anomalies that required qualification of the data except as noted below.

#### **4.2.6 Laboratory Duplicate Samples**

Laboratory duplicate samples were analyzed to measure precision. The RPDs of laboratory duplicates were compared to the laboratory control limits. There were no anomalies that required qualification of the data.

#### **4.2.7 Compound Quantitation and Identification**

The laboratory RLs were compared to the QAPP limits and sample results were reviewed. There were no anomalies observed except as noted below.

- Sample results with trace concentrations, “TR”, reported below the RL but above the MDL, have been flagged “J” to indicate an estimated amount.

#### **4.2.8 Field Duplicate Samples**

Field duplicate samples were not provided for this method in this SDG.

#### **4.2.9 Assessment for Dissolved Gases**

No dissolved gases results were rejected. Based on the available information, the data as qualified are considered useable for their intended purpose.

#### **4.3 Metals by EPA Method SW6010B**

##### **4.3.1 Holding Times**

The samples were analyzed within the recommended holding time of 180 days.

##### **4.3.2 Initial and Continuing Calibration**

Initial and continuing calibrations were not reviewed at this level of validation.

##### **4.3.3 Blank evaluation**

Preparation blanks were prepared and analyzed to assess laboratory contamination. There were no compounds of concern above the reporting criteria found in the blanks.

##### **4.3.4 LCS**

An LCS was reported for each analytical batch. The results were reviewed against the laboratory control limits of 80 to 120 percent. There were no anomalies that required qualification of the data.

##### **4.3.5 MS/MSD**

Project MS/MSD pairs were reviewed for the analysis. If a project MS/MSD was not reported then the RPDs of the non-project MS/MSD pair were reviewed to evaluate precision for the analysis. Percent recoveries and RPDs were compared to the QAPP control limits of 80 to 120 percent for accuracy and 30 for precision. There were no anomalies that required qualification of the data.

##### **4.3.6 Laboratory Duplicate Samples**

Laboratory duplicate samples were reported for the analysis. The RPDs of laboratory duplicate samples were compared to the QAPP control limit of 30. There were no anomalies that required qualification of the data.

### 4.3.7 Compound Quantitation and Identification

The laboratory RLs were compared to the QAPP limits and sample results were reviewed. There were no anomalies that required qualification of the data except as noted below.

- Sample results with trace concentrations, “TR”, reported below the RL but above the MDL, have been flagged “J” to indicate an estimated amount.

### 4.3.8 Field Duplicate Samples

Field duplicate samples and the associated primary samples are identified in **Table 1**. The RPDs for the positive results were calculated and are listed in **Table 3** below. The RPDs were evaluated against the criteria of less than 50 for primary and field duplicate results greater than 5X the RL. All RPDs were within the QAPP criteria of less than 50 for aqueous samples.

**Table 3**  
**Field Duplicate Sample and RPD Results**

Primary and Duplicate Samples	Lab ID	Analyte	Primary Sample Result (mg/l)	Duplicate Sample Result (mg/l)	RPD
PW-14-07012010 / PW-14-07012010DUP	F74877-3 / F74877-4	Calcium	202000	208000	2.9
		Magnesium	71900	74100	3.0
		Potassium	6080	6280	3.2
		Sodium	559000	576000	3.0
PW-17-07012010 / PW-17-07012010DUP	F74877-5 / F74877-6	Calcium	329000	319000	3.1
		Iron	210	870	122*
		Magnesium	110000	105000	4.7
		Potassium	6500	6490	0.15
		Sodium	598000	592000	1.0

\* RPD criteria not applicable - primary and duplicate sample results were both less than 5X the RL.  
 mg/l = milligram per liter

### 4.3.9 Assessment for Metals

There were no rejected metals analytical results. Based on the available information, the data as qualified are considered useable for their intended purposes.

## 4.4 General Chemistry by Various EPA and Standard Methods

### 4.4.1 Holding Times

The samples were analyzed within the recommended holding times for each method.

#### **4.4.2 Initial and Continuing Calibration**

Initial and continuing calibrations were not reviewed at this level of validation.

#### **4.4.3 Blank evaluation**

Preparation blanks were prepared and analyzed to assess laboratory contamination. There were no compounds of concern above the reporting criteria found in the blanks.

#### **4.4.4 LCS**

An LCS was reported for each analytical batch. The results were reviewed against the laboratory control limits percent. There were no anomalies that required qualification of the data.

#### **4.4.5 MS**

Project MSs were reviewed for the analysis. If a project MS was not reported then the LCS, which is discussed in **Section 4.4.4** was used to evaluate accuracy. Percent recoveries of the project MSs were compared to the laboratory control limits for accuracy. There were no anomalies that required qualification of the data except as noted below.

- The MS recovery, “M”, for alkalinity was below the laboratory control limits in the MS performed on sample FDA-MW49-07012010 (F74877-1). Also, the MS recoveries, “M”, for chloride were below the laboratory control limits in the MSs performed on sample PW-15-07012010 (F74877-7). Since the associated LCS recoveries were acceptable, only the associated results in the parent samples have been qualified “J-” for an estimated value with a low bias.

#### **4.4.6 Laboratory Duplicate Samples**

Laboratory duplicate samples were reported for the analysis. The RPDs of laboratory duplicate samples were compared to the laboratory control limits. There were no anomalies that required qualification of the data.

#### **4.4.7 Compound Quantitation and Identification**

The laboratory RLs were compared to the QAPP limits and sample results were reviewed. There were no anomalies that required qualification of the data except as noted below.

- Sample results with trace concentrations, “TR”, reported below the RL but above the MDL, have been flagged “J” to indicate an estimated amount.

#### 4.4.8 Field Duplicate Samples

Field duplicate samples and the associated primary samples are identified in **Table 1**. The RPDs for the positive results were calculated and are listed in **Table 4** below. The RPDs were within the QAPP criteria of less than 50 for aqueous samples.

**Table 4**  
**Field Duplicate Sample and RPD Results**

Primary and Duplicate Samples	Lab ID	Analyte	Primary Sample Result (mg/L)	Duplicate Sample Result (mg/L)	RPD
PW-14-07012010 / PW-14-07012010DUP	F74877-3 / F74877-4	Alkalinity, Total (as CaCO <sub>3</sub> )	75.0	76.0	1.3
		Nitrate-Nitrite (as N)	6.5	6.2	4.7
		Sulfide	0.63	ND	NC
		Chloride	159	153	3.8
		Sulfate (as SO <sub>4</sub> )	1560	1540	1.3
		Total Organic Carbon	5.1	5.1	0
PW-17-07012010 / PW-17-07012010DUP	F74877-5 / F74877-6	Alkalinity, Total (as CaCO <sub>3</sub> )	69.0	65.0	6.0
		Nitrate-Nitrite (as N)	15.0	15.4	2.6
		Sulfide	0.70	0.77	9.5
		Chloride	204	210	2.9
		Sulfate (as SO <sub>4</sub> )	1900	1750	8.2
		Total Organic Carbon	8.7	8.8	1.1

mg/l = milligram per liter  
 ND = not detected  
 NC = not calculated

#### 4.4.9 Assessment for General Chemistry

There were no rejected general chemistry analytical results. Based on the available information, the data as qualified are considered useable for their intended purposes.

### 5.0 RECOMMENDATIONS

There are no recommendations.

### 6.0 OVERALL ASSESSMENT FOR SDG

There were no rejected analytical results in this SDG. Based on the available information, the data as qualified are considered useable for their intended purposes. The qualified data are summarized in the QRT in **Attachment A** of this DAR.

Attachment A: Qualified Results Table

**ATTACHMENT A**  
**QUALIFIED RESULTS TABLE**

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**Attachment A - Qualified Results Table**  
**Laboratory SDG F74877**  
**Site 10 - Former Warehouse Area, Buckley AFB, CO**

Lab Sample ID	Sample ID	Sample Collection Date	Type	Method	Parameter	Original Value	Qualifier	New Value	MDL	RL	Units	Reason
F74877-1	FDA-MW49-07012010	7/1/2010	WG-N	A2320	Alkalinity, Total (as CaCO3)	345	J-	345 J-	2.5	5.0	MG/L	M
F74877-10	PW-21-07022010	7/2/2010	WG-N	A4500E	Nitrate-Nitrite (as N)	0.053	J	0.053 J	0.050	0.10	MG/L	TR
F74877-3	PW-14-07012010	7/1/2010	WG-N	A4500F	Sulfide	0.63	J	0.63 J	0.60	1.0	MG/L	TR
F74877-5	PW-17-07012010	7/1/2010	WG-N	A4500F	Sulfide	0.70	J	0.70 J	0.60	1.0	MG/L	TR
F74877-6	PW-17-07012010DUP	7/1/2010	WG-FD	A4500F	Sulfide	0.77	J	0.77 J	0.60	1.0	MG/L	TR
F74877-12	FWA-MW52-07022010	7/2/2010	WG-N	RSK175	Methane	0.25	J	0.25 J	0.16	0.50	UG/L	TR
F74877-7	PW-15-07012010	7/1/2010	WG-N	RSK175	Methane	0.18	J	0.18 J	0.16	0.50	UG/L	TR
F74877-10	PW-21-07022010	7/2/2010	WG-N	RSK175	Methane	3590	J-	3590 J-	0.80	2.5	UG/L	H
F74877-10	PW-21-07022010	7/2/2010	WG-N	RSK175	Ethane	0.40	J-	0.40 J-	0.32	1.0	UG/L	TRH
F74877-10	PW-21-07022010	7/2/2010	WG-N	RSK175	Ethene	5.2	J-	5.2 J-	0.43	1.0	UG/L	H
F74877-1	FDA-MW49-07012010	7/1/2010	WG-N	SW6010B	Potassium	8820	J	8820 J	500	10000	UG/L	TR
F74877-12	FWA-MW52-07022010	7/2/2010	WG-N	SW6010B	Iron	150	J	150 J	35.0	300	UG/L	TR
F74877-12	FWA-MW52-07022010	7/2/2010	WG-N	SW6010B	Potassium	8850	J	8850 J	500	10000	UG/L	TR
F74877-3	PW-14-07012010	7/1/2010	WG-N	SW6010B	Potassium	6080	J	6080 J	500	10000	UG/L	TR
F74877-4	PW-14-07012010DUP	7/1/2010	WG-FD	SW6010B	Potassium	6280	J	6280 J	500	10000	UG/L	TR
F74877-7	PW-15-07012010	7/1/2010	WG-N	SW6010B	Potassium	5950	J	5950 J	500	10000	UG/L	TR
F74877-5	PW-17-07012010	7/1/2010	WG-N	SW6010B	Iron	210	J	210 J	35.0	300	UG/L	TR
F74877-5	PW-17-07012010	7/1/2010	WG-N	SW6010B	Potassium	6500	J	6500 J	500	10000	UG/L	TR
F74877-6	PW-17-07012010DUP	7/1/2010	WG-FD	SW6010B	Potassium	6490	J	6490 J	500	10000	UG/L	TR
F74877-10	PW-21-07022010	7/2/2010	WG-N	SW6010B	Potassium	5510	J	5510 J	500	10000	UG/L	TR
F74877-1	FDA-MW49-07012010	7/1/2010	WG-N	SW8260B	cis-1,2-Dichloroethylene	4.4	J	4.4 J	3.2	10.0	UG/L	TR
F74877-2	PW-13-07012010	7/1/2010	WG-N	SW8260B	Tetrachloroethene (PCE)	8.5	J-	8.5 J-	0.44	1.0	UG/L	M
F74877-2	PW-13-07012010	7/1/2010	WG-N	SW8260B	Bromodichloromethane	ND	UJ-	ND UJ-	0.28	1.0	UG/L	M
F74877-3	PW-14-07012010	7/1/2010	WG-N	SW8260B	1,1-Dichloroethene	0.64	J	0.64 J	0.29	1.0	UG/L	TR
F74877-3	PW-14-07012010	7/1/2010	WG-N	SW8260B	1,2-Dichloroethane	0.89	J	0.89 J	0.33	1.0	UG/L	TR
F74877-7	PW-15-07012010	7/1/2010	WG-N	SW9056	Chloride	161	J-	161 J-	5.0	10.0	MG/L	M

Matrix / Sample Type

Matrix	Matrix Description	Sample Code	Sample Code Description
WG	GROUND WATER	FD	Field Duplicate
WG	GROUND WATER	N	Normal Environmental Sample

Data Qualifier Definitions

Flag	Description
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

Reason and Comment Code Definitions

Code	Description	Caption
H	Test Hold Time	HT - Test
M	MS Recovery	MS %R
TR	Trace Level Detect	Detect < RL

Attachment A – Data Assessment Report  
 Laboratory SDG F74938  
 Site 10 – Former Warehouse Area, Buckley AFB, CO  
 Collection Date July 6 and 7, 2010

## 1.0 CROSS REFERENCE OF SAMPLES VERIFIED

A Level 3 verification was performed on the analytical data presented in the laboratory Sample Delivery Group (SDG) indicated below. Data were reviewed as described in the Site-Specific Quality Assurance Project Plan (QAPP), provided with the *Groundwater Sampling Work Plan, Site 10 – Former Warehouse Area, Buckley Air Force Base, Colorado*, (ITSI, 2010). The level 3 verification is equivalent to S2AVEM as defined in the *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use*, (EPA, 2009). This SDG contained data for the following methods.

- Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) Method SW8260B
- Metals by EPA Method SW6010B
- Alkalinity by Standard Method (SM) 2320B
- Anions by EPA Method SW9056
- Nitrate-Nitrite by SM18 4500NO3E
- Sulfide by SM20 4500S F
- Total Organic Carbon (TOC) by EPA Method SW9060A

The samples were analyzed by Accutest Laboratories of Orlando, Florida. The table below provides an analytical summary and cross reference for the sample(s) verified. A summary of all qualified data is provided in a qualified results table (QRT) as **Attachment A** of this Data Assessment Report (DAR).

**Table 1**  
**Analytical Summary and Sample Cross Reference**

Field Sample Identification	Sample Type	Accutest Lab Sample ID	VOCs	Metals	Gen Chem*	TOC
PW-18-07062010	WG	F74938-1	X	X	X	-
FWA-TW57-07072010	WG	F74938-2	X	X	X	-
FWA-MW42-07072010	WG	F74938-3	X	-	-	X
FWA-TW58-07062010	WG	F74938-4	X	-	-	X
FDA-MW33-07062010	WG PS	F74938-5	X	-	-	-
FDA-MW33-07062010DUP	WG FD	F74938-6	X	-	-	-
FDA-MW34-07062010	WG PS	F74938-7	X	-	-	-
FDA-MW34-07062010DUP	WG FD	F74938-8	X	-	-	-

Field Sample Identification	Sample Type	Accutest Lab Sample ID	VOCs	Metals	Gen Chem*	TOC
EQUIPMENTBLANK-07062010	EB	F74938-9	X	-	-	-
TB-07062010	TB	F74938-10	X	-	-	-

\*Gen Chem = General Chemistry - consists of Alkalinity, Anions, Nitrate-Nitrite, Sulfide, TOC  
 EB = Equipment Blank  
 WG = Groundwater  
 PS = Primary Sample  
 FD = Field Duplicate  
 TB = Trip Blank

## 2.0 LABORATORY REPORT

The comments and data qualifiers noted by the laboratory in the case narratives were reviewed. Anomalies resulting in qualification of the data are discussed in **Section 4.0**.

## 3.0 SAMPLE INTEGRITY

The chain-of-custody (COC) was available for review. No sample receipt anomalies were reported that required data qualifier flags.

## 4.0 DATA EVALUATION

This section addresses the data review results based on the Summary of Calibration and Quality Control (QC) Procedures and QAPP Worksheet #12, #15, #19, #25 and #28 for the individual methods listed in **Section 1.0** of this report. If qualification of the data was required, then a comment is included that describes the reason for qualification of the data, the data qualifier flag and the associated samples and analytes.

### 4.1 VOCs by EPA Method SW8260B

#### 4.1.1 Holding Times and Preservation

The samples were analyzed within the recommended method holding time of 14 days. There were no anomalies that required qualification of the data.

#### 4.1.2 Initial and Continuing Calibration

Initial and continuing calibrations were not reviewed at this level of validation.

#### **4.1.3 Blank Evaluation**

Preparation blanks, trip blanks and equipment blanks were analyzed to assess laboratory, shipment, collection, equipment and storage contamination. No target compounds were reported above QAPP control limit of one-half of the reporting limit (RL) in any of the blanks.

#### **4.1.4 Laboratory Control Samples (LCS)**

An LCS was reported for each analytical batch. The results were reviewed for accuracy using the QAPP control limits listed for each compound. There were no anomalies that required qualification of the data.

#### **4.1.5 Matrix Spike (MS) and Matrix Spike Duplicate (MSD)**

Project MS/MSD pairs were reviewed for the analysis. If a project MS/MSD was not reported then the Relative Percent Differences (RPDs) of the non-project MS/MSD pair were reviewed to evaluate precision for the analysis. Percent recoveries and RPDs were compared to the QAPP control limits for accuracy listed for each compound and 30 for precision. There were no anomalies that required qualification of the data.

#### **4.1.6 Surrogates**

Surrogate spike recoveries were reviewed against the QAPP control limits. There were no surrogate anomalies that required qualification of the data.

#### **4.1.7 Compound Quantitation and Identification**

The laboratory RLs were compared to the QAPP limits and sample results were reviewed. There were no anomalies observed except as noted below.

- Sample results with trace concentrations, “TR”, reported below the RL but above the method detection limit (MDL), have been flagged “J” to indicate an estimated amount.

#### **4.1.8 Field Duplicate Samples**

Field duplicate samples and the associated primary samples are identified in Table 1. The RPDs for the positive results were calculated and are listed in **Table 2** below. The RPD was within the QAPP criteria of less than 50 for aqueous samples.

**Table 2**  
**Field Duplicate Sample and RPD Results**

Primary and Duplicate Samples	Lab ID	Analyte	Primary Sample Result (µg/l)	Duplicate Sample Result (µg/l)	RPD
FDA-MW34-07062010 / FDA-MW34-07062010DUP	F74938-7 / F74938-8	Tetrachloroethene (PCE)	36.8	38.6	4.8
		Trichloroethene (TCE)	2.6	2.7	3.8

µg/l = microgram per liter

#### 4.1.9 Assessment for VOCs

No VOCs results were rejected. Based on the available information, the data as qualified are considered useable for their intended purpose.

#### 4.2 Metals by EPA Method SW6010B

##### 4.2.1 Holding Times

The samples were analyzed within the recommended holding time of 180 days.

##### 4.2.2 Initial and Continuing Calibration

Initial and continuing calibrations were not reviewed at this level of validation.

##### 4.2.3 Blank evaluation

Preparation blanks were prepared and analyzed to assess laboratory contamination. There were no compounds of concern above the reporting criteria found in the blanks.

##### 4.2.4 LCS

An LCS was reported for each analytical batch. The results were reviewed against the laboratory control limits of 80 to 120 percent. There were no anomalies that required qualification of the data.

##### 4.2.5 MS/MSD

Project MS/MSD pairs were reviewed for the analysis. If a project MS/MSD was not reported then the RPDs of the non-project MS/MSD pair were reviewed to evaluate precision for the analysis. Percent recoveries and RPDs were compared to the QAPP control limits of 80 to 120 percent for accuracy and 30 for precision.

There were no anomalies that required qualification of the data.

#### **4.2.6 Laboratory Duplicate Samples**

Laboratory duplicate samples were reported for the analysis. The RPDs of laboratory duplicate samples were compared to the QAPP control limit of 30. There were no anomalies that required qualification of the data.

#### **4.2.7 Compound Quantitation and Identification**

The laboratory RLs were compared to the QAPP limits and sample results were reviewed. There were no anomalies that required qualification of the data except as noted below.

- Sample results with trace concentrations, “TR”, reported below the RL but above the MDL, have been flagged “J” to indicate an estimated amount.

#### **4.2.8 Field Duplicate Samples**

There were no field duplicate samples provided for the metal analysis.

#### **4.2.9 Assessment for Metals**

There were no rejected metals analytical results. Based on the available information, the data as qualified are considered useable for their intended purposes.

### **4.3 General Chemistry by various EPA and Standard Methods**

#### **4.3.1 Holding Times**

The samples were analyzed within the recommended holding times for each method.

#### **4.3.2 Initial and Continuing Calibration**

Initial and continuing calibrations were not reviewed at this level of validation.

#### **4.3.3 Blank evaluation**

Preparation blanks were prepared and analyzed to assess laboratory contamination. There were no compounds of concern above the reporting criteria found in the blanks.

#### **4.3.4 LCS**

An LCS was reported for each analytical batch. The results were reviewed against the laboratory control limits percent. There were no anomalies that required qualification of the data.

#### **4.3.5 MS/MSD**

Project MSs were reviewed for the analysis. If a project MS was not reported then the LCS, which is discussed in **Section 4.3.4** was used to evaluate accuracy. Percent recoveries of the project MSs were compared to the laboratory control limits for accuracy. There were no anomalies that required qualification of the data except as noted below.

- The MS percent recovery of TOC associated with sample PW-18-07062010 (F74938-1) was below the laboratory control limits, “M”. The parent sample result has been qualified “J-” for an estimated value with a low bias.

#### **4.3.6 Laboratory Duplicate Samples**

Laboratory duplicate samples were reported for the analysis. The RPDs of laboratory duplicates were compared to the laboratory control limits. There were no anomalies that required qualification of the data.

#### **4.3.7 Compound Quantitation and Identification**

The laboratory RLs were compared to the QAPP limits and sample results were reviewed. There were no anomalies that required qualification of the data.

#### **4.3.8 Field Duplicate Samples**

There were no field duplicate samples provided for the general chemistry analyses.

#### **4.3.9 Assessment for General Chemistry**

There were no rejected general chemistry analytical results. Based on the available information, the data as qualified are considered useable for their intended purposes.

### **5.0 RECOMMENDATIONS**

There are no recommendations.

### **6.0 OVERALL ASSESSMENT FOR SDG**

There were no rejected analytical results in this SDG. Based on the available information, the data as qualified are considered useable for their intended purposes. The qualified data are summarized in the QRT in **Attachment A** of this DAR.

Attachment A: Qualified Results Table

**ATTACHMENT A**  
**QUALIFIED RESULTS TABLE**

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**Attachment A - Qualified Results Table**  
**Laboratory SDG F74938**  
**Site 10 - Former Warehouse Area, Buckley AFB, CO**

Lab Sample ID	Sample ID	Sample Collection Date	Type	Method	Parameter	Original Value	Qualifier	New Value	MDL	RL	Units	Reason
F74938-2	FWA-TW57-07072010	7/7/2010	WG-N	SW6010B	Potassium	7910	J	7910 J	500	10000	UG/L	TR
F74938-1	PW-18-07062010	7/6/2010	WG-N	SW6010B	Potassium	9300	J	9300 J	500	10000	UG/L	TR
F74938-1	PW-18-07062010	7/6/2010	WG-N	SW9060	Total Organic Carbon	17.5	J-	17.5 J-	0.50	1.0	MG/L	M

**Matrix / Sample Type**

Matrix	Matrix Description	Sample Code	Sample Code Description
WG	GROUND WATER	N	Normal Environmental Sample

**Data Qualifier Definitions**

Flag	Description
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

**Reason and Comment Code Definitions**

Code	Description	Caption
M	MS Recovery	MS %R
TR	Trace Level Detect	Detect < RL

Attachment A – Data Assessment Report  
 Laboratory SDG F74970  
 Site 10 – Former Warehouse Area, Buckley AFB, CO  
 Collection Date July 6 and 7, 2010

## 1.0 CROSS REFERENCE OF SAMPLES VERIFIED

A Level 3 verification was performed on the analytical data presented in the laboratory Sample Delivery Group (SDG) indicated below. Data were reviewed as described in the Site-Specific Quality Assurance Project Plan (QAPP), provided with the *Groundwater Sampling Work Plan, Site 10 – Former Warehouse Area, Buckley Air Force Base, Colorado*, (ITSI, 2010). The level 3 verification is equivalent to S2AVEM as defined in the *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use*, (EPA, 2009). This SDG contained data for the following methods.

- Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) Method SW8260B
- Dissolved Gases by RSK-175
- Metals by EPA Method SW6010B
- Alkalinity by Standard Method (SM) 2320B
- Anions by EPA Method SW9056
- Nitrate-Nitrite by SM18 4500NO3E
- Sulfide by SM20 4500S F
- Total Organic Carbon (TOC) by EPA Method SW9060A

The samples were analyzed by Accutest Laboratories of Orlando, Florida. The table below provides an analytical summary and cross reference for the sample(s) verified. A summary of all qualified data is provided in a qualified results table (QRT) as **Attachment A** of this Data Assessment Report (DAR).

**Table 1**  
**Analytical Summary and Sample Cross Reference**

Field Sample Identification	Sample Type	Accutest Lab Sample ID	VOCs	Dissolved Gases	Metals	Gen Chem*	TOC
FWA-MW42-07072010	WG	F74970-1	-	-	X	X	
FWA-TW58-07062010	WG	F74970-2	-	-	X	X	
PW22-07072010	WG	F74970-3	X	X	X	X	X
FWA-MW50-07062010	WG	F74970-4	X	-	-	-	
FWA-MW51-07062010	WG	F74970-5	X	-	-	-	
FDA-MW35-07062010	WG	F74970-6	X	-	-	-	
FWA-TW53-07072010	WG	F74970-7	X	-	-	-	
FWA-MW17-07072010	WG	F74970-8	X	-	-	-	
EQUIPMENTBLANK-	EB	F74970-9	X	-	-	-	

Field Sample Identification	Sample Type	Accutest Lab Sample ID	VOCs	Dissolved Gases	Metals	Gen Chem*	TOC
07072010							
TB-07072010	TB	F74970-10	X	-	-	-	

\*Gen Chem consists of Alkalinity, Anions, Nitrate-Nitrite, Sulfide,  
 EB = Equipment Blank  
 WG = Groundwater  
 TB = Trip Blank

## 2.0 LABORATORY REPORT

The comments and data qualifiers noted by the laboratory in the case narratives were reviewed. Anomalies resulting in qualification of the data are discussed in **Section 4.0**.

## 3.0 SAMPLE INTEGRITY

The chain-of-custody (COC) was available for review. No sample receipt anomalies were reported that required data qualifier flags.

## 4.0 DATA EVALUATION

This section addresses the data review results based on the Summary of Calibration and Quality Control (QC) Procedures and QAPP Worksheet #12, #15, #19, #25 and #28 for the individual methods listed in Section 1.0 of this report. If qualification of the data was required, then a comment is included that describes the reason for qualification of the data, the data qualifier flag and the associated samples and analytes.

### 4.1 VOCs by EPA Method SW8260B

#### 4.1.1 Holding Times and Preservation

The samples were analyzed within the recommended method holding time of 14 days. There were no anomalies that required qualification of the data.

#### 4.1.2 Initial and Continuing Calibration

Initial and continuing calibrations were not reviewed at this level of validation.

#### 4.1.3 Blank Evaluation

Preparation blanks, trip blanks and equipment blanks were analyzed to assess laboratory, shipment, collection, equipment and storage contamination. No target compounds were reported above QAPP control limit of one-half of the reporting limit (RL) in any of the blanks.

#### **4.1.4 Laboratory Control Samples (LCS)**

An LCS was reported for each analytical batch. The results were reviewed for accuracy using the QAPP control limits listed for each compound. There were no anomalies that required qualification of the data.

#### **4.1.5 Matrix Spike (MS) and Matrix Spike Duplicate (MSD)**

Project MS/MSD pairs were reviewed for the analysis. If a project MS/MSD was not reported then the Relative Percent Differences (RPDs) of the non-project MS/MSD pair were reviewed to evaluate precision for the analysis. Percent recoveries and RPDs were compared to the QAPP control limits for accuracy listed for each compound and 30 for precision. There were no anomalies that required qualification of the data.

#### **4.1.6 Surrogates**

Surrogate spike recoveries were reviewed against the QAPP control limits. There were no surrogate anomalies that required qualification of the data.

#### **4.1.7 Compound Quantitation and Identification**

The laboratory RLs were compared to the QAPP limits and sample results were reviewed. There were no anomalies observed except as noted below.

- Sample results with trace concentrations, “TR”, reported below the RL but above the method detection limit (MDL), have been flagged “J” to indicate an estimated amount.

#### **4.1.8 Field Duplicates**

There were no field duplicate samples in this SDG.

#### **4.1.9 Assessment for VOCs**

No VOCs results were rejected. Based on the available information, the data as qualified are considered useable for their intended purpose.

### **4.2 Dissolved Gases by Standard Method RSK-175**

#### **4.2.1 Holding Times and Preservation**

The samples were analyzed within the recommended method holding time of 14 days. There were no anomalies that required qualification of the data, however the following anomaly was observed.

- Sample PW22-07072010 (F74970-3) was not preserved to a pH value less than 2.0 as required by the method. The sample results were not qualified because the analysis was performed within 7 days from collection date for unpreserved volume per the method.

#### **4.2.2 Initial and Continuing Calibration**

Initial and continuing calibrations were not reviewed at this level of validation.

#### **4.2.3 Blank Evaluation**

Preparation blanks were prepared and analyzed to assess laboratory contamination. There were no compounds of concern above the reporting criteria found in the blanks.

#### **4.2.4 LCS**

An LCS was reported for each analytical batch. The results were reviewed for accuracy using the laboratory control limits listed for each compound. There were no anomalies that required qualification of the data.

#### **4.2.5 MS**

A non-project MS was reported for the analysis. The LCS, which is discussed in **Section 4.2.4** was used to evaluate accuracy.

#### **4.2.6 Laboratory Duplicate Samples**

Laboratory duplicate samples were analyzed to measure precision. The RPDs of laboratory duplicates were compared to the laboratory control limits. There were no anomalies that required qualification of the data.

#### **4.2.7 Compound Quantitation and Identification**

The laboratory RLs were compared to the QAPP limits and sample results were reviewed. There were no anomalies that required qualification of the data.

#### **4.2.8 Field Duplicate Samples**

Field duplicate samples were not provided for this method in this SDG.

#### **4.2.9 Assessment for Dissolved Gases**

No dissolved gases results were rejected. Based on the available information, the data are considered useable for their intended purpose

### **4.3 Metals by EPA Method SW6010B**

#### **4.3.1 Holding Times**

The samples were analyzed within the recommended holding time of 180 days.

#### **4.3.2 Initial and Continuing Calibration**

Initial and continuing calibrations were not reviewed at this level of validation.

#### **4.3.3 Blank evaluation**

Preparation blanks were prepared and analyzed to assess laboratory contamination. There were no compounds of concern above the reporting criteria found in the blanks.

#### **4.3.4 LCS**

An LCS was reported for each analytical batch. The results were reviewed against the laboratory control limits of 80 to 120 percent. There were no anomalies that required qualification of the data.

#### **4.3.5 MS/MSD**

Project MS/MSD pairs were reviewed for the analysis. If a project MS/MSD was not reported then the RPDs of the non-project MS/MSD pair were reviewed to evaluate precision for the analysis. Percent recoveries and RPDs were compared to the QAPP control limits of 80 to 120 percent for accuracy and 30 for precision. There were no anomalies that required qualification of the data.

#### **4.3.6 Laboratory Duplicate Samples**

Laboratory duplicate samples were reported for the analysis. The RPDs of laboratory duplicate samples were compared to the QAPP control limit of 30. There were no anomalies that required qualification of the data.

#### **4.3.7 Compound Quantitation and Identification**

The laboratory RLs were compared to the QAPP limits and sample results were reviewed. There were no anomalies that required qualification of the data except as noted below.

- Sample results with trace concentrations, “TR”, reported below the RL but above the MDL, have been flagged “J” to indicate an estimated amount.

#### **4.3.8 Field Duplicate Samples**

There were no field duplicate samples in this SDG.

#### **4.3.9 Assessment for Metals**

There were no rejected metals analytical results. Based on the available information, the data as qualified are considered useable for their intended purposes.

### **4.4 General Chemistry by various EPA and Standard Methods**

#### **4.4.1 Holding Times**

The samples were analyzed within the recommended holding times.

#### **4.4.2 Initial and Continuing Calibration**

Initial and continuing calibrations were not reviewed at this level of validation.

#### **4.4.3 Blank evaluation**

Preparation blanks were prepared and analyzed to assess laboratory contamination. There were no compounds of concern above the reporting criteria found in the blanks.

#### **4.4.4 LCS**

An LCS was reported for each analytical batch. The results were reviewed against the laboratory control limits percent. There were no anomalies that required qualification of the data.

#### **4.4.5 MS/MSD**

Project MSs were reviewed for the analysis. If a project MS was not reported then the LCS, which is discussed in **Section 4.4.4** was used to evaluate accuracy. Percent recoveries of the project MSs were compared to the laboratory control limits for accuracy. There were no anomalies that required qualification of the data except as noted below.

- The MS percent recoveries, “M”, for sulfate and chloride prepared from sample PW22-07072010 (F74970-3) were below the laboratory control limits of 90 to 110 percent at 84.4 percent and 86 percent, respectively. Since the LCS recoveries were acceptable, only the parent sample results have been qualified “J-” for an estimated value with a low bias.

#### **4.4.6 Laboratory Duplicate Samples**

Laboratory duplicate samples were analyzed for the analysis. The RPDs of laboratory duplicates were compared to the laboratory control limits. There were no anomalies that required qualification of the data.

#### **4.4.7 Compound Quantitation and Identification**

The laboratory RLs were compared to the QAPP limits and sample results were reviewed. There were no anomalies that required qualification of the data.

#### **4.4.8 Field Duplicate Samples**

There were no field duplicate samples in this SDG.

#### **4.4.9 Assessment for General Chemistry**

There were no rejected metals analytical results. Based on the available information, the data as qualified are considered useable for their intended purposes.

### **5.0 RECOMMENDATIONS**

There are no recommendations.

### **6.0 OVERALL ASSESSMENT FOR SDG**

There were no rejected analytical results in this SDG. Based on the available information, the data as qualified are considered useable for their intended purposes. The qualified data are summarized in the QRT in **Attachment A** of this DAR.

Attachment A: Qualified Results Table

**ATTACHMENT A**  
**QUALIFIED RESULTS TABLE**

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**Attachment A - Qualified Results Table**  
**Laboratory SDG F74970**  
**Site 10 - Former Warehouse Area, Buckley AFB, CO**

Lab Sample ID	Sample ID	Sample Collection Date	Type	Method	Parameter	Original Value	Qualifier	New Value	MDL	RL	Units	Reason
F74970-1	FWA-MW42-07072010	7/7/2010	WG-N	A4500F	Sulfide	0.97	J	0.97 J	0.60	1.0	MG/L	TR
F74970-1	FWA-MW42-07072010	7/7/2010	WG-N	SW6010B	Iron	102	J	102 J	35.0	300	UG/L	TR
F74970-1	FWA-MW42-07072010	7/7/2010	WG-N	SW6010B	Potassium	8120	J	8120 J	500	10000	UG/L	TR
F74970-2	FWA-TW58-07062010	7/6/2010	WG-N	SW6010B	Iron	128	J	128 J	35.0	300	UG/L	TR
F74970-8	FWA-MW17-07072010	7/7/2010	WG-N	SW8260B	Trichloroethene (TCE)	0.59	J	0.59 J	0.24	1.0	UG/L	TR
F74970-1	FWA-MW42-07072010	7/7/2010	WG-N	SW9056	Chloride	378	J-	378 J-	25.0	50.0	MG/L	M
F74970-3	PW22-07072010	7/7/2010	WG-N	SW9056	Sulfate (as SO4)	16.8	J-	16.8 J-	2.0	4.0	MG/L	M

**Matrix / Sample Type**

Matrix	Matrix Description	Sample Code	Sample Code Description
WG	GROUND WATER	N	Normal Environmental Sample

**Data Qualifier Definitions**

Flag	Description
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

**Reason and Comment Code Definitions**

Code	Description	Caption
M	MS Recovery	MS %R
TR	Trace Level Detect	Detect < RL

Attachment A – Data Assessment Report  
 Laboratory SDG F75011  
 Site 10 – Former Warehouse Area, Buckley AFB, CO  
 Collection Date July 8 and 9, 2010

## 1.0 CROSS REFERENCE OF SAMPLES VERIFIED

A Level 3 verification was performed on the analytical data presented in the laboratory Sample Delivery Group (SDG) indicated below. Data were reviewed as described in the Site-Specific Quality Assurance Project Plan (QAPP), provided with the *Groundwater Sampling Work Plan, Site 10 – Former Warehouse Area, Buckley Air Force Base, Colorado*, (ITSI, 2010). The level 3 verification is equivalent to S2AVEM as defined in the *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use*, (EPA, 2009). This SDG contained data for the following methods.

- Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) Method SW8260B
- Dissolved Gases by RSK-175
- Metals by EPA Method SW6010B
- Alkalinity by Standard Method (SM) 2320B
- Anions by EPA Method SW9056
- Nitrate-Nitrite by SM18 4500NO3E
- Sulfide by SM20 4500S F
- Total Organic Carbon (TOC) by EPA Method SW9060A

The samples were analyzed by Accutest Laboratories of Orlando, Florida. The table below provides an analytical summary and cross reference for the sample(s) verified. A summary of all qualified data is provided in a qualified results table (QRT) as **Attachment A** of this Data Assessment Report (DAR).

**Table 1**  
**Analytical Summary and Sample Cross Reference**

Field Sample Identification	Sample Type	Accutest Laboratory ID	VOCs	Dissolved Gases	Metals	Gen Chem*	TOC
FWA-TW68-07092010	WG	F75011-1	X	X	X	X	X
FDA-MW28-07092010	WG	F75011-2	X	-	-	-	-
FWA-DPT19-07092010	WG	F75011-3	X	-	-	-	-
FDA-MW15-07082010	WG	F75011-4	X	-	-	-	-
PW-20-07082010	WG	F75011-5	X	X	-	-	X
FWA-DPT8-07092010	WG	F75011-6	X	-	-	-	-
FWA-DPT12-07082010	WG	F75011-7	X	-	-	-	-
FWA-DPT9-07082010	WG	F75011-8	X	-	-	-	-
FWA-DPT17-07092010	WG	F75011-9	X	-	-	-	-

Field Sample Identification	Sample Type	Accutest Laboratory ID	VOCs	Dissolved Gases	Metals	Gen Chem*	TOC
FWA-DPT18-07082010	WG	F75011-10	X	-	-	-	-
EQUIPMENTBLANK-07082010	EB	F75011-11	X	-	-	-	-
EQUIPMENTBLANK-07092010	EB	F75011-12	X	-	-	-	-
EQUIPMENTBLANK-070820102	EB	F75011-13	X	-	-	-	-
EQUIPMENTBLANK-070920102	EB	F75011-14	X	-	-	-	-
TB-07092010	TB	F75011-15	X	-	-	-	-

\*Gen Chem consists of Alkalinity, Anions, Nitrate-Nitrite and Sulfide

WG = Groundwater  
 EB = Equipment Blank  
 TB = Trip Blank

## 2.0 LABORATORY REPORT

The comments and data qualifiers noted by the laboratory in the case narratives were reviewed. Anomalies resulting in qualification of the data are discussed in **Section 4.0**.

## 3.0 SAMPLE INTEGRITY

The chain-of-custody (COC) was available for review. No sample receipt anomalies were reported that required data qualifier flags.

## 4.0 DATA EVALUATION

This section addresses the data review results based on the Summary of Calibration and Quality Control (QC) Procedures and QAPP Worksheet #12, #15, #19, #25 and #28 for the individual methods listed in Section 1.0 of this report. If qualification of the data was required, then a comment is included that describes the reason for qualification of the data, the data qualifier flag and the associated samples and analytes.

### 4.1 VOCs by EPA Method SW8260B

#### 4.1.1 Holding Times and Preservation

The samples were analyzed within the recommended method holding time of 14 days for preserved samples. There were no anomalies that required qualification of the data except as noted below.

- The pH for sample FWA-TW68-07092010 was greater than 2. The sample was analyzed four to six days past the holding time, “H”, of seven days for unpreserved samples. The associated results have been qualified as “J-” or “UJ-” for an estimated value with a low bias.

#### **4.1.2 Initial and Continuing Calibration**

Initial and continuing calibrations were not reviewed at this level of validation.

#### **4.1.3 Blank Evaluation**

Preparation blanks, trip blanks and equipment blanks were analyzed to assess laboratory, shipment, collection, equipment and storage contamination. No target compounds were reported above QAPP control limit of one-half of the reporting limit (RL) in any of the blanks.

#### **4.1.4 Laboratory Control Samples (LCS)**

An LCS was reported for each analytical batch. The results were reviewed for accuracy using the QAPP control limits listed for each compound. There were no anomalies that required qualification of the data.

#### **4.1.5 Matrix Spike (MS) and Matrix Spike Duplicate (MSD)**

Project MS/MSD pairs were reviewed for the analysis. If a project MS/MSD was not reported then the Relative Percent Differences (RPDs) of the non-project MS/MSD pair were reviewed to evaluate precision for the analysis. Percent recoveries and RPDs were compared to the QAPP control limits for accuracy listed for each compound and 20 for precision. There were no anomalies that required qualification of the data except as noted below.

#### **4.1.6 Surrogates**

Surrogate spike recoveries were reviewed against the QAPP control limits. There were no surrogate anomalies that required qualification of the data.

#### **4.1.7 Compound Quantitation and Identification**

The laboratory RLs were compared to the QAPP limits and sample results were reviewed. There were no anomalies observed except as noted below.

- Sample results with trace concentrations, “TR”, reported below the RL but above the method detection limit (MDL), have been flagged “J” to indicate an estimated amount.

- The laboratory noted that the analytical results for tetrachloroethene (PCE) were not consistent, “P”, between separate vials for sample FWA-TW68-07092010 (F75011-1). The vial with the highest result for PCE was reported for this sample. The associated result has been qualified “J” for an estimated value.

#### **4.1.8 Field Duplicate Samples**

Field duplicate samples were not provided for this SDG.

#### **4.1.9 Assessment for VOCs**

No VOCs results were rejected. Based on the available information, the data as qualified are considered useable for their intended purpose.

### **4.2 Dissolved Gases by Standard Method RSK-175**

#### **4.2.1 Holding Times and Preservation**

The samples were analyzed within the recommended method holding time of 14 days. There were no anomalies that required qualification of the data, however the following anomaly was observed.

- Samples FWA-TW68-07092010 (F75011-1) and PW-20-07082010 (F75011-5) were not preserved to a pH value less than 2.0 as required by the method. The sample results were not qualified because the analysis was performed within 7 days from collection per the method for unpreserved volume.

#### **4.2.2 Initial and Continuing Calibration**

Initial and continuing calibrations were not reviewed at this level of validation.

#### **4.2.3 Blank Evaluation**

Preparation blanks were prepared and analyzed to assess laboratory contamination. There were no compounds of concern above the reporting criteria found in the blanks.

#### **4.2.4 LCS**

An LCS was reported for each analytical batch. The results were reviewed for accuracy using the laboratory control limits listed for each compound. There were no anomalies that required qualification of the data.

#### **4.2.5 MS/MSD**

A non-project MS was reported for the analysis. The LCS, which is discussed in **Section 4.2.4** was used to evaluate accuracy.

#### **4.2.6 Laboratory Duplicate Samples**

Laboratory duplicate samples were reported for the analysis. The RPDs of laboratory duplicate samples were compared to the laboratory control limits. There were no anomalies that required qualification of the data.

#### **4.2.7 Compound Quantitation and Identification**

The laboratory RLs were compared to the QAPP limits and sample results were reviewed. There were no anomalies observed except as noted below.

- Sample results with trace concentrations, “TR”, reported below the RL but above the MDL, have been flagged “J” to indicate an estimated amount.

#### **4.2.8 Field Duplicate Samples**

Field duplicate samples were not provided for this SDG.

#### **4.2.9 Assessment for Dissolved Gases**

No dissolved gases results were rejected. Based on the available information, the data as qualified are considered useable for their intended purpose.

### **4.3 Metals by EPA Method SW6010B**

#### **4.3.1 Holding Times**

The samples were analyzed within the recommended holding time of 180 days.

#### **4.3.2 Initial and Continuing Calibration**

Initial and continuing calibrations were not reviewed at this level of validation.

#### **4.3.3 Blank evaluation**

Preparation blanks were prepared and analyzed to assess laboratory contamination. There were no compounds of concern above the reporting criteria found in the blanks.

#### **4.3.4 LCS**

An LCS was reported for each analytical batch. The results were reviewed against the laboratory control limits of 80 to 120 percent. There were no anomalies that required qualification of the data.

#### **4.3.5 MS/MSD**

Project MS/MSD pairs were reviewed for the analysis. If a project MS/MSD was not reported then the RPDs of the non-project MS/MSD pair were reviewed to evaluate precision for the analysis. Percent recoveries and RPDs were compared to the QAPP control limits of 80 to 120 percent for accuracy and 30 for precision. There were no anomalies that required qualification of the data.

#### **4.3.6 Laboratory Duplicate Samples**

Laboratory duplicate samples were reported for the analysis. The RPDs of laboratory duplicate samples were compared to the QAPP control limit of 30. There were no anomalies that required qualification of the data.

#### **4.3.7 Compound Quantitation and Identification**

The laboratory RLs were compared to the QAPP limits and sample results were reviewed. There were no anomalies that required qualification of the data.

#### **4.3.8 Field Duplicate Samples**

Field duplicate samples were not provided for this SDG.

#### **4.3.9 Assessment for Metals**

There were no rejected metals analytical results. Based on the available information, the data as qualified are considered useable for their intended purposes.

### **4.4 General Chemistry by various EPA and Standard Methods**

#### **4.4.1 Holding Times**

The samples were analyzed within the recommended holding times for each method.

#### **4.4.2 Initial and Continuing Calibration**

Initial and continuing calibrations were not reviewed at this level of validation.

#### **4.4.3 Blank evaluation**

Preparation blanks were prepared and analyzed to assess laboratory contamination. There were no compounds of concern above the reporting criteria found in the blanks.

#### **4.4.4 LCS**

An LCS was reported for each analytical batch. The results were reviewed against the laboratory control limits percent. There were no anomalies that required qualification of the data.

#### **4.4.5 MS/MSD**

Non-project MSs was reported for the analyses. The LCS, which is discussed in **Section 4.4.4**, was used to evaluate accuracy.

#### **4.4.6 Laboratory Duplicate Samples**

Laboratory duplicate samples were reported for the analysis. The RPDs of laboratory duplicates were compared to the laboratory control limits. There were no anomalies that required qualification of the data.

#### **4.4.7 Compound Quantitation and Identification**

The laboratory RLs were compared to the QAPP limits and sample results were reviewed. There were no anomalies that required qualification of the data.

#### **4.4.8 Field Duplicate Samples**

Field duplicate samples were not provided for this SDG.

#### **4.4.9 Assessment for General Chemistry**

There were no rejected general chemistry analytical results. Based on the available information, the data are considered useable for their intended purposes.

### **5.0 RECOMMENDATIONS**

There are no recommendations.

## **6.0 OVERALL ASSESSMENT FOR SDG**

There were no rejected analytical results in this SDG. Based on the available information, the data as qualified are considered useable for their intended purposes. The qualified data are summarized in the QRT in **Attachment A** of this DAR.

Attachment A: Qualified Results Table

**ATTACHMENT A**  
**QUALIFIED RESULTS TABLE**

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**Attachment A - Qualified Results Table**  
**Laboratory SDG F75011**  
**Site 10 - Former Warehouse Area, Buckley AFB, CO**

Lab Sample ID	Sample ID	Sample Collection Date	Type	Method	Parameter	Original Value	Qualifier	New Value	MDL	RL	Units	Reason
F75011-1	FWA-TW68-07092010	7/9/2010	WG-N	RSK175	Ethene	0.47	J	0.47 J	0.43	1.0	UG/L	TR
F75011-9	FWA-DPT17-07092010	7/9/2010	WG-N	SW8260B	Trichloroethene (TCE)	0.46	J	0.46 J	0.24	1.0	UG/L	TR
F75011-1	FWA-TW68-07092010	7/9/2010	WG-N	SW8260B	Bromodichloromethane	ND	UJ-	ND UJ-	0.28	1.0	UG/L	H
F75011-1	FWA-TW68-07092010	7/9/2010	WG-N	SW8260B	1,1-Dichloroethene	ND	UJ-	ND UJ-	0.29	1.0	UG/L	H
F75011-1	FWA-TW68-07092010	7/9/2010	WG-N	SW8260B	1,2-Dichloroethane	ND	UJ-	ND UJ-	0.33	1.0	UG/L	H
F75011-1	FWA-TW68-07092010	7/9/2010	WG-N	SW8260B	cis-1,2-Dichloroethylene	ND	UJ-	ND UJ-	0.32	1.0	UG/L	H
F75011-1	FWA-TW68-07092010	7/9/2010	WG-N	SW8260B	trans-1,2-Dichloroethene	ND	UJ-	ND UJ-	0.34	1.0	UG/L	H
F75011-1	FWA-TW68-07092010	7/9/2010	WG-N	SW8260B	Tetrachloroethene (PCE)	212	J-	212 J-	44.0	100	UG/L	HP
F75011-1	FWA-TW68-07092010	7/9/2010	WG-N	SW8260B	Trichloroethene (TCE)	6.2	J-	6.2 J-	0.24	1.0	UG/L	H
F75011-1	FWA-TW68-07092010	7/9/2010	WG-N	SW8260B	Vinyl Chloride	ND	UJ-	ND UJ-	0.28	1.0	UG/L	H

**Matrix / Sample Type**

Matrix	Matrix Description	Sample Code	Sample Code Description
WG	GROUND WATER	N	Normal Environmental Sample

**Data Qualifier Definitions**

Flag	Description
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

**Reason and Comment Code Definitions**

Code	Description	Caption
H	Test Hold Time	HT - Test
P	Confirmation RPD	Column RPD
TR	Trace Level Detect	Detect < RL

**ATTACHMENT B**  
**ANALYTICAL LABORATORY REPORTS**  
**(Provided on CD)**

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## Technical Report for

**Innovative Technical Solutions, Inc**

**Buckley AFB, Aurora, CO**

**07030.0007**

**Accutest Job Number: F74784**

**Sampling Date: 06/29/10**

**Report to:**

**ITSI, CO**

**pschwarzweiler@itsi.com**

**ATTN: Paul Schwarzweiler**

**Total number of pages in report: 16**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

  
**Harry Behzadi, Ph.D.**  
**Laboratory Director**

**Client Service contact: Sue Bell 407-425-6700**

Certifications: FL (DOH E83510), NC (573), NJ (FL002), MA (FL946), IA (366), LA (03051), KS (E-10327), SC, AK  
This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.  
Test results relate only to samples analyzed.



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## Sample Summary

Innovative Technical Solutions, Inc

**Job No:** F74784

Buckley AFB, Aurora, CO

Project No: 07030.0007

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
F74784-1	06/29/10	12:00 CV	06/30/10	AQ	Ground Water	FWA-MW47-06292010
F74784-2	06/29/10	13:15 CV	06/30/10	AQ	Ground Water	FWA-MW37-06292010
F74784-3	06/29/10	14:35 CV	06/30/10	AQ	Ground Water	FDA-MW32-06292010
F74784-4	06/29/10	16:30 CV	06/30/10	AQ	Ground Water	FDA-MW36-06292010
F74784-5	06/29/10	17:25 CV	06/30/10	AQ	Ground Water	FDA-MW27-06292010
F74784-6	06/29/10	17:25 CV	06/30/10	AQ	Ground Water	FDA-MW27-06292010DUP
F74784-7	06/29/10	18:17 CV	06/30/10	AQ	Equipment Blank	EQUIPMENTBLANK-06292010
F74784-8	06/29/10	18:30 CV	06/30/10	AQ	Trip Blank Water	TB-06292010

## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** Innovative Technical Solutions, Inc

**Job No:** F74784

**Site:** Buckley AFB, Aurora, CO

**Report Date** 7/15/2010 12:31:45

7 Samples, 1 Trip Blank were collected on 06/29/2010 and received at Accutest on 06/30/2010 properly preserved, at 3 Deg. C and intact. These Samples received an Accutest job number of F74784. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Volatiles by GCMS By Method SW846 8260B

**Matrix:** AQ

**Batch ID:** VN1800

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F74784-1DUP, F74861-6MS, F74861-6MSD were used as the QC samples indicated.

Matrix Spike Recovery(s) for cis-1,2-Dichloroethylene are outside control limits. Probable cause due to matrix interference.

RPD(s) for MSD for trans-1,2-Dichloroethylene are outside control limits for sample F74861-6MSD. Probable cause due to sample homogeneity.

Accutest Laboratories Southeast (ALSE) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALSE and as stated on the COC. ALSE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALSE Quality Manual except as noted above. This report is to be used in its entirety. ALSE is not responsible for any assumptions of data quality if partial data packages are used

Narrative prepared by:

\_\_\_\_\_  
Svetlana Izosimova, QAO (signature on file)

Date: July 15, 2010



## Sample Results

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## Report of Analysis

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## Report of Analysis

3.1  
3

<b>Client Sample ID:</b> FWA-MW47-06292010	<b>Date Sampled:</b> 06/29/10
<b>Lab Sample ID:</b> F74784-1	<b>Date Received:</b> 06/30/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8260B	
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0044426.D	1	07/12/10	LD	n/a	n/a	VN1800
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

**VOA Special List**

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		87-116%
17060-07-0	1,2-Dichloroethane-D4	105%		76-127%
2037-26-5	Toluene-D8	94%		86-112%
460-00-4	4-Bromofluorobenzene	97%		84-120%

U = Not detected      MDL - Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

## Report of Analysis

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<b>Client Sample ID:</b> FWA-MW37-06292010	
<b>Lab Sample ID:</b> F74784-2	<b>Date Sampled:</b> 06/29/10
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 06/30/10
<b>Method:</b> SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0044432.D	1	07/12/10	LD	n/a	n/a	VN1800
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

### VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		87-116%
17060-07-0	1,2-Dichloroethane-D4	105%		76-127%
2037-26-5	Toluene-D8	98%		86-112%
460-00-4	4-Bromofluorobenzene	103%		84-120%

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> FDA-MW32-06292010	<b>Date Sampled:</b> 06/29/10
<b>Lab Sample ID:</b> F74784-3	<b>Date Received:</b> 06/30/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8260B	
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0044433.D	1	07/12/10	LD	n/a	n/a	VN1800
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

### VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	38.4	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.32	1.0	0.24	ug/l	J
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		87-116%
17060-07-0	1,2-Dichloroethane-D4	106%		76-127%
2037-26-5	Toluene-D8	98%		86-112%
460-00-4	4-Bromofluorobenzene	101%		84-120%

U = Not detected      MDL - Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> FDA-MW36-06292010	
<b>Lab Sample ID:</b> F74784-4	<b>Date Sampled:</b> 06/29/10
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 06/30/10
<b>Method:</b> SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0044439.D	1	07/12/10	LD	n/a	n/a	VN1800
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	20.8	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		87-116%
17060-07-0	1,2-Dichloroethane-D4	102%		76-127%
2037-26-5	Toluene-D8	94%		86-112%
460-00-4	4-Bromofluorobenzene	94%		84-120%

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	FDA-MW27-06292010	<b>Date Sampled:</b>	06/29/10
<b>Lab Sample ID:</b>	F74784-5	<b>Date Received:</b>	06/30/10
<b>Matrix:</b>	AQ - Ground Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	Buckley AFB, Aurora, CO		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0044436.D	1	07/12/10	LD	n/a	n/a	VN1800
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	6.1	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		87-116%
17060-07-0	1,2-Dichloroethane-D4	103%		76-127%
2037-26-5	Toluene-D8	96%		86-112%
460-00-4	4-Bromofluorobenzene	97%		84-120%

U = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	FDA-MW27-06292010DUP	<b>Date Sampled:</b>	06/29/10
<b>Lab Sample ID:</b>	F74784-6	<b>Date Received:</b>	06/30/10
<b>Matrix:</b>	AQ - Ground Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	Buckley AFB, Aurora, CO		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0044437.D	1	07/12/10	LD	n/a	n/a	VN1800
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	6.0	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		87-116%
17060-07-0	1,2-Dichloroethane-D4	102%		76-127%
2037-26-5	Toluene-D8	96%		86-112%
460-00-4	4-Bromofluorobenzene	96%		84-120%

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	EQUIPMENTBLANK-06292010		
<b>Lab Sample ID:</b>	F74784-7	<b>Date Sampled:</b>	06/29/10
<b>Matrix:</b>	AQ - Equipment Blank	<b>Date Received:</b>	06/30/10
<b>Method:</b>	SW846 8260B	<b>Percent Solids:</b>	n/a
<b>Project:</b>	Buckley AFB, Aurora, CO		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0044434.D	1	07/12/10	LD	n/a	n/a	VN1800
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		87-116%
17060-07-0	1,2-Dichloroethane-D4	105%		76-127%
2037-26-5	Toluene-D8	96%		86-112%
460-00-4	4-Bromofluorobenzene	101%		84-120%

U = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> TB-06292010	
<b>Lab Sample ID:</b> F74784-8	<b>Date Sampled:</b> 06/29/10
<b>Matrix:</b> AQ - Trip Blank Water	<b>Date Received:</b> 06/30/10
<b>Method:</b> SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0044435.D	1	07/12/10	LD	n/a	n/a	VN1800
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		87-116%
17060-07-0	1,2-Dichloroethane-D4	103%		76-127%
2037-26-5	Toluene-D8	96%		86-112%
460-00-4	4-Bromofluorobenzene	99%		84-120%

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound



## Misc. Forms

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### Custody Documents and Other Forms

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Includes the following where applicable:

- Certification Exceptions
- Chain of Custody

F74784

005851



2730 Shadelands Drive, Suite 100  
Walnut Creek, California 94598  
(925) 946-3100 (925) 256-8998 (fax)

Local Address: 3333 S. Wadsworth Blvd  
Ste 220  
Lakewood CO 80227

### Chain-Of-Custody

Project Name and Number: Buckley AFB/09030.0007  
Project Manager: Kelly Ruden  
Site Location: Aurora, CO

Laboratory Name: Accutest Lab. SE, Inc  
Address: 4405 Vineyard Rd Contact Name: Suz Bell  
St. C15, Orlando FL 32811 Phone: 407-425-6700

Date: 6/29/2010  
Page: 1 of 1

Sample I.D.	Date	Time	Sample Depth	No. of Containers	Sample Matrix	Analysis:		Special Instructions/Comments
						Preservative:	Container Type:	
						8260B	VOA	
						IK1	VOA	
1 FWA-MW47-06292010	6/29/10	1200	28.5'	3	GW	X		
2 FWA-MW37-06292010	6/29/10	1315	33'	3	GW	X		
3 FDA-MW32-06292010	6/29/10	1435	34'	3	GW	X		
4 FDA-MW36-06292010	6/29/10	1630	32'	3	GW	X		
5 FDA-MW27-06292010	6/29/10	1725	33'	3	GW	X		
6 FDA-MW27-06292010 DUP	6/29/10	1725	33'	3	GW	X		
7 EQUIPMENT BLANK-06292010	6/29/10	1817		3	DI	X		
8 TB-06292010	6/29/10	1830		2		X		

Sampled By: Charles VanHeuvelen/Brooks Dillard  
Signature: [Signature]  
Special Instructions:  
Send Results to: edawson@itsi.com  
(w/fax #)  
Turnaround Time: standand

Sampler: Charles VanHeuvelen/Brooks Dillard  
Relinquished By/Affiliation: [Signature] ITS1  
Date: 6/29/10 1930  
Time: 6/29/10 9:00

Courier/Airbill No.: 8723 798 8350  
Received By/Affiliation: FedEx  
Date: 6/29/10  
Time: 9:00

Original - Laboratory Yellow - Field/Office

3.0

Graphics/Stationery/chain\_custody0408.ai

4.1  
4

**ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION**

ACCUTEST'S JOB NUMBER: F74784 CLIENT: IRS PROJECT: Buckley AFB  
 DATE/TIME RECEIVED: 6/30/10 9:00 (MM/DD/YY 24:00) NUMBER OF COOLERS RECEIVED: 1  
 METHOD OF DELIVERY: FEDEX UPS ACCUTEST COURIER GREYHOUND DELIVERY OTHER  
 AIRBILL NUMBERS: 873 79688361

**COOLER INFORMATION**

- CUSTODY SEAL NOT PRESENT OR NOT INTACT
- CHAIN OF CUSTODY NOT RECEIVED (COC)
- ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- TEMPERATURE CRITERIA NOT MET
- WET ICE PRESENT

**TRIP BLANK INFORMATION**

- TRIP BLANK PROVIDED
- TRIP BLANK NOT PROVIDED
- TRIP BLANK NOT ON COC
- TRIP BLANK INTACT
- TRIP BLANK NOT INTACT
- RECEIVED WATER TRIP BLANK
- RECEIVED SOIL TRIP BLANK

**MISC. INFORMATION**

NUMBER OF ENCORES ? 0  
 NUMBER OF 5035 FIELD KITS ? 0  
 NUMBER OR LAB FILTERED METALS ? 0

**TEMPERATURE INFORMATION**

IR THERM ID 101 CORR. FACTOR 1.4  
 OBSERVED TEMPS: 2.6  
 CORRECTED TEMPS: 3.0

**SAMPLE INFORMATION**

- SAMPLE LABELS PRESENT ON ALL BOTTLES
- INCORRECT NUMBER OF CONTAINERS USED
- SAMPLE RECEIVED IMPROPERLY PRESERVED
- INSUFFICIENT VOLUME FOR ANALYSIS
- DATES/TIMES ON COC DO NOT MATCH SAMPLE LABEL
- ID'S ON COC DO NOT MATCH LABEL
- VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- UNCLEAR FILTERING OR COMPOSITING INSTRUCTIONS
- SAMPLE CONTAINER(S) RECEIVED BROKEN
- % SOLIDS JAR NOT RECEIVED
- 5035 FIELD KIT FROZEN WITHIN 48 HOUR'S
- RESIDUAL CHLORINE PRESENT

(APPLICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS)

SUMMARY OF COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

TECHNICIAN SIGNATURE/DATE [Signature] 6/30/10 REVIEWER SIGNATURE/DATE [Signature] 06-30-10  
 NF 10/09 RECEIPT CONFIRMATION 100609 (2).xls

4.1  
4



Technical Report for

Innovative Technical Solutions, Inc

Buckley AFB, Aurora, CO

07030.0007

Accutest Job Number: F74812

Sampling Date: 06/30/10

Report to:

ITSI, CO

pschwarzweiler@itsi.com

ATTN: Paul Schwarzweiler

Total number of pages in report: **24**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

  
Harry Behzadi, Ph.D.  
Laboratory Director

Client Service contact: Sue Bell 407-425-6700

Certifications: FL (DOH E83510), NC (573), NJ (FL002), MA (FL946), IA (366), LA (03051), KS (E-10327), SC, AK  
This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.  
Test results relate only to samples analyzed.



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## Sample Summary

Innovative Technical Solutions, Inc

**Job No:** F74812

Buckley AFB, Aurora, CO

Project No: 07030.0007

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
F74812-1	06/30/10	10:30 CV	07/01/10	AQ	Ground Water	FWA-MW38-06302010
F74812-2	06/30/10	11:55 CV	07/01/10	AQ	Ground Water	FDA-MW26-06302010
F74812-3	06/30/10	14:20 CV	07/01/10	AQ	Ground Water	FDA-MW22-06302010
F74812-4	06/30/10	12:30 CV	07/01/10	AQ	Ground Water	FDA-MW23-06302010
F74812-5	06/30/10	14:45 CV	07/01/10	AQ	Ground Water	FWA-MW43-06302010
F74812-6	06/30/10	16:58 CV	07/01/10	AQ	Equipment Blank	EQUIPMENTBLANK-06302010
F74812-7	06/30/10	18:30 CV	07/01/10	AQ	Trip Blank Water	TB-06302010

## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** Innovative Technical Solutions, Inc

**Job No:** F74812

**Site:** Buckley AFB, Aurora, CO

**Report Date** 7/27/2010 5:38:27 PM

6 Samples, 1 Trip Blank were collected on 06/30/2010 and received at Accutest on 07/01/2010 properly preserved, at 2.8 Deg. C and intact. These Samples received an Accutest job number of F74812. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Volatiles by GCMS By Method SW846 8260B

**Matrix:** AQ

**Batch ID:** VC2886

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F74777-3MS, F74777-3MSD were used as the QC samples indicated.

RPD(s) for MSD for 1,2-Dichloroethane, Bromodichloromethane, cis-1,2-Dichloroethylene, Trichloroethylene are outside control limits for sample F74777-3MSD. Probable cause due to sample homogeneity.

**Matrix:** AQ

**Batch ID:** VN1801

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F74777-19MS, F74777-19MSD were used as the QC samples indicated.

### Metals By Method SW846 6010B

**Matrix:** AQ

**Batch ID:** MP18627

All samples were digested within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F74745-4FDUP, F74745-4FMS, F74745-4FMSD, F74745-4FSDL were used as the QC samples for metals.

RPD(s) for Duplicate for Iron are outside control limits for sample MP18627-D1. RPD acceptable due to low duplicate and sample concentrations.

RPD(s) for Serial Dilution for Iron, Sodium are outside control limits for sample MP18627-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

### Wet Chemistry By Method EPA 300/SW846 9056

**Matrix:** AQ

**Batch ID:** GP15140

All samples were prepared within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F74800-5DUP, F74800-5MS were used as the QC samples for Sulfate, Chloride.

Matrix Spike Recovery(s) for Chloride, Sulfate are outside control limits. Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

### Wet Chemistry By Method SM18 4500NO3E

**Matrix:** AQ

**Batch ID:** GN40510

All method blanks for this batch meet method specific criteria.

Sample(s) F74809-1ADUP, F74809-1AMS were used as the QC samples for Nitrogen, Nitrate + Nitrite.

GN40510-S1 for Nitrogen, Nitrate + Nitrite: Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

### Wet Chemistry By Method SM19 2320B

**Matrix:** AQ

**Batch ID:** GN40304

All samples were analyzed within the recommended method holding time.  
All method blanks for this batch meet method specific criteria.  
Sample(s) F74811-9DUP, F74811-9MS, F74811-9MSD were used as the QC samples for Alkalinity, Total as CaCO<sub>3</sub>.

### Wet Chemistry By Method SM19 5310B/SW 9060A

**Matrix:** AQ **Batch ID:** GP15181

All samples were prepared within the recommended method holding time.  
All samples were analyzed within the recommended method holding time.  
All method blanks for this batch meet method specific criteria.  
Sample(s) F74777-17DUP, F74777-17MS were used as the QC samples for Total Organic Carbon.  
Matrix Spike Recovery(s) for Total Organic Carbon are outside control limits. Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

### Wet Chemistry By Method SM20 4500S F

**Matrix:** AQ **Batch ID:** GN40318

All samples were analyzed within the recommended method holding time.  
All method blanks for this batch meet method specific criteria.  
Sample(s) F74877-1MS, F74877-1DUP were used as the QC samples for Sulfide.  
RPD(s) for Duplicate for Sulfide are outside control limits for sample GN40318-D1. RPD acceptable due to low duplicate and sample concentrations.

Accutest Laboratories Southeast (ALSE) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALSE and as stated on the COC. ALSE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALSE Quality Manual except as noted above. This report is to be used in its entirety. ALSE is not responsible for any assumptions of data quality if partial data packages are used

Narrative prepared by:

\_\_\_\_\_  
Svetlana Izosimova, QA Officer (signature on file)

Date: July 27, 2010



## Sample Results

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## Report of Analysis

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## Report of Analysis

<b>Client Sample ID:</b>	FWA-MW38-06302010	
<b>Lab Sample ID:</b>	F74812-1	<b>Date Sampled:</b> 06/30/10
<b>Matrix:</b>	AQ - Ground Water	<b>Date Received:</b> 07/01/10
<b>Method:</b>	SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b>	Buckley AFB, Aurora, CO	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C072217.D	1	07/12/10	AJ	n/a	n/a	VC2886
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	2.7	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		87-116%
17060-07-0	1,2-Dichloroethane-D4	101%		76-127%
2037-26-5	Toluene-D8	101%		86-112%
460-00-4	4-Bromofluorobenzene	102%		84-120%

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	FDA-MW26-06302010	<b>Date Sampled:</b>	06/30/10
<b>Lab Sample ID:</b>	F74812-2	<b>Date Received:</b>	07/01/10
<b>Matrix:</b>	AQ - Ground Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	Buckley AFB, Aurora, CO		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C072218.D	1	07/12/10	AJ	n/a	n/a	VC2886
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	1.7	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		87-116%
17060-07-0	1,2-Dichloroethane-D4	99%		76-127%
2037-26-5	Toluene-D8	99%		86-112%
460-00-4	4-Bromofluorobenzene	98%		84-120%

U = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> FDA-MW22-06302010	
<b>Lab Sample ID:</b> F74812-3	<b>Date Sampled:</b> 06/30/10
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 07/01/10
<b>Method:</b> SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C072219.D	1	07/12/10	AJ	n/a	n/a	VC2886
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	76.8	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	2.5	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		87-116%
17060-07-0	1,2-Dichloroethane-D4	103%		76-127%
2037-26-5	Toluene-D8	100%		86-112%
460-00-4	4-Bromofluorobenzene	98%		84-120%

U = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> FDA-MW22-06302010 <b>Lab Sample ID:</b> F74812-3 <b>Matrix:</b> AQ - Ground Water <b>Project:</b> Buckley AFB, Aurora, CO	<b>Date Sampled:</b> 06/30/10 <b>Date Received:</b> 07/01/10 <b>Percent Solids:</b> n/a
---	---

### Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	493000	1000	100	ug/l	1	07/08/10	07/08/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Iron	794	300	35	ug/l	1	07/08/10	07/08/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Magnesium	68800	5000	100	ug/l	1	07/08/10	07/08/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Potassium	8840 J	10000	500	ug/l	1	07/08/10	07/08/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Sodium	831000	200000	15000	ug/l	20	07/08/10	07/09/10 RS	SW846 6010B <sup>2</sup>	SW846 3010A <sup>3</sup>

- (1) Instrument QC Batch: MA8219
- (2) Instrument QC Batch: MA8221
- (3) Prep QC Batch: MP18627

RL = Reporting Limit  
 MDL = Method Detection Limit

U = Indicates a result < MDL  
 J = Indicates a result > = MDL but < RL

## Report of Analysis

<b>Client Sample ID:</b> FDA-MW22-06302010 <b>Lab Sample ID:</b> F74812-3 <b>Matrix:</b> AQ - Ground Water <b>Project:</b> Buckley AFB, Aurora, CO	<b>Date Sampled:</b> 06/30/10 <b>Date Received:</b> 07/01/10 <b>Percent Solids:</b> n/a
---	---

### General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	223	5.0	2.5	mg/l	1	07/02/10	CC	SM19 2320B
Chloride	414	50	25	mg/l	25	07/01/10 20:22	CC	EPA 300/SW846 9056
Nitrogen, Nitrate + Nitrite	8.5	2.5	1.3	mg/l	25	07/22/10	SJL	SM18 4500NO3E
Sulfate	2310	50	25	mg/l	25	07/01/10 20:22	CC	EPA 300/SW846 9056
Sulfide	0.97 J	1.0	0.60	mg/l	1	07/06/10	CP	SM20 4500S F
Total Organic Carbon	3.9	1.0	0.50	mg/l	1	07/10/10 20:03	LE	SM19 5310B/SW 9060A

RL = Reporting Limit  
 MDL = Method Detection Limit

U = Indicates a result < MDL  
 J = Indicates a result > = MDL but < RL

## Report of Analysis

<b>Client Sample ID:</b> FDA-MW23-06302010	
<b>Lab Sample ID:</b> F74812-4	<b>Date Sampled:</b> 06/30/10
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 07/01/10
<b>Method:</b> SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C072220.D	1	07/12/10	AJ	n/a	n/a	VC2886
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		87-116%
17060-07-0	1,2-Dichloroethane-D4	99%		76-127%
2037-26-5	Toluene-D8	97%		86-112%
460-00-4	4-Bromofluorobenzene	100%		84-120%

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

3.4  
3

<b>Client Sample ID:</b> FDA-MW23-06302010	<b>Date Sampled:</b> 06/30/10
<b>Lab Sample ID:</b> F74812-4	<b>Date Received:</b> 07/01/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

### Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	543000	2000	200	ug/l	2	07/08/10	07/09/10 RS	SW846 6010B <sup>2</sup>	SW846 3010A <sup>3</sup>
Iron	271 J	300	35	ug/l	1	07/08/10	07/08/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Magnesium	44800	5000	100	ug/l	1	07/08/10	07/08/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Potassium	9210 J	10000	500	ug/l	1	07/08/10	07/08/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Sodium	1020000	500000	38000	ug/l	50	07/08/10	07/09/10 RS	SW846 6010B <sup>2</sup>	SW846 3010A <sup>3</sup>

- (1) Instrument QC Batch: MA8219
- (2) Instrument QC Batch: MA8221
- (3) Prep QC Batch: MP18627

RL = Reporting Limit  
MDL = Method Detection Limit

U = Indicates a result < MDL  
J = Indicates a result > = MDL but < RL

## Report of Analysis

<b>Client Sample ID:</b> FDA-MW23-06302010	<b>Date Sampled:</b> 06/30/10
<b>Lab Sample ID:</b> F74812-4	<b>Date Received:</b> 07/01/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

### General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	85.3	5.0	2.5	mg/l	1	07/02/10	CC	SM19 2320B
Chloride	861	50	25	mg/l	25	07/01/10 20:40	CC	EPA 300/SW846 9056
Nitrogen, Nitrate + Nitrite	19.4	5.0	2.5	mg/l	50	07/22/10	SJL	SM18 4500NO3E
Sulfate	2190	50	25	mg/l	25	07/01/10 20:40	CC	EPA 300/SW846 9056
Sulfide	0.60 U	1.0	0.60	mg/l	1	07/06/10	CP	SM20 4500S F
Total Organic Carbon	4.1	1.0	0.50	mg/l	1	07/10/10 20:18	LE	SM19 5310B/SW 9060A

RL = Reporting Limit  
 MDL = Method Detection Limit

U = Indicates a result < MDL  
 J = Indicates a result > = MDL but < RL

## Report of Analysis

3.5  
3

<b>Client Sample ID:</b> FWA-MW43-06302010	
<b>Lab Sample ID:</b> F74812-5	<b>Date Sampled:</b> 06/30/10
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 07/01/10
<b>Method:</b> SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C072221.D	1	07/12/10	AJ	n/a	n/a	VC2886
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

**VOA Special List**

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		87-116%
17060-07-0	1,2-Dichloroethane-D4	103%		76-127%
2037-26-5	Toluene-D8	96%		86-112%
460-00-4	4-Bromofluorobenzene	94%		84-120%

U = Not detected      MDL - Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

## Report of Analysis

3.5  
3

<b>Client Sample ID:</b> FWA-MW43-06302010	<b>Date Sampled:</b> 06/30/10
<b>Lab Sample ID:</b> F74812-5	<b>Date Received:</b> 07/01/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

### Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	464000	1000	100	ug/l	1	07/08/10	07/08/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Iron	10300	300	35	ug/l	1	07/08/10	07/08/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Magnesium	97000	5000	100	ug/l	1	07/08/10	07/08/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Potassium	10800	10000	500	ug/l	1	07/08/10	07/08/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Sodium	1140000	500000	38000	ug/l	50	07/08/10	07/09/10 RS	SW846 6010B <sup>2</sup>	SW846 3010A <sup>3</sup>

- (1) Instrument QC Batch: MA8219
- (2) Instrument QC Batch: MA8221
- (3) Prep QC Batch: MP18627

RL = Reporting Limit  
MDL = Method Detection Limit

U = Indicates a result < MDL  
J = Indicates a result > = MDL but < RL

## Report of Analysis

35  
3

<b>Client Sample ID:</b> FWA-MW43-06302010	<b>Date Sampled:</b> 06/30/10
<b>Lab Sample ID:</b> F74812-5	<b>Date Received:</b> 07/01/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

### General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	232	5.0	2.5	mg/l	1	07/02/10	CC	SM19 2320B
Chloride	575	50	25	mg/l	25	07/01/10 20:58	CC	EPA 300/SW846 9056
Nitrogen, Nitrate + Nitrite	8.3	2.5	1.3	mg/l	25	07/22/10	SJL	SM18 4500NO3E
Sulfate	2060	100	50	mg/l	50	07/02/10 09:52	CC	EPA 300/SW846 9056
Sulfide	0.61 J	1.0	0.60	mg/l	1	07/06/10	CP	SM20 4500S F
Total Organic Carbon	3.7	1.0	0.50	mg/l	1	07/10/10 20:33	LE	SM19 5310B/SW 9060A

RL = Reporting Limit  
MDL = Method Detection Limit

U = Indicates a result < MDL  
J = Indicates a result > = MDL but < RL

## Report of Analysis

<b>Client Sample ID:</b>	EQUIPMENTBLANK-06302010		
<b>Lab Sample ID:</b>	F74812-6	<b>Date Sampled:</b>	06/30/10
<b>Matrix:</b>	AQ - Equipment Blank	<b>Date Received:</b>	07/01/10
<b>Method:</b>	SW846 8260B	<b>Percent Solids:</b>	n/a
<b>Project:</b>	Buckley AFB, Aurora, CO		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C072222.D	1	07/12/10	AJ	n/a	n/a	VC2886
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		87-116%
17060-07-0	1,2-Dichloroethane-D4	99%		76-127%
2037-26-5	Toluene-D8	98%		86-112%
460-00-4	4-Bromofluorobenzene	95%		84-120%

U = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> TB-06302010	
<b>Lab Sample ID:</b> F74812-7	<b>Date Sampled:</b> 06/30/10
<b>Matrix:</b> AQ - Trip Blank Water	<b>Date Received:</b> 07/01/10
<b>Method:</b> SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0044453.D	1	07/13/10	MM	n/a	n/a	VN1801
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		87-116%
17060-07-0	1,2-Dichloroethane-D4	98%		76-127%
2037-26-5	Toluene-D8	93%		86-112%
460-00-4	4-Bromofluorobenzene	90%		84-120%

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound



## Misc. Forms

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### Custody Documents and Other Forms

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Includes the following where applicable:

- Certification Exceptions
- Chain of Custody



2730 Shadelands Drive, Suite 100  
Walnut Creek, California 94598  
(925) 946-3100 (925) 256-8998 (fax)

Local Address: **3333 S WARDWORTH BLVD**  
**STE 220**  
**LAKEWOOD CO 80227**

005852  
**F74812**  
**Chain-Of-Custody**

Project Name and Number: **BUCKLEY AFB | 07030.0007**  
Project Manager: **KELLY RUDER**  
Site Location: **AURORA, CA**

Laboratory Name: **ACCUTEST LAB. SE, INC.**  
Address: **4405 VINELAND RD**  
Contact Name: **SUE BELL**  
Phone: **407.425.6700**

Date: **06/30/2010**  
Page: **1** of **1**

Sample I.D.	Date	Time	Sample Depth	No. of Containers	Sample Matrix	Analysis:	Preservative:	Container type:	Special Instructions/Comments
1 FWA-MW38-06302010	6/30/10	1030	30'	3	GW	VOC's (8260E)	HCl	VOA	
2 FDA-MW26-06302010		1155	38'	3		SM9 5310B / SM9 5160A / 6010B / (Ca, Mg, K, Na, Fe) / SM18 4500DZE (NO2-NO3) / SM2320B (ALKALINITY) / EPA 300.0 / (CHLORIDE) / SM20 4500SF (SULFIDES)	HCl	VOA POLY POLY POLY POLY POLY	ONLY VOC'S
3 FDA-MW22-06302010		1420	55'	11			HCl	VOA POLY POLY POLY POLY POLY	ONLY VOC'S
4 FDA-MW23-06302010		1230	49'	11			HCl	VOA POLY POLY POLY POLY POLY	
5 FWA-MW43-06302010		1445	50'	11			HCl	VOA POLY POLY POLY POLY POLY	
6 EQUIPMENT BLANK-06302010		1658		3	DI		HCl	VOA POLY POLY POLY POLY POLY	
7 TRIP BLANK				4			HCl	VOA POLY POLY POLY POLY POLY	

Sampled By: **CHARLES VANHEUVELN / BROOKS DILLARD**  
Signature: *[Signature]*  
Special Instructions:  
Send Results to: **EDAWSON@ITSI.COM**  
Turnaround Time: **STANDARD**

Sampler: **CHARLES VANHEUVELN / BROOKS DILLARD**  
Relinquished By/Affiliation: *[Signature]* ITS1  
Date: 6/30/10 Time: 1930  
Received By/Affiliation: *[Signature]* FEDEX  
Date: 6/30/10 Time: 0900  
Courier/Airbill No.: **8723 7968 8360**  
**8515 9875 4299**

Original - Laboratory Yellow - Field/Office

Graphics/Stationery/chain\_custody0408.ai

4.1  
4

**ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION**

ACCUTEST'S JOB NUMBER: F74812 CLIENT: DISE PROJECT: Buckley AFB  
 DATE/TIME RECEIVED: 070110 0900 (MM/DD/YY 24:00) NUMBER OF COOLERS RECEIVED: 2  
 METHOD OF DELIVERY: KEDEX UPS ACCUTEST COURIER GREYHOUND DELIVERY OTHER  
 AIRBILL NUMBERS: 8723 7168 8350

**COOLER INFORMATION**

- CUSTODY SEAL NOT PRESENT OR NOT INTACT
- CHAIN OF CUSTODY NOT RECEIVED (COC)
- ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- TEMPERATURE CRITERIA NOT MET
- WET ICE PRESENT

**TRIP BLANK INFORMATION**

- TRIP BLANK PROVIDED
- TRIP BLANK NOT PROVIDED
- TRIP BLANK NOT ON COC
- TRIP BLANK INTACT
- TRIP BLANK NOT INTACT
- RECEIVED WATER TRIP BLANK
- RECEIVED SOIL TRIP BLANK

**MISC. INFORMATION**

NUMBER OF ENCORES ? \_\_\_\_\_  
 NUMBER OF 5035 FIELD KITS ? \_\_\_\_\_  
 NUMBER OR LAB FILTERED METALS ? \_\_\_\_\_

**TEMPERATURE INFORMATION**

- IR THERM ID 3 CORR. FACTOR 1.4
- OBSERVED TEMPS: \_\_\_\_\_
- CORRECTED TEMPS: 28

**SAMPLE INFORMATION**

- SAMPLE LABELS PRESENT ON ALL BOTTLES
- INCORRECT NUMBER OF CONTAINERS USED
- SAMPLE RECEIVED IMPROPERLY PRESERVED
- INSUFFICIENT VOLUME FOR ANALYSIS
- DATES/TIMES ON COC DO NOT MATCH SAMPLE LABEL
- ID'S ON COC DO NOT MATCH LABEL
- VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- UNCLEAR FILTERING OR COMPOSITING INSTRUCTIONS
- SAMPLE CONTAINER(S) RECEIVED BROKEN
- % SOLIDS JAR NOT RECEIVED
- 5035 FIELD KIT FROZEN WITHIN 48 HOUR'S
- RESIDUAL CHLORINE PRESENT

(APPLICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS)

SUMMARY OF COMMENTS: FOR SAMPLE #2 COC meets MW-20 2 vials meets only (MW)

TECHNICIAN SIGNATURE/DATE: ET 070110 REVIEWER SIGNATURE/DATE: [Signature] 07-1-10

NF 10/09

RECEIPT CONFIRMATION 100609 (2).xls

4  
4



2730 Shadelands Drive, Suite 100  
Walnut Creek, California 94598  
(925) 946-3700 (925) 256-8998 (fax)

Local Address: **3333 S WADSWORTH BLVD**  
**STE 220**  
**LAKEWOOD CO 80127**

**F74812**  
005852  
**Chain-Of-Custody**

Project Name and Number: **BUCKLEY AFB 07030.0007**  
Project Manager: **KELLY RUDER**  
Site Location: **AURORA, CA**

Laboratory Name: **ACCUTEST LAB. SE, INC.**  
Address: **4405 VINLAND** Contact Name: **SUE BELL**  
**STE C15, ORLANDO FL 32811** Phone: **407.428.6700**

Date: **06/30/2010**  
Page: **1** of **1**

Sample I.D.	Date	Time	Sample Depth	No. of Containers	Sample Matrix	Analysis:	Preservative:	Container Type:	Special Instructions/Comments
1 FWA-MW38-06302010	6/30/10	1030	30'	3	GW	VOC's (CALIF)	HCL	VOA	
2 FDA-MW26-06302010		1155	38'	3	GW	SM9 5310B SM 9060A 6010B SM 8 7500DSE (CALIF) (MINE)	HCL	VOA Poly Poly Poly Poly Poly	ONLY VOC's
3 FDA-MW22-06302010		1420	55'	11	GW	SM 2320B (MINE)	HCL	VOA Poly Poly Poly Poly Poly	ONLY VOC's
4 FDA-MW23-06302010		1230	49'	11	GW	SM 2320B (CALIF) (MINE)	HCL	VOA Poly Poly Poly Poly Poly	
5 FWA-MW43-06302010		1445	50'	11	GW	SM 2320B (CALIF) (MINE)	HCL	VOA Poly Poly Poly Poly Poly	
6 EQUIPMENT BLANK-06302010		1658	/	3	DI		HCL	VOA Poly Poly Poly Poly Poly	
7 TRIP BLANK TB-06302010		1830	/	4	WB		HCL	VOA Poly Poly Poly Poly Poly	

Sampled By: **CHARLES VANHEUVELD / BROOKS DILLARD**  
Signature: *[Signature]*  
Special Instructions: \_\_\_\_\_  
Send Results to: **EDAWSON@ITSI.COM**  
(w/fax #)  
Turnaround Time: **STANDARD**

Sampler: **CHARLES VANHEUVELD / BROOKS DILLARD**  
Relinquished By/Affiliation: *[Signature]* ITS.I  
Date: **6/30/10** Time: **1930**  
Received By/Affiliation: **FEDEX**  
Date: **6/30/10** Time: **0900**  
Courier/Airbill No.: **8515 9875 4299**

**Job Change Order:** F74812\_7/13/2010

<b>Requested Date:</b>	7/13/2010	<b>Received Date:</b>	7/1/2010
<b>Account Name:</b>	Innovative Technical Solutions, Inc	<b>Due Date:</b>	7/15/2010
<b>Project Description:</b>	Buckley AFB, Aurora, CO	<b>Deliverable:</b>	FULT1
<b>CSR:</b>	SB	<b>TAT (Days):</b>	14

**Sample #:** F74812-7  
**Change:** Per Eric M at ITSI via e-mail 07.12.10, TRIP BLANK should be TB-06302010, collected at 18:30. Revised coc sent in.

TRIP BLANK

**Above Changes** Eric M. at ITSI via e-mail 07.12.10 **Date:** 7/13/2010

To Client: This Change Order is confirmation of the revisions, previously discussed with the Accutest Client Service Representative.

Page 1 of 1

**F74812: Chain of Custody**  
**Page 4 of 4**



Technical Report for

Innovative Technical Solutions, Inc

Buckley AFB, Aurora, CO

07030.0007

Accutest Job Number: F74877

Sampling Dates: 07/01/10 - 07/02/10

Report to:

ITSI, CO

pschwarzweiler@itsi.com

ATTN: Paul Schwarzweiler

Total number of pages in report: **52**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

  
Harry Behzadi, Ph.D.  
Laboratory Director

Client Service contact: Sue Bell 407-425-6700

Certifications: FL (DOH E83510), NC (573), NJ (FL002), MA (FL946), IA (366), LA (03051), KS (E-10327), SC, AK  
This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.  
Test results relate only to samples analyzed.



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## Sample Summary

Innovative Technical Solutions, Inc

**Job No:** F74877

Buckley AFB, Aurora, CO

Project No: 07030.0007

Sample Number	Collected		Matrix Received	Code	Type	Client Sample ID
	Date	Time By				
F74877-1	07/01/10	11:00 BDCH	07/03/10	AQ	Ground Water	FDA-MW49-07012010
F74877-1D	07/01/10	11:00 BDCH	07/03/10	AQ	Water Dup/MSD	FDA-MW49-07012010
F74877-1S	07/01/10	11:00 BDCH	07/03/10	AQ	Water Matrix Spike	FDA-MW49-07012010
F74877-2	07/01/10	13:35 BDCH	07/03/10	AQ	Ground Water	PW-13-07012010
F74877-2D	07/01/10	13:35 BDCH	07/03/10	AQ	Water Dup/MSD	PW-13-07012010
F74877-2S	07/01/10	13:35 BDCH	07/03/10	AQ	Water Matrix Spike	PW-13-07012010
F74877-3	07/01/10	14:25 BDCH	07/03/10	AQ	Ground Water	PW-14-07012010
F74877-4	07/01/10	14:25 BDCH	07/03/10	AQ	Ground Water	PW-14-07012010DUP
F74877-5	07/01/10	16:15 BDCH	07/03/10	AQ	Ground Water	PW-17-07012010
F74877-6	07/01/10	16:15 BDCH	07/03/10	AQ	Ground Water	PW-17-07012010DUP
F74877-7	07/01/10	16:45 BDCH	07/03/10	AQ	Ground Water	PW-15-07012010
F74877-7D	07/01/10	16:45 BDCH	07/03/10	AQ	Water Dup/MSD	PW-15-07012010
F74877-7S	07/01/10	16:45 BDCH	07/03/10	AQ	Water Matrix Spike	PW-15-07012010



## Sample Summary

(continued)

Innovative Technical Solutions, Inc

**Job No:** F74877

Buckley AFB, Aurora, CO

Project No: 07030.0007

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
F74877-8	07/01/10	17:55 BDCH	07/03/10	AQ	Equipment Blank	EQUIPMENTBLANK-07012010
F74877-9	07/02/10	10:20 BDCH	07/03/10	AQ	Ground Water	FWA-TW65-07022010
F74877-10	07/02/10	13:15 BDCH	07/03/10	AQ	Ground Water	PW-21-07022010
F74877-11	07/02/10	11:45 BDCH	07/03/10	AQ	Ground Water	FWA-MW41-07022010
F74877-12	07/02/10	15:25 BDCH	07/03/10	AQ	Ground Water	FWA-MW52-07022010
F74877-13	07/02/10	15:55 BDCH	07/03/10	AQ	Ground Water	FDA-MW39-07022010
F74877-14	07/02/10	16:30 BDCH	07/03/10	AQ	Equipment Blank	EQUIPMENTBLANK-07022010
F74877-15	07/02/10	17:30 BDCH	07/03/10	AQ	Trip Blank Water	TB-07022010

## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** Innovative Technical Solutions, Inc

**Job No:** F74877

**Site:** Buckley AFB, Aurora, CO

**Report Date** 7/28/2010 10:42:06

14 Samples, 1 Trip Blank were collected on between 07/01/2010 and 07/02/2010 and received at Accutest on 07/03/2010 properly preserved, at 2.8 Deg. C and intact. These Samples received an Accutest job number of F74877. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Volatiles by GCMS By Method SW846 8260B

**Matrix:** AQ **Batch ID:** VE19

All samples were analyzed within the recommended method holding time.

Sample(s) F74877-2MS, F74877-2MSD were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

MS and/or MSD Recovery(s) for Bromodichloromethane, Tetrachloroethylene are outside control limits. Probable cause due to matrix interference.

RPD(s) for MSD for Bromodichloromethane are outside control limits for sample F74877-2MSD. Probable cause due to sample homogeneity.

**Matrix:** AQ **Batch ID:** VE20

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F74877-7DUP, F74877-7MS, F74877-7MSD were used as the QC samples indicated.

**Matrix:** AQ **Batch ID:** VJ3279

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F74877-12DUP, F75042-1MS, F75042-1MSD were used as the QC samples indicated.

RPD(s) for Duplicate for 1,1-Dichloroethylene, trans-1,2-Dichloroethylene are outside control limits for sample F74877-12DUP. Probable cause due to sample homogeneity.

**Matrix:** AQ **Batch ID:** VM1789

F74877-1: Confirmation run.

**Matrix:** AQ **Batch ID:** VM1790

All method blanks for this batch meet method specific criteria.

Sample(s) F74980-15MS, F74980-15MSD were used as the QC samples indicated.

### Volatiles by GC By Method RSKSOP-147/175

**Matrix:** AQ **Batch ID:** GFF286

All samples were analyzed within the recommended method holding time.

Sample(s) F74877-7DUP, F74877-7MS were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

F74877-10: Sample was not preserved to a pH < 2; reported results are considered minimum values.

F74877-10: Sample was not preserved to a pH < 2; reported results are considered minimum values.

**Matrix:** AQ **Batch ID:** GFF291

All samples were analyzed within the recommended method holding time.

Sample(s) F75068-1DUP, F75068-1MS were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

### Metals By Method SW846 6010B

**Matrix:** AQ **Batch ID:** MP18641

All samples were digested within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F74877-1DUP, F74877-1MS, F74877-1MSD, F74877-1SDL were used as the QC samples for metals.

Matrix Spike Recovery(s) for Calcium, Magnesium, Sodium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

RPD(s) for Duplicate for Iron are outside control limits for sample MP18641-D1. RPD acceptable due to low duplicate and sample concentrations.

**Matrix:** AQ

**Batch ID:** MP18642

All samples were digested within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F74877-7DUP, F74877-7MS, F74877-7MSD, F74877-7SDL were used as the QC samples for metals.

Matrix Spike Recovery(s) for Sodium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

### Wet Chemistry By Method EPA 300/SW846 9056

**Matrix:** AQ

**Batch ID:** GP15156

All samples were prepared within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F74877-7DUP, F74877-7MS were used as the QC samples for Sulfate, Chloride.

Matrix Spike Recovery(s) for Chloride, Sulfate are outside control limits. Spike recovery indicates possible matrix interference. For method performance in clean matrix refer to Blank Spike.

### Wet Chemistry By Method SM18 4500NO3E

**Matrix:** AQ

**Batch ID:** GN40580

All method blanks for this batch meet method specific criteria.

Sample(s) F74877-1DUP, F74877-1MS were used as the QC samples for Nitrogen, Nitrate + Nitrite.

### Wet Chemistry By Method SM19 2320B

**Matrix:** AQ

**Batch ID:** GN40327

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F74877-1DUP, F74877-1MSD were used as the QC samples for Alkalinity, Total as CaCO<sub>3</sub>.

MS/MSD Recovery(s) for Alkalinity, Total as CaCO<sub>3</sub> are outside control limits. Spike recovery indicates possible matrix interference. For method performance in clean matrix refer to Blank Spike.

### Wet Chemistry By Method SM19 5310B/SW 9060A

**Matrix:** AQ

**Batch ID:** GP15207

All samples were prepared within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F74877-1DUP, F74877-1MS were used as the QC samples for Total Organic Carbon.

**Matrix:** AQ

**Batch ID:** GP15208

All samples were prepared within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F74877-7DUP, F74877-7MS were used as the QC samples for Total Organic Carbon.

### Wet Chemistry By Method SM20 4500S F

**Matrix:** AQ

**Batch ID:** GN40318

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F74877-1MS, F74877-1DUP were used as the QC samples for Sulfide.

RPD(s) for Duplicate for Sulfide are outside control limits for sample GN40318-D1. RPD acceptable due to low duplicate and sample concentrations.

**Matrix:** AQ

**Batch ID:** GN40336

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F74877-7DUP, F74877-7MS were used as the QC samples for Sulfide.

Accutest Laboratories Southeast (ALSE) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALSE and as stated on the COC. ALSE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALSE Quality Manual except as noted above. This report is to be used in its entirety. ALSE is not responsible for any assumptions of data quality if partial data packages are used

Narrative prepared by:

\_\_\_\_\_  
Svetlana Izosimova, QA Officer (signature on file)

Date: July 28, 2010



## Sample Results

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## Report of Analysis

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## Report of Analysis

<b>Client Sample ID:</b>	FDA-MW49-07012010	<b>Date Sampled:</b>	07/01/10
<b>Lab Sample ID:</b>	F74877-1	<b>Date Received:</b>	07/03/10
<b>Matrix:</b>	AQ - Ground Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	Buckley AFB, Aurora, CO		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0044282.D	10	07/15/10	MM	n/a	n/a	VM1790
Run #2 <sup>a</sup>	M0044265.D	20	07/14/10	MM	n/a	n/a	VM1789

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	2.8 U	10	2.8	ug/l	
75-35-4	1,1-Dichloroethylene	2.9 U	10	2.9	ug/l	
107-06-2	1,2-Dichloroethane	3.3 U	10	3.3	ug/l	
156-59-2	cis-1,2-Dichloroethylene	4.4	10	3.2	ug/l	J
156-60-5	trans-1,2-Dichloroethylene	3.4 U	10	3.4	ug/l	
127-18-4	Tetrachloroethylene	907	10	4.4	ug/l	
79-01-6	Trichloroethylene	20.2	10	2.4	ug/l	
75-01-4	Vinyl chloride	2.8 U	10	2.8	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%	99%	87-116%
17060-07-0	1,2-Dichloroethane-D4	92%	97%	76-127%
2037-26-5	Toluene-D8	107%	108%	86-112%
460-00-4	4-Bromofluorobenzene	100%	105%	84-120%

(a) Confirmation run.

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

3.1  
3

<b>Client Sample ID:</b> FDA-MW49-07012010	<b>Date Sampled:</b> 07/01/10
<b>Lab Sample ID:</b> F74877-1	<b>Date Received:</b> 07/03/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

### Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	420000	1000	100	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Iron	35 U	300	35	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Magnesium	102000	5000	100	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Potassium	8820 J	10000	500	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Sodium	1110000	200000	15000	ug/l	20	07/12/10	07/14/10 RS	SW846 6010B <sup>2</sup>	SW846 3010A <sup>3</sup>

- (1) Instrument QC Batch: MA8226
- (2) Instrument QC Batch: MA8231
- (3) Prep QC Batch: MP18641

RL = Reporting Limit  
MDL = Method Detection Limit

U = Indicates a result < MDL  
J = Indicates a result > = MDL but < RL

## Report of Analysis

<b>Client Sample ID:</b> FDA-MW49-07012010	<b>Date Sampled:</b> 07/01/10
<b>Lab Sample ID:</b> F74877-1	<b>Date Received:</b> 07/03/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

### General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	345	5.0	2.5	mg/l	1	07/07/10	CN	SM19 2320B
Chloride	226	20	10	mg/l	10	07/03/10 19:57	CC	EPA 300/SW846 9056
Nitrogen, Nitrate + Nitrite	9.9	2.0	1.0	mg/l	20	07/27/10 08:00	SJL	SM18 4500NO3E
Sulfate	2620	100	50	mg/l	50	07/04/10 03:10	CC	EPA 300/SW846 9056
Sulfide	0.60 U	1.0	0.60	mg/l	1	07/06/10	CP	SM20 4500S F
Total Organic Carbon	7.7	1.0	0.50	mg/l	1	07/15/10 17:15	LT	SM19 5310B/SW 9060A

RL = Reporting Limit  
MDL = Method Detection Limit

U = Indicates a result < MDL  
J = Indicates a result > = MDL but < RL

## Report of Analysis

<b>Client Sample ID:</b> PW-13-07012010	
<b>Lab Sample ID:</b> F74877-2	<b>Date Sampled:</b> 07/01/10
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 07/03/10
<b>Method:</b> SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E000560.D	1	07/14/10	TD	n/a	n/a	VE19
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	8.5	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		87-116%
17060-07-0	1,2-Dichloroethane-D4	96%		76-127%
2037-26-5	Toluene-D8	109%		86-112%
460-00-4	4-Bromofluorobenzene	107%		84-120%

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> PW-14-07012010	
<b>Lab Sample ID:</b> F74877-3	<b>Date Sampled:</b> 07/01/10
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 07/03/10
<b>Method:</b> SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E000561.D	1	07/14/10	TD	n/a	n/a	VE19
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.64	1.0	0.29	ug/l	J
107-06-2	1,2-Dichloroethane	0.89	1.0	0.33	ug/l	J
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		87-116%
17060-07-0	1,2-Dichloroethane-D4	94%		76-127%
2037-26-5	Toluene-D8	109%		86-112%
460-00-4	4-Bromofluorobenzene	106%		84-120%

U = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> PW-14-07012010 <b>Lab Sample ID:</b> F74877-3 <b>Matrix:</b> AQ - Ground Water <b>Project:</b> Buckley AFB, Aurora, CO	<b>Date Sampled:</b> 07/01/10 <b>Date Received:</b> 07/03/10 <b>Percent Solids:</b> n/a
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### Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	202000	1000	100	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Iron	35 U	300	35	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Magnesium	71900	5000	100	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Potassium	6080 J	10000	500	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Sodium	559000	100000	7500	ug/l	10	07/12/10	07/14/10 RS	SW846 6010B <sup>2</sup>	SW846 3010A <sup>3</sup>

- (1) Instrument QC Batch: MA8226
- (2) Instrument QC Batch: MA8231
- (3) Prep QC Batch: MP18641

RL = Reporting Limit  
 MDL = Method Detection Limit

U = Indicates a result < MDL  
 J = Indicates a result > = MDL but < RL

## Report of Analysis

<b>Client Sample ID:</b> PW-14-07012010 <b>Lab Sample ID:</b> F74877-3 <b>Matrix:</b> AQ - Ground Water <b>Project:</b> Buckley AFB, Aurora, CO	<b>Date Sampled:</b> 07/01/10 <b>Date Received:</b> 07/03/10 <b>Percent Solids:</b> n/a
--	---

### General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	75.0	5.0	2.5	mg/l	1	07/07/10	CN	SM19 2320B
Chloride	159	10	5.0	mg/l	5	07/03/10 18:09	CC	EPA 300/SW846 9056
Nitrogen, Nitrate + Nitrite	6.5	1.0	0.50	mg/l	10	07/27/10 08:00	SJL	SM18 4500NO3E
Sulfate	1560	50	25	mg/l	25	07/04/10 01:40	CC	EPA 300/SW846 9056
Sulfide	0.63 J	1.0	0.60	mg/l	1	07/06/10	CP	SM20 4500S F
Total Organic Carbon	5.1	1.0	0.50	mg/l	1	07/15/10 17:30	LT	SM19 5310B/SW 9060A

RL = Reporting Limit  
 MDL = Method Detection Limit

U = Indicates a result < MDL  
 J = Indicates a result > = MDL but < RL

## Report of Analysis

<b>Client Sample ID:</b> PW-14-07012010DUP	
<b>Lab Sample ID:</b> F74877-4	<b>Date Sampled:</b> 07/01/10
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 07/03/10
<b>Method:</b> SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E000562.D	1	07/14/10	TD	n/a	n/a	VE19
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		87-116%
17060-07-0	1,2-Dichloroethane-D4	95%		76-127%
2037-26-5	Toluene-D8	109%		86-112%
460-00-4	4-Bromofluorobenzene	108%		84-120%

U = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> PW-14-07012010DUP <b>Lab Sample ID:</b> F74877-4 <b>Matrix:</b> AQ - Ground Water <b>Project:</b> Buckley AFB, Aurora, CO	<b>Date Sampled:</b> 07/01/10 <b>Date Received:</b> 07/03/10 <b>Percent Solids:</b> n/a
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### Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	208000	1000	100	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Iron	35 U	300	35	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Magnesium	74100	5000	100	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Potassium	6280 J	10000	500	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Sodium	576000	100000	7500	ug/l	10	07/12/10	07/14/10 RS	SW846 6010B <sup>2</sup>	SW846 3010A <sup>3</sup>

- (1) Instrument QC Batch: MA8226
- (2) Instrument QC Batch: MA8231
- (3) Prep QC Batch: MP18641

RL = Reporting Limit  
 MDL = Method Detection Limit

U = Indicates a result < MDL  
 J = Indicates a result > = MDL but < RL

## Report of Analysis

34  
3

<b>Client Sample ID:</b> PW-14-07012010DUP	<b>Date Sampled:</b> 07/01/10
<b>Lab Sample ID:</b> F74877-4	<b>Date Received:</b> 07/03/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

### General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	76.0	5.0	2.5	mg/l	1	07/07/10	CN	SM19 2320B
Chloride	153	10	5.0	mg/l	5	07/03/10 18:27	CC	EPA 300/SW846 9056
Nitrogen, Nitrate + Nitrite	6.2	1.0	0.50	mg/l	10	07/27/10 08:00	SJL	SM18 4500NO3E
Sulfate	1540	50	25	mg/l	25	07/04/10 01:58	CC	EPA 300/SW846 9056
Sulfide	0.60 U	1.0	0.60	mg/l	1	07/06/10	CP	SM20 4500S F
Total Organic Carbon	5.1	1.0	0.50	mg/l	1	07/15/10 17:45	LT	SM19 5310B/SW 9060A

RL = Reporting Limit  
MDL = Method Detection Limit

U = Indicates a result < MDL  
J = Indicates a result > = MDL but < RL

## Report of Analysis

<b>Client Sample ID:</b> PW-17-07012010	
<b>Lab Sample ID:</b> F74877-5	<b>Date Sampled:</b> 07/01/10
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 07/03/10
<b>Method:</b> SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E000563.D	1	07/14/10	TD	n/a	n/a	VE19
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		87-116%
17060-07-0	1,2-Dichloroethane-D4	93%		76-127%
2037-26-5	Toluene-D8	109%		86-112%
460-00-4	4-Bromofluorobenzene	106%		84-120%

U = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

3.5  
3

<b>Client Sample ID:</b> PW-17-07012010 <b>Lab Sample ID:</b> F74877-5 <b>Matrix:</b> AQ - Ground Water <b>Project:</b> Buckley AFB, Aurora, CO	<b>Date Sampled:</b> 07/01/10 <b>Date Received:</b> 07/03/10 <b>Percent Solids:</b> n/a
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### Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	329000	1000	100	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Iron	210 J	300	35	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Magnesium	110000	5000	100	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Potassium	6500 J	10000	500	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Sodium	598000	100000	7500	ug/l	10	07/12/10	07/14/10 RS	SW846 6010B <sup>2</sup>	SW846 3010A <sup>3</sup>

- (1) Instrument QC Batch: MA8226
- (2) Instrument QC Batch: MA8231
- (3) Prep QC Batch: MP18641

RL = Reporting Limit  
 MDL = Method Detection Limit

U = Indicates a result < MDL  
 J = Indicates a result > = MDL but < RL

## Report of Analysis

35  
3

<b>Client Sample ID:</b> PW-17-07012010	<b>Date Sampled:</b> 07/01/10
<b>Lab Sample ID:</b> F74877-5	<b>Date Received:</b> 07/03/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

### General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	69.0	5.0	2.5	mg/l	1	07/07/10	CN	SM19 2320B
Chloride	204	10	5.0	mg/l	5	07/03/10 18:45	CC	EPA 300/SW846 9056
Nitrogen, Nitrate + Nitrite	15.0	2.5	1.3	mg/l	25	07/27/10 08:00	SJL	SM18 4500NO3E
Sulfate	1900	50	25	mg/l	25	07/04/10 02:16	CC	EPA 300/SW846 9056
Sulfide	0.70 J	1.0	0.60	mg/l	1	07/06/10	CP	SM20 4500S F
Total Organic Carbon	8.7	1.0	0.50	mg/l	1	07/15/10 18:00	LT	SM19 5310B/SW 9060A

RL = Reporting Limit  
MDL = Method Detection Limit

U = Indicates a result < MDL  
J = Indicates a result > = MDL but < RL

## Report of Analysis

3.6  
3

<b>Client Sample ID:</b> PW-17-07012010DUP	
<b>Lab Sample ID:</b> F74877-6	<b>Date Sampled:</b> 07/01/10
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 07/03/10
<b>Method:</b> SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E000564.D	1	07/14/10	TD	n/a	n/a	VE19
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

**VOA Special List**

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		87-116%
17060-07-0	1,2-Dichloroethane-D4	92%		76-127%
2037-26-5	Toluene-D8	109%		86-112%
460-00-4	4-Bromofluorobenzene	105%		84-120%

U = Not detected      MDL - Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

## Report of Analysis

3.6  
3

<b>Client Sample ID:</b> PW-17-07012010DUP	<b>Date Sampled:</b> 07/01/10
<b>Lab Sample ID:</b> F74877-6	<b>Date Received:</b> 07/03/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

**Total Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	319000	1000	100	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Iron	870	300	35	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Magnesium	105000	5000	100	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Potassium	6490 J	10000	500	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Sodium	592000	100000	7500	ug/l	10	07/12/10	07/14/10 RS	SW846 6010B <sup>2</sup>	SW846 3010A <sup>3</sup>

- (1) Instrument QC Batch: MA8226
- (2) Instrument QC Batch: MA8231
- (3) Prep QC Batch: MP18641

RL = Reporting Limit  
MDL = Method Detection Limit

U = Indicates a result < MDL  
J = Indicates a result > = MDL but < RL

## Report of Analysis

36  
3

<b>Client Sample ID:</b> PW-17-07012010DUP	<b>Date Sampled:</b> 07/01/10
<b>Lab Sample ID:</b> F74877-6	<b>Date Received:</b> 07/03/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

### General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	65.0	5.0	2.5	mg/l	1	07/07/10	CN	SM19 2320B
Chloride	210	10	5.0	mg/l	5	07/03/10 19:39	CC	EPA 300/SW846 9056
Nitrogen, Nitrate + Nitrite	15.4	2.5	1.3	mg/l	25	07/27/10 08:00	SJL	SM18 4500NO3E
Sulfate	1750	50	25	mg/l	25	07/04/10 02:34	CC	EPA 300/SW846 9056
Sulfide	0.77 J	1.0	0.60	mg/l	1	07/06/10	CP	SM20 4500S F
Total Organic Carbon	8.8	1.0	0.50	mg/l	1	07/15/10 18:45	LT	SM19 5310B/SW 9060A

RL = Reporting Limit  
MDL = Method Detection Limit

U = Indicates a result < MDL  
J = Indicates a result > = MDL but < RL

## Report of Analysis

<b>Client Sample ID:</b>	PW-15-07012010	<b>Date Sampled:</b>	07/01/10
<b>Lab Sample ID:</b>	F74877-7	<b>Date Received:</b>	07/03/10
<b>Matrix:</b>	AQ - Ground Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	Buckley AFB, Aurora, CO		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E000591.D	1	07/15/10	TD	n/a	n/a	VE20
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		87-116%
17060-07-0	1,2-Dichloroethane-D4	92%		76-127%
2037-26-5	Toluene-D8	108%		86-112%
460-00-4	4-Bromofluorobenzene	108%		84-120%

U = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

37  
3

<b>Client Sample ID:</b> PW-15-07012010	<b>Date Sampled:</b> 07/01/10
<b>Lab Sample ID:</b> F74877-7	<b>Date Received:</b> 07/03/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> RSKSOP-147/175	
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FF06749.D	1	07/12/10	WV	n/a	n/a	GFF286
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	0.18	0.50	0.16	ug/l	J
74-84-0	Ethane	0.32 U	1.0	0.32	ug/l	
74-85-1	Ethene	0.43 U	1.0	0.43	ug/l	

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

37  
3

<b>Client Sample ID:</b> PW-15-07012010 <b>Lab Sample ID:</b> F74877-7 <b>Matrix:</b> AQ - Ground Water <b>Project:</b> Buckley AFB, Aurora, CO	<b>Date Sampled:</b> 07/01/10 <b>Date Received:</b> 07/03/10 <b>Percent Solids:</b> n/a
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### Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	221000	1000	100	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Iron	35 U	300	35	ug/l	1	07/12/10	07/14/10 RS	SW846 6010B <sup>2</sup>	SW846 3010A <sup>3</sup>
Magnesium	81400	5000	100	ug/l	1	07/12/10	07/14/10 RS	SW846 6010B <sup>2</sup>	SW846 3010A <sup>3</sup>
Potassium	5950 J	10000	500	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Sodium	586000	100000	7500	ug/l	10	07/12/10	07/14/10 RS	SW846 6010B <sup>2</sup>	SW846 3010A <sup>3</sup>

- (1) Instrument QC Batch: MA8226
- (2) Instrument QC Batch: MA8231
- (3) Prep QC Batch: MP18642

RL = Reporting Limit  
 MDL = Method Detection Limit

U = Indicates a result < MDL  
 J = Indicates a result > = MDL but < RL

## Report of Analysis

<b>Client Sample ID:</b> PW-15-07012010	<b>Date Sampled:</b> 07/01/10
<b>Lab Sample ID:</b> F74877-7	<b>Date Received:</b> 07/03/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

### General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	77.0	5.0	2.5	mg/l	1	07/07/10	CN	SM19 2320B
Chloride	161	10	5.0	mg/l	5	07/03/10 17:51	CC	EPA 300/SW846 9056
Nitrogen, Nitrate + Nitrite	9.5	2.0	1.0	mg/l	20	07/27/10 08:00	SJL	SM18 4500NO3E
Sulfate	1760	50	25	mg/l	25	07/04/10 02:52	CC	EPA 300/SW846 9056
Sulfide	0.60 U	1.0	0.60	mg/l	1	07/07/10	LE	SM20 4500S F
Total Organic Carbon	5.7	1.0	0.50	mg/l	1	07/15/10 22:16	LT	SM19 5310B/SW 9060A

RL = Reporting Limit  
MDL = Method Detection Limit

U = Indicates a result < MDL  
J = Indicates a result > = MDL but < RL

## Report of Analysis

<b>Client Sample ID:</b>	EQUIPMENTBLANK-07012010		
<b>Lab Sample ID:</b>	F74877-8	<b>Date Sampled:</b>	07/01/10
<b>Matrix:</b>	AQ - Equipment Blank	<b>Date Received:</b>	07/03/10
<b>Method:</b>	SW846 8260B	<b>Percent Solids:</b>	n/a
<b>Project:</b>	Buckley AFB, Aurora, CO		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E000566.D	1	07/14/10	TD	n/a	n/a	VE19
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		87-116%
17060-07-0	1,2-Dichloroethane-D4	92%		76-127%
2037-26-5	Toluene-D8	110%		86-112%
460-00-4	4-Bromofluorobenzene	105%		84-120%

U = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	FWA-TW65-07022010	
<b>Lab Sample ID:</b>	F74877-9	<b>Date Sampled:</b> 07/02/10
<b>Matrix:</b>	AQ - Ground Water	<b>Date Received:</b> 07/03/10
<b>Method:</b>	SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b>	Buckley AFB, Aurora, CO	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E000580.D	1	07/14/10	TD	n/a	n/a	VE19
Run #2	E000569.D	20	07/14/10	TD	n/a	n/a	VE19

Run #	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	866 <sup>a</sup>	20	8.8	ug/l	
79-01-6	Trichloroethylene	4.8	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%	94%	87-116%
17060-07-0	1,2-Dichloroethane-D4	95%	91%	76-127%
2037-26-5	Toluene-D8	109%	111%	86-112%
460-00-4	4-Bromofluorobenzene	106%	105%	84-120%

(a) Result is from Run# 2

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

3.9  
3

<b>Client Sample ID:</b> FWA-TW65-07022010	
<b>Lab Sample ID:</b> F74877-9	<b>Date Sampled:</b> 07/02/10
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 07/03/10
<b>Method:</b> RSKSOP-147/175	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FF06760.D	1	07/12/10	WV	n/a	n/a	GFF286
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	0.16 U	0.50	0.16	ug/l	
74-84-0	Ethane	0.32 U	1.0	0.32	ug/l	
74-85-1	Ethene	0.43 U	1.0	0.43	ug/l	

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> FWA-TW65-07022010	<b>Date Sampled:</b> 07/02/10
<b>Lab Sample ID:</b> F74877-9	<b>Date Received:</b> 07/03/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

**Total Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	437000	1000	100	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Iron	60200	300	35	ug/l	1	07/12/10	07/14/10 RS	SW846 6010B <sup>2</sup>	SW846 3010A <sup>3</sup>
Magnesium	108000	5000	100	ug/l	1	07/12/10	07/14/10 RS	SW846 6010B <sup>2</sup>	SW846 3010A <sup>3</sup>
Potassium	15200	10000	500	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Sodium	1290000	200000	15000	ug/l	20	07/12/10	07/14/10 RS	SW846 6010B <sup>2</sup>	SW846 3010A <sup>3</sup>

- (1) Instrument QC Batch: MA8226
- (2) Instrument QC Batch: MA8231
- (3) Prep QC Batch: MP18642

RL = Reporting Limit  
MDL = Method Detection Limit

U = Indicates a result < MDL  
J = Indicates a result > = MDL but < RL

## Report of Analysis

39  
3

<b>Client Sample ID:</b> FWA-TW65-07022010	<b>Date Sampled:</b> 07/02/10
<b>Lab Sample ID:</b> F74877-9	<b>Date Received:</b> 07/03/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

### General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	121	5.0	2.5	mg/l	1	07/07/10	CN	SM19 2320B
Chloride	759	20	10	mg/l	10	07/03/10 20:15	CC	EPA 300/SW846 9056
Nitrogen, Nitrate + Nitrite	15.0	5.0	2.5	mg/l	50	07/27/10 08:00	SJL	SM18 4500NO3E
Sulfate	2330	100	50	mg/l	50	07/04/10 03:28	CC	EPA 300/SW846 9056
Total Organic Carbon	9.5	1.0	0.50	mg/l	1	07/15/10 19:01	LT	SM19 5310B/SW 9060A

RL = Reporting Limit  
MDL = Method Detection Limit

U = Indicates a result < MDL  
J = Indicates a result > = MDL but < RL

## Report of Analysis

<b>Client Sample ID:</b>	PW-21-07022010		<b>Date Sampled:</b>	07/02/10
<b>Lab Sample ID:</b>	F74877-10		<b>Date Received:</b>	07/03/10
<b>Matrix:</b>	AQ - Ground Water		<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8260B			
<b>Project:</b>	Buckley AFB, Aurora, CO			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E000581.D	1	07/14/10	TD	n/a	n/a	VE19
Run #2	E000570.D	2	07/14/10	TD	n/a	n/a	VE19

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	119 <sup>a</sup>	2.0	0.64	ug/l	
156-60-5	trans-1,2-Dichloroethylene	60.0	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	2.1	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	4.0	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	26.5	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%	97%	87-116%
17060-07-0	1,2-Dichloroethane-D4	94%	94%	76-127%
2037-26-5	Toluene-D8	110%	111%	86-112%
460-00-4	4-Bromofluorobenzene	105%	104%	84-120%

(a) Result is from Run# 2

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	PW-21-07022010		<b>Date Sampled:</b>	07/02/10
<b>Lab Sample ID:</b>	F74877-10		<b>Date Received:</b>	07/03/10
<b>Matrix:</b>	AQ - Ground Water		<b>Percent Solids:</b>	n/a
<b>Method:</b>	RSKSOP-147/175			
<b>Project:</b>	Buckley AFB, Aurora, CO			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	FF06761.D	1	07/12/10	WV	n/a	n/a	GFF286
Run #2 <sup>a</sup>	FF06763.D	5	07/12/10	WV	n/a	n/a	GFF286

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	3590 <sup>b</sup>	2.5	0.80	ug/l	
74-84-0	Ethane	0.40	1.0	0.32	ug/l	J
74-85-1	Ethene	5.20	1.0	0.43	ug/l	

(a) Sample was not preserved to a pH < 2; reported results are considered minimum values.

(b) Result is from Run# 2

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> PW-21-07022010	<b>Date Sampled:</b> 07/02/10
<b>Lab Sample ID:</b> F74877-10	<b>Date Received:</b> 07/03/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

### Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	306000	1000	100	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Iron	23000	300	35	ug/l	1	07/12/10	07/14/10 RS	SW846 6010B <sup>2</sup>	SW846 3010A <sup>3</sup>
Magnesium	176000	5000	100	ug/l	1	07/12/10	07/14/10 RS	SW846 6010B <sup>2</sup>	SW846 3010A <sup>3</sup>
Potassium	5510 J	10000	500	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Sodium	529000	100000	7500	ug/l	10	07/12/10	07/14/10 RS	SW846 6010B <sup>2</sup>	SW846 3010A <sup>3</sup>

- (1) Instrument QC Batch: MA8226
- (2) Instrument QC Batch: MA8231
- (3) Prep QC Batch: MP18642

RL = Reporting Limit  
 MDL = Method Detection Limit

U = Indicates a result < MDL  
 J = Indicates a result > = MDL but < RL

## Report of Analysis

<b>Client Sample ID:</b> PW-21-07022010	<b>Date Sampled:</b> 07/02/10
<b>Lab Sample ID:</b> F74877-10	<b>Date Received:</b> 07/03/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

### General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Nitrogen, Nitrate + Nitrite	0.053 J	0.10	0.050	mg/l	1	07/27/10 08:00	SJL	SM18 4500NO3E
Total Organic Carbon	26.4	1.0	0.50	mg/l	1	07/15/10 19:16	LT	SM19 5310B/SW 9060A

RL = Reporting Limit  
MDL = Method Detection Limit

U = Indicates a result < MDL  
J = Indicates a result > = MDL but < RL

## Report of Analysis

<b>Client Sample ID:</b>	FWA-MW41-07022010	
<b>Lab Sample ID:</b>	F74877-11	<b>Date Sampled:</b> 07/02/10
<b>Matrix:</b>	AQ - Ground Water	<b>Date Received:</b> 07/03/10
<b>Method:</b>	SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b>	Buckley AFB, Aurora, CO	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E000571.D	1	07/14/10	TD	n/a	n/a	VE19
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		87-116%
17060-07-0	1,2-Dichloroethane-D4	93%		76-127%
2037-26-5	Toluene-D8	111%		86-112%
460-00-4	4-Bromofluorobenzene	106%		84-120%

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	FWA-MW52-07022010	
<b>Lab Sample ID:</b>	F74877-12	<b>Date Sampled:</b> 07/02/10
<b>Matrix:</b>	AQ - Ground Water	<b>Date Received:</b> 07/03/10
<b>Method:</b>	SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b>	Buckley AFB, Aurora, CO	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J057968.D	1	07/16/10	KW	n/a	n/a	VJ3279
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	2.7	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	30.9	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	39.6	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	4.7	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	92.6	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		87-116%
17060-07-0	1,2-Dichloroethane-D4	96%		76-127%
2037-26-5	Toluene-D8	102%		86-112%
460-00-4	4-Bromofluorobenzene	95%		84-120%

U = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> FWA-MW52-07022010	<b>Date Sampled:</b> 07/02/10
<b>Lab Sample ID:</b> F74877-12	<b>Date Received:</b> 07/03/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> RSKSOP-147/175	
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FF06889.D	1	07/15/10	WV	n/a	n/a	GFF291
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	0.25	0.50	0.16	ug/l	I
74-84-0	Ethane	0.32 U	1.0	0.32	ug/l	
74-85-1	Ethene	0.43 U	1.0	0.43	ug/l	

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> FWA-MW52-07022010	<b>Date Sampled:</b> 07/02/10
<b>Lab Sample ID:</b> F74877-12	<b>Date Received:</b> 07/03/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

### Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	412000	1000	100	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Iron	150 J	300	35	ug/l	1	07/12/10	07/14/10 RS	SW846 6010B <sup>2</sup>	SW846 3010A <sup>3</sup>
Magnesium	94100	5000	100	ug/l	1	07/12/10	07/14/10 RS	SW846 6010B <sup>2</sup>	SW846 3010A <sup>3</sup>
Potassium	8850 J	10000	500	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Sodium	1170000	200000	15000	ug/l	20	07/12/10	07/14/10 RS	SW846 6010B <sup>2</sup>	SW846 3010A <sup>3</sup>

- (1) Instrument QC Batch: MA8226
- (2) Instrument QC Batch: MA8231
- (3) Prep QC Batch: MP18642

RL = Reporting Limit  
MDL = Method Detection Limit

U = Indicates a result < MDL  
J = Indicates a result > = MDL but < RL

## Report of Analysis

<b>Client Sample ID:</b> FWA-MW52-07022010	<b>Date Sampled:</b> 07/02/10
<b>Lab Sample ID:</b> F74877-12	<b>Date Received:</b> 07/03/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

### General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	188	5.0	2.5	mg/l	1	07/07/10	CN	SM19 2320B
Chloride	374	20	10	mg/l	10	07/03/10 20:33	CC	EPA 300/SW846 9056
Nitrogen, Nitrate + Nitrite	6.9	1.0	0.50	mg/l	10	07/27/10 08:00	SJL	SM18 4500NO3E
Sulfate	2530	100	50	mg/l	50	07/04/10 03:46	CC	EPA 300/SW846 9056
Sulfide	0.60 U	1.0	0.60	mg/l	1	07/07/10	LE	SM20 4500S F
Total Organic Carbon	4.4	1.0	0.50	mg/l	1	07/15/10 19:31	LT	SM19 5310B/SW 9060A

RL = Reporting Limit  
 MDL = Method Detection Limit

U = Indicates a result < MDL  
 J = Indicates a result > = MDL but < RL

## Report of Analysis

<b>Client Sample ID:</b>	FDA-MW39-07022010	<b>Date Sampled:</b>	07/02/10
<b>Lab Sample ID:</b>	F74877-13	<b>Date Received:</b>	07/03/10
<b>Matrix:</b>	AQ - Ground Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	Buckley AFB, Aurora, CO		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E000573.D	1	07/14/10	TD	n/a	n/a	VE19
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	3.0	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		87-116%
17060-07-0	1,2-Dichloroethane-D4	94%		76-127%
2037-26-5	Toluene-D8	108%		86-112%
460-00-4	4-Bromofluorobenzene	105%		84-120%

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	EQUIPMENTBLANK-07022010	
<b>Lab Sample ID:</b>	F74877-14	<b>Date Sampled:</b> 07/02/10
<b>Matrix:</b>	AQ - Equipment Blank	<b>Date Received:</b> 07/03/10
<b>Method:</b>	SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b>	Buckley AFB, Aurora, CO	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E000574.D	1	07/14/10	TD	n/a	n/a	VE19
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		87-116%
17060-07-0	1,2-Dichloroethane-D4	91%		76-127%
2037-26-5	Toluene-D8	109%		86-112%
460-00-4	4-Bromofluorobenzene	107%		84-120%

U = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> TB-07022010	
<b>Lab Sample ID:</b> F74877-15	<b>Date Sampled:</b> 07/02/10
<b>Matrix:</b> AQ - Trip Blank Water	<b>Date Received:</b> 07/03/10
<b>Method:</b> SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E000575.D	1	07/14/10	TD	n/a	n/a	VE19
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		87-116%
17060-07-0	1,2-Dichloroethane-D4	91%		76-127%
2037-26-5	Toluene-D8	110%		86-112%
460-00-4	4-Bromofluorobenzene	108%		84-120%

U = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



## Misc. Forms

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### Custody Documents and Other Forms

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Includes the following where applicable:

- Certification Exceptions
- Chain of Custody



2730 Shadelands Drive, Suite 100  
Walnut Creek, California 94598  
(925) 946-3100 (925) 256-8998 (fax)

**F74877**

Local Address: 33335 Wadsworth Blvd  
Ste 220  
Lakewood CO 80227

# Chain-Of-Custody

Project Name and Number: Buckley AFB/07030.0007  
Project Manager: Kelly Ruder  
Site Location: Avonra CO

Laboratory Name: Accutest Lab SE Inc  
Address: 4405 Vineland Rd  
Ste C15, Orlando FL 32811  
Contact Name: Steve Bell  
Phone: 407-425-6700

Date: 7/2/2010  
Page: 1 of 2

Sample I.D.	Date	Time	Sample Depth	No. of Containers	Sample Matrix	Analysis:										Special Instructions/Comments
						BZ60B (VOC)	SM19 (SVOC)	SM18 (TOC)	6010B (Ca, Mg, K, Na, Fe)	SM18 (4500MBE) (NO <sub>2</sub> -N)	SM220B (Alkalinity)	EPA 300.0 (Ammonia + SO <sub>4</sub> )	SM20 (4500SF) (Sulfides)	RSK (TS)	(MEE)	
Preservative:						HCl	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	N/A	N/A	NaOH	HCl			
Container Type:						VOA	500 POLY	500 POLY	500 POLY	500 POLY	250 POLY	VOA				
1 FDA-MW49-07012010	7/1/10	1100	43'	33	GW	X	X	X	X	X	X	X			triple volume MS/MSD	
2 PW-13-07012010	7/1/10	1335	26'	9	GW	X	X	X	X	X	X	X			triple volume MS/MSD	
3 PW-14-07012010	7/1/10	1425	26'	11	GW	X	X	X	X	X	X	X				
4 PW-14-07012010 DUP	7/1/10	1425	26'	11	GW	X	X	X	X	X	X	X				
5 PW-17-07012010	7/1/10	1615	25'	11	GW	X	X	X	X	X	X	X				
6 PW-17-07012010 DUP	7/1/10	1615	25'	11	GW	X	X	X	X	X	X	X				
7 PW-15-07012010	7/1/10	1645	25'	42	GW	X	X	X	X	X	X	X	X		triple volume MS/MSD	
8 EQUIPMENT BLANK-07012010	7/1/10	1755		3	DI	X										
9 FWA-TW65-07022010	7/2/10	1020	39.5'	11	GW	X	X	X	X	X	X	X	X			
10 PW-21-07022010	7/2/10	1315	34'		GW	X	X	X	X	X	X	X	X			

Sampled By: Charles VanHoven/ Brooks Dillard  
Signature: [Signature]  
Special Instructions: \_\_\_\_\_  
Send Results to: edawson@itsi.com  
(w/fax #)  
Turnaround Time: standard

Sampler: Charles VanHoven/ Brooks Dillard Courier/Airbill No.: 8723 7968 8453  
Requisitioned By/Affiliation: [Signature] / ITS1 Date: 7/2/10 Time: 1700 Received By/Affiliation: [Signature] / ITS1 Date: 7/2/10 Time: 2000  
[Signature] / ITS1 Date: 7/2/10 Time: 1700 Received By/Affiliation: [Signature] / ITS1 Date: 7/2/10 Time: 2000



F74877



2730 Shadelands Drive, Suite 100  
Walnut Creek, California 94598  
(925) 946-3100 (925) 256-8998 (fax)

Local Address: 3333 S. Wadsworth Blvd  
Ste 220  
Lakewood CO 80227

# Chain-Of-Custody

Project Name and Number: Buckley AFB/07030-0007 Laboratory Name: Accutest Lab. SE, Inc Date: 7/2/2010  
Project Manager: Kelly Ruden Address: 4405 Vineland Rd Contact Name: Sue Bell Page: 2 of 2  
Site Location: Avonra CO Ste C15, Orlando, FL 32811 Phone: 407-425-6700

Sample I.D.	Date	Time	Sample Depth	No. of Containers	Sample Matrix	Analysis:										Special Instructions/Comments
						8260B (VOC)	SM19 5305	SM 7060A (TOC)	6010B	(Ca, Mg, K, Na, Fe)	SM184500NOSE	(NO <sub>2</sub> -NO <sub>x</sub> )	SM 2320B	(Alkalinity)	EPA 300.0	
						Preservative:	HCl	HCl	H <sub>2</sub> SO <sub>4</sub>	H <sub>2</sub> SO <sub>4</sub>	N/A	N/A	N/A	NaOH	ZnAc	
						Container Type:	600 mL	600 mL	600 mL	250 mL						
11 FWA-MW41-07022010	7/2/10	1145	70'	3	GW	X										
12 FWA-MW52-07022010	7/2/10	1525	41'	11	GW	X	X	X	X	X	X	X	X			
13 FDA-MW39-07022010	7/2/10	1555	59'	3	GW	X										
14 Equipment blank-07022010	7/2/10	1630		3	DI	X										
15 TB-07022010	7/2/10															

Sampled By: Charles VanHeurden / Brooks Dillard Sampler: Charles VanHeurden / Brooks Dillard Courier/Airbill No.: 8723 7968 8453

Signature: [Signature] Relinquished By/Affiliation: [Signature] / ITSi Date: 7/2/10 Time: 1700 Received By/Affiliation: FedEx Date: 7/2/10 Time: 2000

Special Instructions: \_\_\_\_\_

Send Results to: edawson@itsi.com \_\_\_\_\_ Date: 7/2/10 Time: 1700

Turnaround Time: standard \_\_\_\_\_ Date: 7/2/10 Time: 1700

Original - Laboratory Yellow - Field/Office

Graphics/Stationery/chain\_custody0408.ai

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**ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION**

ACCUTEST'S JOB NUMBER: F74877 CLIENT: ITSI PROJECT: Buckley AFB  
 DATE/TIME RECEIVED: 0703100927 (MM/DD/YY 24:00) NUMBER OF COOLERS RECEIVED: 8  
 METHOD OF DELIVERY:  FEDEX  UPS  ACCUTEST COURIER  GREYHOUND  DELIVERY  OTHER  
 AIRBILL NUMBERS: \_\_\_\_\_

**COOLER INFORMATION**

- CUSTODY SEAL NOT PRESENT OR NOT INTACT
- CHAIN OF CUSTODY NOT RECEIVED (COC)
- ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- TEMPERATURE CRITERIA NOT MET
- WET ICE PRESENT

**TRIP BLANK INFORMATION**

- TRIP BLANK PROVIDED
- TRIP BLANK NOT PROVIDED
- TRIP BLANK NOT ON COC
- TRIP BLANK INTACT
- TRIP BLANK NOT INTACT
- RECEIVED WATER TRIP BLANK
- RECEIVED SOIL TRIP BLANK

**MISC. INFORMATION**

NUMBER OF ENCORES ? \_\_\_\_\_  
 NUMBER OF 5035 FIELD KITS ? \_\_\_\_\_  
 NUMBER OR LAB FILTERED METALS ? \_\_\_\_\_

**TEMPERATURE INFORMATION**

IR THERM ID 3 CORR. FACTOR 1.4  
 OBSERVED TEMPS: 26 1.4 18 20 28 30 1.4 20  
 CORRECTED TEMPS: 40 28 22 34 42 44 28 34

**SAMPLE INFORMATION**

- SAMPLE LABELS PRESENT ON ALL BOTTLES
- INCORRECT NUMBER OF CONTAINERS USED
- SAMPLE RECEIVED IMPROPERLY PRESERVED
- INSUFFICIENT VOLUME FOR ANALYSIS
- DATES/TIMES ON COC DO NOT MATCH SAMPLE LABEL
- ID'S ON COC DO NOT MATCH LABEL
- VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- UNCLEAR FILTERING OR COMPOSITING INSTRUCTIONS
- SAMPLE CONTAINER(S) RECEIVED BROKEN
- % SOLIDS JAR NOT RECEIVED
- 5035 FIELD KIT FROZEN WITHIN 48 HOUR'S
- RESIDUAL CHLORINE PRESENT

{APPLICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS}

SUMMARY OF COMMENTS: Sample & 2 vials broken, sample to us (app) only received as requested on WC

TECHNICIAN SIGNATURE/DATE [Signature] 070310 REVIEWER SIGNATURE/DATE \_\_\_\_\_

NF 10/09

RECEIPT CONFIRMATION 100609 (2).xls

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**Job Change Order: F74877\_7/6/2010**

<b>Requested Date:</b>	7/6/2010	<b>Received Date:</b>	7/3/2010
<b>Account Name:</b>	Innovative Technical Solutions, Inc	<b>Due Date:</b>	7/19/2010
<b>Project Description:</b>	Buckley AFB, Aurora, CO	<b>Deliverable:</b>	FULT1
<b>CSR:</b>	SB	<b>TAT (Days):</b>	14

**Sample #:** F74877-TB      **Change:** Per Eric M at ITSI via phone 07.06.10, run Trip Blank for VOCs even though it is not checked off for analysis on the COC.

**Sample #:** F74877-10      **Change:** No Unpreserved bottle received for this sample. Chloride and Sufate cannot be run. Client notified 07.06.10.

PW-21-07022010

**Above Changes**      Eric M at ITSI      **Date:** 7/6/2010

To Client: This Change Order is confirmation of the revisions, previously discussed with the Accutest Client Service Representative.

Page 1 of 1

**F74877: Chain of Custody**  
**Page 4 of 6**

F74877



2730 Shadelands Drive, Suite 100  
Walnut Creek, California 94598  
(925) 946-3100 (925) 256-8998 (fax)

Local Address: 3335 S. Wadsworth Blvd  
Ste 220  
Lakewood CO 80227

Chain-Of-Custody

Project Name and Number: Buckley AFB/07030.0007  
Project Manager: Kelly Ruder  
Site Location: Avonora CO

Laboratory Name: Accutest Lab. SE, Inc  
Address: 4405 Vineland Rd Contact Name: Sue Bell  
Site: St. Clair, Ontario, FL 32811 Phone: 407-425-6700

Date: 7/2/2010  
Page: 2 of 2

Sample I.D.	Date	Time	Sample Depth	No. of Containers	Sample Matrix	Analysis:										Special Instructions/Comments						
						8260B (VOC)	SM19 (SVOC)	SM20 (SVOC)	SM21 (SVOC)	SM22 (SVOC)	SM23 (SVOC)	SM24 (SVOC)	SM25 (SVOC)	SM26 (SVOC)	SM27 (SVOC)		SM28 (SVOC)					
11 EWA-MW41-07022010	7/2/10	11:45	70'	3	GW	X																
12 EWA-MW52-07022010	7/2/10	15:25	11'	11	GW	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
13 FDA-MW39-07022010	7/2/10	15:55	89'	3	GW	X																
14 Equipment blank-07022010	7/2/10	16:30	/	3	DI	X																
15 TB-07022010	7/2/10	17:30	/	1	WA	X																

am  
7/2/10

Sampled By: <u>Charles VanHeurten/Brooks Dillard</u>	Sampler: <u>Charles VanHeurten/Brooks Dillard</u>	Courier/Airbill No.: <u>8723 7968 8453</u>
Signature: <u>[Signature]</u>	Requested By/Affiliation: <u>[Signature] / ITSL</u>	Date: <u>7/2/10</u> Time: <u>17:00</u>
Special Instructions:	Received By/Affiliation: <u>[Signature]</u>	Date: <u>7/2/10</u> Time: <u>20:00</u>
Send Results to: <u>edawson@itsi.com</u>	Turnaround Time: <u>standard</u>	

Original - Laboratory Yellow - Field/Office

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4

**Job Change Order:** F74877\_7/13/2010

<b>Requested Date:</b>	7/13/2010	<b>Received Date:</b>	7/3/2010
<b>Account Name:</b>	Innovative Technical Solutions, Inc	<b>Due Date:</b>	7/19/2010
<b>Project Description:</b>	Buckley AFB, Aurora, CO	<b>Deliverable:</b>	FULT1
<b>CSR:</b>	SB	<b>TAT (Days):</b>	14

**Sample #:** F74877-15      **Change:** Per Eric M. at ITSI via e-mail 07.12.10: F74877-15 (no collection time) collected at 17:30. Revised COC sent in

TB-07022010

**Above Changes**      Eric M at ITSI      **Date:** 7/13/2010

To Client: This Change Order is confirmation of the revisions, previously discussed with the Accutest Client Service Representative.

Page 1 of 1

**F74877: Chain of Custody**  
**Page 6 of 6**

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Technical Report for

Innovative Technical Solutions, Inc

Buckley AFB, Aurora, CO

07030.0007

Accutest Job Number: F74938

Sampling Dates: 07/06/10 - 07/07/10

Report to:

ITSI, CO

pschwarzweiler@itsi.com

ATTN: Paul Schwarzweiler

Total number of pages in report: **25**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

  
Harry Behzadi, Ph.D.  
Laboratory Director

Client Service contact: Sue Bell 407-425-6700

Certifications: FL (DOH E83510), NC (573), NJ (FL002), MA (FL946), IA (366), LA (03051), KS (E-10327), SC, AK  
This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.  
Test results relate only to samples analyzed.



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## Sample Summary

Innovative Technical Solutions, Inc

**Job No:** F74938

Buckley AFB, Aurora, CO

Project No: 07030.0007

Sample Number	Collected		Matrix Received	Code	Type	Client Sample ID
	Date	Time By				
F74938-1	07/06/10	16:35 WLBD	07/08/10	AQ	Ground Water	PW-18-07062010
F74938-2	07/07/10	11:20 WLBD	07/08/10	AQ	Ground Water	FWA-TW57-07072010
F74938-3	07/07/10	10:05 WLBD	07/08/10	AQ	Ground Water	FWA-MW42-07072010
F74938-4	07/06/10	17:58 WLBD	07/08/10	AQ	Ground Water	FWA-TW58-07062010
F74938-5	07/06/10	10:40 WLBD	07/08/10	AQ	Ground Water	FDA-MW33-07062010
F74938-6	07/06/10	10:40 WLBD	07/08/10	AQ	Ground Water	FDA-MW33-07062010DUP
F74938-7	07/06/10	12:05 WLBD	07/08/10	AQ	Ground Water	FDA-MW34-07062010
F74938-8	07/06/10	12:05 WLBD	07/08/10	AQ	Ground Water	FDA-MW34-07062010DUP
F74938-9	07/06/10	18:30 WLBD	07/08/10	AQ	Equipment Blank	EQUIPMENTBLANK-07062010
F74938-10	07/06/10	00:00 WLBD	07/08/10	AQ	Trip Blank Water	TB-07062010

## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** Innovative Technical Solutions, Inc

**Job No:** F74938

**Site:** Buckley AFB, Aurora, CO

**Report Date** 7/28/2010 11:12:21

9 Samples, 1 Trip Blank were collected on between 07/06/2010 and 07/07/2010 and received at Accutest on 07/08/2010 properly preserved, at 3.2 Deg. C and intact. These Samples received an Accutest job number of F74938. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Volatiles by GCMS By Method SW846 8260B

**Matrix:** AQ

**Batch ID:** VM1792

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F74938-2MS, F74938-2MSD were used as the QC samples indicated.

**Matrix:** AQ

**Batch ID:** VN1804

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F74938-1MS were used as the QC samples indicated.

**Matrix:** AQ

**Batch ID:** VN1805

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F74970-4MS, F74970-4MSD were used as the QC samples indicated.

Blank Spike Recovery(s) for cis-1,2-Dichloroethylene are outside control limits. Biased high, not detected in the associated samples, data integrity not adversely affected.

Matrix Spike Duplicate Recovery(s) for cis-1,2-Dichloroethylene are outside control limits.

### Metals By Method SW846 6010B

**Matrix:** AQ

**Batch ID:** MP18630

All samples were digested within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F74794-1ADUP, F74794-1AMS, F74794-1AMSD, F74794-1ASDL were used as the QC samples for metals.

RPD(s) for Serial Dilution for Calcium, Iron, Sodium are outside control limits for sample MP18630-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

### Wet Chemistry By Method EPA 300/SW846 9056

**Matrix:** AQ

**Batch ID:** GP15169

All samples were prepared within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F74953-5DUP, F74953-5MS were used as the QC samples for Sulfate, Chloride.

Matrix Spike Recovery(s) for Sulfate are outside control limits. Spike recovery indicates possible matrix interference.

### Wet Chemistry By Method SM18 4500NO3E

**Matrix:** AQ

**Batch ID:** GN40580

All method blanks for this batch meet method specific criteria.

Sample(s) F74877-1DUP, F74877-1MS were used as the QC samples for Nitrogen, Nitrate + Nitrite.

### Wet Chemistry By Method SM19 2320B

**Matrix:** AQ

**Batch ID:** GN40366

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F74938-1DUP, F74938-1MS, F74938-1MSD were used as the QC samples for Alkalinity, Total as CaCO<sub>3</sub>.

### **Wet Chemistry By Method SM19 5310B/SW 9060A**

**Matrix:** AQ

**Batch ID:** GP15217

All samples were prepared within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F74938-1DUP, F74938-1MS were used as the QC samples for Total Organic Carbon.

Matrix Spike Recovery(s) for Total Organic Carbon are outside control limits. Spike recovery indicates possible matrix interference and/or sample non homogeneity.

### **Wet Chemistry By Method SM20 4500S F**

**Matrix:** AQ

**Batch ID:** GN40383

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F75010-1DUP, F75010-1MS were used as the QC samples for Sulfide.

Matrix Spike Recovery(s) for Sulfide are outside control limits. Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

Accutest Laboratories Southeast (ALSE) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALSE and as stated on the COC. ALSE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALSE Quality Manual except as noted above. This report is to be used in its entirety. ALSE is not responsible for any assumptions of data quality if partial data packages are used

Narrative prepared by:

\_\_\_\_\_  
Svetlana Izosimova, QA Officer (signature on file)

Date: July 28, 2010



## Sample Results

---

## Report of Analysis

---

## Report of Analysis

<b>Client Sample ID:</b> PW-18-07062010	
<b>Lab Sample ID:</b> F74938-1	<b>Date Sampled:</b> 07/06/10
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 07/08/10
<b>Method:</b> SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0044539.D	1	07/16/10	MM	n/a	n/a	VN1804
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		87-116%
17060-07-0	1,2-Dichloroethane-D4	100%		76-127%
2037-26-5	Toluene-D8	94%		86-112%
460-00-4	4-Bromofluorobenzene	92%		84-120%

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

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3

<b>Client Sample ID:</b> PW-18-07062010	<b>Date Sampled:</b> 07/06/10
<b>Lab Sample ID:</b> F74938-1	<b>Date Received:</b> 07/08/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

**Total Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	452000	1000	100	ug/l	1	07/09/10	07/09/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Iron	711	300	35	ug/l	1	07/09/10	07/09/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Magnesium	150000	5000	100	ug/l	1	07/09/10	07/09/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Potassium	9300 J	10000	500	ug/l	1	07/09/10	07/09/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Sodium	819000	200000	15000	ug/l	20	07/09/10	07/12/10 RS	SW846 6010B <sup>2</sup>	SW846 3010A <sup>3</sup>

- (1) Instrument QC Batch: MA8221
- (2) Instrument QC Batch: MA8226
- (3) Prep QC Batch: MP18630

RL = Reporting Limit  
MDL = Method Detection Limit

U = Indicates a result < MDL  
J = Indicates a result > = MDL but < RL

## Report of Analysis

<b>Client Sample ID:</b> PW-18-07062010	<b>Date Sampled:</b> 07/06/10
<b>Lab Sample ID:</b> F74938-1	<b>Date Received:</b> 07/08/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

### General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	104	5.0	2.5	mg/l	1	07/09/10	CC	SM19 2320B
Chloride	324	50	25	mg/l	25	07/08/10 11:41	CC	EPA 300/SW846 9056
Nitrogen, Nitrate + Nitrite	16.6	5.0	2.5	mg/l	50	07/27/10 08:00	SJL	SM18 4500NO3E
Sulfate	2510	100	50	mg/l	50	07/09/10 11:31	CC	EPA 300/SW846 9056
Sulfide	1.5	1.0	0.60	mg/l	1	07/12/10	LE	SM20 4500S F
Total Organic Carbon	17.5	1.0	0.50	mg/l	1	07/16/10 17:11	LT	SM19 5310B/SW 9060A

RL = Reporting Limit  
MDL = Method Detection Limit

U = Indicates a result < MDL  
J = Indicates a result > = MDL but < RL

## Report of Analysis

<b>Client Sample ID:</b>	FWA-TW57-07072010		
<b>Lab Sample ID:</b>	F74938-2	<b>Date Sampled:</b>	07/07/10
<b>Matrix:</b>	AQ - Ground Water	<b>Date Received:</b>	07/08/10
<b>Method:</b>	SW846 8260B	<b>Percent Solids:</b>	n/a
<b>Project:</b>	Buckley AFB, Aurora, CO		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0044347.D	5	07/19/10	MM	n/a	n/a	VM1792
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	1.4 U	5.0	1.4	ug/l	
75-35-4	1,1-Dichloroethylene	1.5 U	5.0	1.5	ug/l	
107-06-2	1,2-Dichloroethane	1.7 U	5.0	1.7	ug/l	
156-59-2	cis-1,2-Dichloroethylene	16.0	5.0	1.6	ug/l	
156-60-5	trans-1,2-Dichloroethylene	10.2	5.0	1.7	ug/l	
127-18-4	Tetrachloroethylene	212	5.0	2.2	ug/l	
79-01-6	Trichloroethylene	12.3	5.0	1.2	ug/l	
75-01-4	Vinyl chloride	1.4 U	5.0	1.4	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		87-116%
17060-07-0	1,2-Dichloroethane-D4	96%		76-127%
2037-26-5	Toluene-D8	104%		86-112%
460-00-4	4-Bromofluorobenzene	97%		84-120%

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

32  
3

<b>Client Sample ID:</b> FWA-TW57-07072010	<b>Date Sampled:</b> 07/07/10
<b>Lab Sample ID:</b> F74938-2	<b>Date Received:</b> 07/08/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

### Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	474000	1000	100	ug/l	1	07/09/10	07/09/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Iron	35 U	300	35	ug/l	1	07/09/10	07/09/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Magnesium	145000	5000	100	ug/l	1	07/09/10	07/09/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Potassium	7910 J	10000	500	ug/l	1	07/09/10	07/09/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Sodium	819000	200000	15000	ug/l	20	07/09/10	07/12/10 RS	SW846 6010B <sup>2</sup>	SW846 3010A <sup>3</sup>

- (1) Instrument QC Batch: MA8221
- (2) Instrument QC Batch: MA8226
- (3) Prep QC Batch: MP18630

RL = Reporting Limit  
MDL = Method Detection Limit

U = Indicates a result < MDL  
J = Indicates a result > = MDL but < RL

## Report of Analysis

<b>Client Sample ID:</b> FWA-TW57-07072010	<b>Date Sampled:</b> 07/07/10
<b>Lab Sample ID:</b> F74938-2	<b>Date Received:</b> 07/08/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

### General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	473	5.0	2.5	mg/l	1	07/09/10	CC	SM19 2320B
Chloride	542	50	25	mg/l	25	07/08/10 11:59	CC	EPA 300/SW846 9056
Nitrogen, Nitrate + Nitrite	5.0	2.5	1.3	mg/l	25	07/27/10 08:00	SJL	SM18 4500NO3E
Sulfate	2370	50	25	mg/l	25	07/08/10 11:59	CC	EPA 300/SW846 9056
Sulfide	1.1	1.0	0.60	mg/l	1	07/12/10	LE	SM20 4500S F
Total Organic Carbon	7.7	1.0	0.50	mg/l	1	07/16/10 17:26	LT	SM19 5310B/SW 9060A

RL = Reporting Limit  
MDL = Method Detection Limit

U = Indicates a result < MDL  
J = Indicates a result > = MDL but < RL

## Report of Analysis

<b>Client Sample ID:</b>	FWA-MW42-07072010	
<b>Lab Sample ID:</b>	F74938-3	<b>Date Sampled:</b> 07/07/10
<b>Matrix:</b>	AQ - Ground Water	<b>Date Received:</b> 07/08/10
<b>Method:</b>	SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b>	Buckley AFB, Aurora, CO	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0044346.D	2	07/19/10	MM	n/a	n/a	VM1792
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.56 U	2.0	0.56	ug/l	
75-35-4	1,1-Dichloroethylene	22.9	2.0	0.58	ug/l	
107-06-2	1,2-Dichloroethane	0.66 U	2.0	0.66	ug/l	
156-59-2	cis-1,2-Dichloroethylene	20.7	2.0	0.64	ug/l	
156-60-5	trans-1,2-Dichloroethylene	8.3	2.0	0.68	ug/l	
127-18-4	Tetrachloroethylene	16.9	2.0	0.88	ug/l	
79-01-6	Trichloroethylene	81.4	2.0	0.48	ug/l	
75-01-4	Vinyl chloride	0.56 U	2.0	0.56	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		87-116%
17060-07-0	1,2-Dichloroethane-D4	95%		76-127%
2037-26-5	Toluene-D8	104%		86-112%
460-00-4	4-Bromofluorobenzene	102%		84-120%

U = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> FWA-MW42-07072010 <b>Lab Sample ID:</b> F74938-3 <b>Matrix:</b> AQ - Ground Water <b>Project:</b> Buckley AFB, Aurora, CO	<b>Date Sampled:</b> 07/07/10 <b>Date Received:</b> 07/08/10 <b>Percent Solids:</b> n/a
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### General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Total Organic Carbon	9.7	1.0	0.50	mg/l	1	07/16/10 17:41	LT	SM19 5310B/SW 9060A

RL = Reporting Limit  
 MDL = Method Detection Limit

U = Indicates a result < MDL  
 J = Indicates a result > = MDL but < RL

## Report of Analysis

<b>Client Sample ID:</b> FWA-TW58-07062010	
<b>Lab Sample ID:</b> F74938-4	<b>Date Sampled:</b> 07/06/10
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 07/08/10
<b>Method:</b> SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0044567.D	1	07/19/10	MM	n/a	n/a	VN1805
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

### VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		87-116%
17060-07-0	1,2-Dichloroethane-D4	103%		76-127%
2037-26-5	Toluene-D8	93%		86-112%
460-00-4	4-Bromofluorobenzene	96%		84-120%

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

3.4  
3

<b>Client Sample ID:</b> FWA-TW58-07062010 <b>Lab Sample ID:</b> F74938-4 <b>Matrix:</b> AQ - Ground Water <b>Project:</b> Buckley AFB, Aurora, CO	<b>Date Sampled:</b> 07/06/10 <b>Date Received:</b> 07/08/10 <b>Percent Solids:</b> n/a
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### General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Total Organic Carbon	5.8	1.0	0.50	mg/l	1	07/16/10 17:58	LT	SM19 5310B/SW 9060A

RL = Reporting Limit  
 MDL = Method Detection Limit

U = Indicates a result < MDL  
 J = Indicates a result > = MDL but < RL

## Report of Analysis

<b>Client Sample ID:</b>	FDA-MW33-07062010	<b>Date Sampled:</b>	07/06/10
<b>Lab Sample ID:</b>	F74938-5	<b>Date Received:</b>	07/08/10
<b>Matrix:</b>	AQ - Ground Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	Buckley AFB, Aurora, CO		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0044568.D	1	07/19/10	MM	n/a	n/a	VN1805
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		87-116%
17060-07-0	1,2-Dichloroethane-D4	102%		76-127%
2037-26-5	Toluene-D8	91%		86-112%
460-00-4	4-Bromofluorobenzene	92%		84-120%

U = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	FDA-MW33-07062010DUP	<b>Date Sampled:</b>	07/06/10
<b>Lab Sample ID:</b>	F74938-6	<b>Date Received:</b>	07/08/10
<b>Matrix:</b>	AQ - Ground Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	Buckley AFB, Aurora, CO		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0044569.D	1	07/19/10	MM	n/a	n/a	VN1805
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		87-116%
17060-07-0	1,2-Dichloroethane-D4	99%		76-127%
2037-26-5	Toluene-D8	92%		86-112%
460-00-4	4-Bromofluorobenzene	90%		84-120%

U = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	FDA-MW34-07062010	<b>Date Sampled:</b>	07/06/10
<b>Lab Sample ID:</b>	F74938-7	<b>Date Received:</b>	07/08/10
<b>Matrix:</b>	AQ - Ground Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	Buckley AFB, Aurora, CO		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0044570.D	1	07/19/10	MM	n/a	n/a	VN1805
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	36.8	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	2.6	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		87-116%
17060-07-0	1,2-Dichloroethane-D4	99%		76-127%
2037-26-5	Toluene-D8	91%		86-112%
460-00-4	4-Bromofluorobenzene	90%		84-120%

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	FDA-MW34-07062010DUP	<b>Date Sampled:</b>	07/06/10
<b>Lab Sample ID:</b>	F74938-8	<b>Date Received:</b>	07/08/10
<b>Matrix:</b>	AQ - Ground Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	Buckley AFB, Aurora, CO		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0044571.D	1	07/19/10	MM	n/a	n/a	VN1805
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	38.6	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	2.7	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		87-116%
17060-07-0	1,2-Dichloroethane-D4	99%		76-127%
2037-26-5	Toluene-D8	91%		86-112%
460-00-4	4-Bromofluorobenzene	91%		84-120%

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	EQUIPMENTBLANK-07062010		
<b>Lab Sample ID:</b>	F74938-9	<b>Date Sampled:</b>	07/06/10
<b>Matrix:</b>	AQ - Equipment Blank	<b>Date Received:</b>	07/08/10
<b>Method:</b>	SW846 8260B	<b>Percent Solids:</b>	n/a
<b>Project:</b>	Buckley AFB, Aurora, CO		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0044565.D	1	07/19/10	MM	n/a	n/a	VN1805
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		87-116%
17060-07-0	1,2-Dichloroethane-D4	104%		76-127%
2037-26-5	Toluene-D8	94%		86-112%
460-00-4	4-Bromofluorobenzene	100%		84-120%

U = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> TB-07062010	
<b>Lab Sample ID:</b> F74938-10	<b>Date Sampled:</b> 07/06/10
<b>Matrix:</b> AQ - Trip Blank Water	<b>Date Received:</b> 07/08/10
<b>Method:</b> SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0044566.D	1	07/19/10	MM	n/a	n/a	VN1805
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		87-116%
17060-07-0	1,2-Dichloroethane-D4	103%		76-127%
2037-26-5	Toluene-D8	93%		86-112%
460-00-4	4-Bromofluorobenzene	97%		84-120%

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound



## Misc. Forms

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### Custody Documents and Other Forms

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Includes the following where applicable:

- Certification Exceptions
- Chain of Custody



2730 Shadelands Drive, Suite 100  
Walnut Creek, California 94598  
(925) 946-3100 (925) 256-8998 (fax)

**F74938**

Local Address: 3333 Si Woodsonville Blvd  
Ste 220  
Lakewood, CO 80227

# Chain-Of-Custody

Project Name and Number: Buckley AFB Env Rest/07030.0007 Laboratory Name: Accutest Lab SE, Inc. Date: 7/7/2010  
Project Manager: Kelly Ruelter Address: 4405 Vineland Rd Contact Name: Sue Bell Page: 1 of 1  
Site Location: Aurora, CO 566 C15, Orlando, FL 32811 Phone: 407-425-6700

Sample I.D.	Date	Time	Sample Depth	No. of Containers	Sample Matrix	Analysis:										Special Instructions/Comments							
						8260B	5310B SM19	5WREG-00A (TOC)	6010B	(Ca, Mg, K, Na, Fe)	SM1PVS CON-SE	(NO <sub>2</sub> -NO <sub>3</sub> )	SM 232-05	(FALICALINOLY)	EDPA 300.0		CHLORIDE (SOL)	SM 20450.05	(SOLIDS)				
1 PW-18-07062010	7/6/10	1635	25.5'	11	GW	3	2	1	1														
2 FWA-TW57-07072010	7/7/10	1120	29.5'	11	GW	3	2	1	1														
3 FWA-MW42-07072010	7/7/10	1005	46'	5	GW	3	2																
4 FWA-TW58-07062010	7/6/10	1758	53'	5	GW	3	2																
5 FDA-MW33-07062010	7/6/10	1040	65'	3	GW	3																	
6 FDA-MW33-07062010 DUP	7/6/10	1040	65'	3	GW	3																	
7 FDA-MW34-07062010	7/6/10	1205	70'	3	GW	3																	
8 FDA-MW34-07062010 DUP	7/6/10	1205	70'	3	GW	3																	
9 Equipment Blank-07062010	7/6/10	1830		3	DI	3																	
10 TB-07062010	7/6/10			2		2																	

Sampled By: Whitney L. Elliott/ Brooks Dillard Sampler: Whitney L. Elliott/ Brooks Dillard Courier/Airbill No.: 8731 09430674

Signature: [Signature]

Special Instructions: \_\_\_\_\_

Relinquished By/Affiliation: [Signature] Date: 7/10 Time: 1730 Received By/Affiliation: [Signature] Date: 7/10 Time: 1830

Send Results to: edawson@itsi.com

Turnaround Time: Standard

3-2



**ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION**

ACCUTEST'S JOB NUMBER: F74938 CLIENT: ITSI PROJECT: Buckley AFB  
 DATE/TIME RECEIVED: 070810 0900 (MM/DD/YY 24:00) NUMBER OF COOLERS RECEIVED: 1  
 METHOD OF DELIVERY:  **FEDEX** UPS ACCUTEST COURIER GREYHOUND DELIVERY OTHER  
 AIRBILL NUMBERS: 8731 0943 0674

**COOLER INFORMATION**

- CUSTODY SEAL NOT PRESENT OR NOT INTACT
- CHAIN OF CUSTODY NOT RECEIVED (COC)
- ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- TEMPERATURE CRITERIA NOT MET
- WET ICE PRESENT

**TRIP BLANK INFORMATION**

- TRIP BLANK PROVIDED
- TRIP BLANK NOT PROVIDED
- TRIP BLANK NOT ON COC
- TRIP BLANK INTACT
- TRIP BLANK NOT INTACT
- RECEIVED WATER TRIP BLANK
- RECEIVED SOIL TRIP BLANK

**MISC. INFORMATION**

NUMBER OF ENCORES ? \_\_\_\_\_  
 NUMBER OF 5035 FIELD KITS ? \_\_\_\_\_  
 NUMBER OR LAB FILTERED METALS ? \_\_\_\_\_

**TEMPERATURE INFORMATION**

- IR THERM ID 3 CORR. FACTOR +1.4
- OBSERVED TEMPS: 1.8
- CORRECTED TEMPS: 3.2

**SAMPLE INFORMATION**

- SAMPLE LABELS PRESENT ON ALL BOTTLES
- INCORRECT NUMBER OF CONTAINERS USED
- SAMPLE RECEIVED IMPROPERLY PRESERVED
- INSUFFICIENT VOLUME FOR ANALYSIS
- DATES/TIMES ON COC DO NOT MATCH SAMPLE LABEL
- ID'S ON COC DO NOT MATCH LABEL
- VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- UNCLEAR FILTERING OR COMPOSITING INSTRUCTIONS
- SAMPLE CONTAINER(S) RECEIVED BROKEN
- % SOLIDS JAR NOT RECEIVED
- 5035 FIELD KIT FROZEN WITHIN 48 HOUR'S
- RESIDUAL CHLORINE PRESENT

(APPLICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS)

SUMMARY OF COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

TECHNICIAN SIGNATURE/DATE F7070810 REVIEWER SIGNATURE/DATE 07-8-10

NF 10/09

RECEIPT CONFIRMATION 100609 (2).xls

4.1  
4

**F74938: Chain of Custody**

**Page 2 of 2**



Technical Report for

Innovative Technical Solutions, Inc

Buckley AFB, Aurora, CO

07030.0007

Accutest Job Number: F74970

Sampling Dates: 07/06/10 - 07/07/10

Report to:

ITSI, CO

pschwarzweiler@itsi.com

ATTN: Paul Schwarzweiler

Total number of pages in report: **24**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

  
Harry Behzadi, Ph.D.  
Laboratory Director

Client Service contact: Sue Bell 407-425-6700

Certifications: FL (DOH E83510), NC (573), NJ (FL002), MA (FL946), IA (366), LA (03051), KS (E-10327), SC, AK  
This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.  
Test results relate only to samples analyzed.



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## Sample Summary

Innovative Technical Solutions, Inc

**Job No:** F74970

Buckley AFB, Aurora, CO

Project No: 07030.0007

Sample Number	Collected		Matrix Received	Code	Type	Client Sample ID
	Date	Time By				
F74970-1	07/07/10	10:05 WLBD	07/09/10	AQ	Ground Water	FWA-MW42-07072010
F74970-2	07/06/10	17:58 WLBD	07/09/10	AQ	Ground Water	FWA-TW58-07062010
F74970-3	07/07/10	13:20 WLBD	07/09/10	AQ	Ground Water	PW22-07072010
F74970-4	07/06/10	13:50 WLBD	07/09/10	AQ	Ground Water	FWA-MW50-07062010
F74970-5	07/06/10	12:09 WLBD	07/09/10	AQ	Ground Water	FWA-MW51-07062010
F74970-6	07/06/10	14:40 WLBD	07/09/10	AQ	Ground Water	FDA-MW35-07062010
F74970-7	07/07/10	11:36 WLBD	07/09/10	AQ	Ground Water	FWA-TW53-07072010
F74970-8	07/07/10	14:10 WLBD	07/09/10	AQ	Ground Water	FWA-MW17-07072010
F74970-9	07/07/10	17:00 WLBD	07/09/10	AQ	Equipment Blank	EQUIPMENTBLANK-07072010
F74970-10	07/07/10	00:00 WLBD	07/09/10	AQ	Trip Blank Water	TB-07072010

## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** Innovative Technical Solutions, Inc

**Job No:** F74970

**Site:** Buckley AFB, Aurora, CO

**Report Date** 7/28/2010 12:34:48

9 Samples, 1 Trip Blank were collected on between 07/06/2010 and 07/07/2010 and received at Accutest on 07/09/2010 properly preserved, at 2.2 Deg. C and intact. These Samples received an Accutest job number of F74970. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Volatiles by GCMS By Method SW846 8260B

**Matrix:** AQ

**Batch ID:** VN1804

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F74938-1MS were used as the QC samples indicated.

F74970-3: Sample was treated with an anti-foaming agent. Sample was not preserved to a pH < 2; reported results are considered minimum values.

**Matrix:** AQ

**Batch ID:** VN1805

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F74970-4MS, F74970-4MSD were used as the QC samples indicated.

Blank Spike Recovery(s) for cis-1,2-Dichloroethylene are outside control limits. Biased high, not detected in the associated samples, data integrity not adversely affected.

Matrix Spike Duplicate Recovery(s) for cis-1,2-Dichloroethylene are outside control limits.

F74970-4: Confirmation run.

### Volatiles by GC By Method RSKSOP-147/175

**Matrix:** AQ

**Batch ID:** GXY1883

All samples were analyzed within the recommended method holding time.

Sample(s) F74990-1DUP, F74990-1MS were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

F74970-3: Sample was not preserved to a pH < 2.

F74970-3: Sample was not preserved to a pH < 2.

### Metals By Method SW846 6010B

**Matrix:** AQ

**Batch ID:** MP18641

All samples were digested within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F74877-1DUP, F74877-1MS, F74877-1MSD, F74877-1SDL were used as the QC samples for metals.

Matrix Spike Recovery(s) for Calcium, Magnesium, Sodium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

RPD(s) for Duplicate for Iron are outside control limits for sample MP18641-D1. RPD acceptable due to low duplicate and sample concentrations.

### Wet Chemistry By Method EPA 300/SW846 9056

**Matrix:** AQ

**Batch ID:** GP15179

All samples were prepared within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F74970-3DUP, F74970-3MS were used as the QC samples for Sulfate, Chloride.

Matrix Spike Recovery(s) for Chloride, Sulfate are outside control limits. Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

F74970-3 for Sulfate: Dilution required due to matrix interference.

### Wet Chemistry By Method SM18 4500NO3E

**Matrix:** AQ **Batch ID:** GN40580

All method blanks for this batch meet method specific criteria.

Sample(s) F74877-1DUP, F74877-1MS were used as the QC samples for Nitrogen, Nitrate + Nitrite.

### Wet Chemistry By Method SM19 2320B

**Matrix:** AQ **Batch ID:** GN40366

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F74938-1DUP, F74938-1MS, F74938-1MSD were used as the QC samples for Alkalinity, Total as CaCO3.

**Matrix:** AQ **Batch ID:** GN40379

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F74970-3DUP, F74970-3MS were used as the QC samples for Alkalinity, Total as CaCO3.

### Wet Chemistry By Method SM19 5310B/SW 9060A

**Matrix:** AQ **Batch ID:** GP15218

All samples were prepared within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F74970-3DUP, F74970-3MS were used as the QC samples for Total Organic Carbon.

Matrix Spike Recovery(s) for Total Organic Carbon are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

### Wet Chemistry By Method SM20 4500S F

**Matrix:** AQ **Batch ID:** GN40383

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F75010-1DUP, F75010-1MS were used as the QC samples for Sulfide.

Matrix Spike Recovery(s) for Sulfide are outside control limits. Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

Accutest Laboratories Southeast (ALSE) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALSE and as stated on the COC. ALSE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALSE Quality Manual except as noted above. This report is to be used in its entirety. ALSE is not responsible for any assumptions of data quality if partial data packages are used

Narrative prepared by:

Date: July 28, 2010

\_\_\_\_\_  
Svetlana Izosimova, QA Officer (signature on file)



## Sample Results

---

## Report of Analysis

---

## Report of Analysis

3.1  
3

<b>Client Sample ID:</b> FWA-MW42-07072010	<b>Date Sampled:</b> 07/07/10
<b>Lab Sample ID:</b> F74970-1	<b>Date Received:</b> 07/09/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

### Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	443000	1000	100	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Iron	102 J	300	35	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Magnesium	109000	5000	100	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Potassium	8120 J	10000	500	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Sodium	1300000	400000	30000	ug/l	40	07/12/10	07/14/10 RS	SW846 6010B <sup>2</sup>	SW846 3010A <sup>3</sup>

- (1) Instrument QC Batch: MA8226
- (2) Instrument QC Batch: MA8231
- (3) Prep QC Batch: MP18641

RL = Reporting Limit  
MDL = Method Detection Limit

U = Indicates a result < MDL  
J = Indicates a result > = MDL but < RL

## Report of Analysis

3.1  
3

<b>Client Sample ID:</b> FWA-MW42-07072010	<b>Date Sampled:</b> 07/07/10
<b>Lab Sample ID:</b> F74970-1	<b>Date Received:</b> 07/09/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

### General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	311	5.0	2.5	mg/l	1	07/09/10	CC	SM19 2320B
Chloride	378	50	25	mg/l	25	07/09/10 12:25	CC	EPA 300/SW846 9056
Nitrogen, Nitrate + Nitrite	16.7	5.0	2.5	mg/l	50	07/27/10 08:00	SJL	SM18 4500NO3E
Sulfate	3020	100	50	mg/l	50	07/09/10 14:13	CC	EPA 300/SW846 9056
Sulfide	0.97 J	1.0	0.60	mg/l	1	07/12/10	LE	SM20 4500S F

RL = Reporting Limit  
MDL = Method Detection Limit

U = Indicates a result < MDL  
J = Indicates a result > = MDL but < RL

## Report of Analysis

32  
3

<b>Client Sample ID:</b> FWA-TW58-07062010	<b>Date Sampled:</b> 07/06/10
<b>Lab Sample ID:</b> F74970-2	<b>Date Received:</b> 07/09/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

**Total Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	459000	1000	100	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Iron	128 J	300	35	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Magnesium	77900	5000	100	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Potassium	10900	10000	500	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Sodium	1130000	200000	15000	ug/l	20	07/12/10	07/14/10 RS	SW846 6010B <sup>2</sup>	SW846 3010A <sup>3</sup>

- (1) Instrument QC Batch: MA8226
- (2) Instrument QC Batch: MA8231
- (3) Prep QC Batch: MP18641

RL = Reporting Limit  
MDL = Method Detection Limit

U = Indicates a result < MDL  
J = Indicates a result > = MDL but < RL

## Report of Analysis

<b>Client Sample ID:</b> FWA-TW58-07062010	<b>Date Sampled:</b> 07/06/10
<b>Lab Sample ID:</b> F74970-2	<b>Date Received:</b> 07/09/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

### General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	175	5.0	2.5	mg/l	1	07/09/10	CC	SM19 2320B
Chloride	864	50	25	mg/l	25	07/09/10 12:43	CC	EPA 300/SW846 9056
Nitrogen, Nitrate + Nitrite	22.1	5.0	2.5	mg/l	50	07/27/10 08:00	SJL	SM18 4500NO3E
Sulfate	1890	100	50	mg/l	50	07/09/10 14:31	CC	EPA 300/SW846 9056
Sulfide	1.4	1.0	0.60	mg/l	1	07/12/10	LE	SM20 4500S F

RL = Reporting Limit  
MDL = Method Detection Limit

U = Indicates a result < MDL  
J = Indicates a result > = MDL but < RL

## Report of Analysis

<b>Client Sample ID:</b>	PW22-07072010	<b>Date Sampled:</b>	07/07/10
<b>Lab Sample ID:</b>	F74970-3	<b>Date Received:</b>	07/09/10
<b>Matrix:</b>	AQ - Ground Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	Buckley AFB, Aurora, CO		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	N0044545.D	1	07/16/10	MM	n/a	n/a	VN1804
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	1.2	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		87-116%
17060-07-0	1,2-Dichloroethane-D4	99%		76-127%
2037-26-5	Toluene-D8	92%		86-112%
460-00-4	4-Bromofluorobenzene	87%		84-120%

(a) Sample was treated with an anti-foaming agent. Sample was not preserved to a pH < 2; reported results are considered minimum values.

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> PW22-07072010	
<b>Lab Sample ID:</b> F74970-3	<b>Date Sampled:</b> 07/07/10
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 07/09/10
<b>Method:</b> RSKSOP-147/175	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	XY045136.D	1	07/13/10	CW	n/a	n/a	GXY1883
Run #2 <sup>a</sup>	XY045149.D	10	07/13/10	CW	n/a	n/a	GXY1883

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	5810 <sup>b</sup>	5.0	1.6	ug/l	
74-84-0	Ethane	0.32 U	1.0	0.32	ug/l	
74-85-1	Ethene	0.43 U	1.0	0.43	ug/l	

(a) Sample was not preserved to a pH < 2.

(b) Result is from Run# 2

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> PW22-07072010 <b>Lab Sample ID:</b> F74970-3 <b>Matrix:</b> AQ - Ground Water <b>Project:</b> Buckley AFB, Aurora, CO	<b>Date Sampled:</b> 07/07/10 <b>Date Received:</b> 07/09/10 <b>Percent Solids:</b> n/a
---	---

### Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	396000	1000	100	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Iron	49300	300	35	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Magnesium	115000	5000	100	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Potassium	50700	10000	500	ug/l	1	07/12/10	07/12/10 RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Sodium	413000	100000	7500	ug/l	10	07/12/10	07/14/10 RS	SW846 6010B <sup>2</sup>	SW846 3010A <sup>3</sup>

- (1) Instrument QC Batch: MA8226
- (2) Instrument QC Batch: MA8231
- (3) Prep QC Batch: MP18641

RL = Reporting Limit  
 MDL = Method Detection Limit

U = Indicates a result < MDL  
 J = Indicates a result > = MDL but < RL

## Report of Analysis

<b>Client Sample ID:</b> PW22-07072010	<b>Date Sampled:</b> 07/07/10
<b>Lab Sample ID:</b> F74970-3	<b>Date Received:</b> 07/09/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

### General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	2500	25	13	mg/l	1	07/12/10	CC	SM19 2320B
Chloride	134	4.0	2.0	mg/l	2	07/09/10 14:49	CC	EPA 300/SW846 9056
Nitrogen, Nitrate + Nitrite	0.050 U	0.10	0.050	mg/l	1	07/27/10 08:00	SJL	SM18 4500NO3E
Sulfate <sup>a</sup>	16.8	4.0	2.0	mg/l	2	07/09/10 14:49	CC	EPA 300/SW846 9056
Sulfide	2.4	1.0	0.60	mg/l	1	07/12/10	LE	SM20 4500S F
Total Organic Carbon	61.5	1.0	0.50	mg/l	1	07/19/10 18:00	LT	SM19 5310B/SW 9060A

(a) Dilution required due to matrix interference.

RL = Reporting Limit  
 MDL = Method Detection Limit

U = Indicates a result < MDL  
 J = Indicates a result > = MDL but < RL

## Report of Analysis

<b>Client Sample ID:</b>	FWA-MW50-07062010	
<b>Lab Sample ID:</b>	F74970-4	<b>Date Sampled:</b> 07/06/10
<b>Matrix:</b>	AQ - Ground Water	<b>Date Received:</b> 07/09/10
<b>Method:</b>	SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b>	Buckley AFB, Aurora, CO	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0044552.D	1	07/16/10	MM	n/a	n/a	VN1804
Run #2 <sup>a</sup>	N0044574.D	1	07/19/10	MM	n/a	n/a	VN1805

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%	108%	87-116%
17060-07-0	1,2-Dichloroethane-D4	97%	99%	76-127%
2037-26-5	Toluene-D8	92%	91%	86-112%
460-00-4	4-Bromofluorobenzene	90%	91%	84-120%

(a) Confirmation run for internal standard areas.

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> FWA-MW51-07062010	
<b>Lab Sample ID:</b> F74970-5	<b>Date Sampled:</b> 07/06/10
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 07/09/10
<b>Method:</b> SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0044578.D	1	07/19/10	MM	n/a	n/a	VN1805
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		87-116%
17060-07-0	1,2-Dichloroethane-D4	98%		76-127%
2037-26-5	Toluene-D8	90%		86-112%
460-00-4	4-Bromofluorobenzene	90%		84-120%

U = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> FDA-MW35-07062010	
<b>Lab Sample ID:</b> F74970-6	<b>Date Sampled:</b> 07/06/10
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 07/09/10
<b>Method:</b> SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0044546.D	1	07/16/10	MM	n/a	n/a	VN1804
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	67.7	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	4.3	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		87-116%
17060-07-0	1,2-Dichloroethane-D4	98%		76-127%
2037-26-5	Toluene-D8	92%		86-112%
460-00-4	4-Bromofluorobenzene	89%		84-120%

U = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> FWA-TW53-07072010	
<b>Lab Sample ID:</b> F74970-7	<b>Date Sampled:</b> 07/07/10
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 07/09/10
<b>Method:</b> SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0044548.D	1	07/16/10	MM	n/a	n/a	VN1804
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		87-116%
17060-07-0	1,2-Dichloroethane-D4	96%		76-127%
2037-26-5	Toluene-D8	91%		86-112%
460-00-4	4-Bromofluorobenzene	88%		84-120%

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> FWA-MW17-07072010	
<b>Lab Sample ID:</b> F74970-8	<b>Date Sampled:</b> 07/07/10
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 07/09/10
<b>Method:</b> SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0044549.D	1	07/16/10	MM	n/a	n/a	VN1804
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	9.5	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.59	1.0	0.24	ug/l	J
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		87-116%
17060-07-0	1,2-Dichloroethane-D4	98%		76-127%
2037-26-5	Toluene-D8	91%		86-112%
460-00-4	4-Bromofluorobenzene	90%		84-120%

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	EQUIPMENTBLANK-07072010		
<b>Lab Sample ID:</b>	F74970-9	<b>Date Sampled:</b>	07/07/10
<b>Matrix:</b>	AQ - Equipment Blank	<b>Date Received:</b>	07/09/10
<b>Method:</b>	SW846 8260B	<b>Percent Solids:</b>	n/a
<b>Project:</b>	Buckley AFB, Aurora, CO		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0044572.D	1	07/19/10	MM	n/a	n/a	VN1805
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		87-116%
17060-07-0	1,2-Dichloroethane-D4	99%		76-127%
2037-26-5	Toluene-D8	91%		86-112%
460-00-4	4-Bromofluorobenzene	88%		84-120%

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> TB-07072010	
<b>Lab Sample ID:</b> F74970-10	<b>Date Sampled:</b> 07/07/10
<b>Matrix:</b> AQ - Trip Blank Water	<b>Date Received:</b> 07/09/10
<b>Method:</b> SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0044573.D	1	07/19/10	MM	n/a	n/a	VN1805
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		87-116%
17060-07-0	1,2-Dichloroethane-D4	98%		76-127%
2037-26-5	Toluene-D8	90%		86-112%
460-00-4	4-Bromofluorobenzene	88%		84-120%

U = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



## Misc. Forms

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### Custody Documents and Other Forms

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Includes the following where applicable:

- Certification Exceptions
- Chain of Custody



2730 Shadelands Drive, Suite 100  
Walnut Creek, California 94598  
(925) 946-3100 (925) 256-8998 (fax)

Local Address: 3333 S. Wadsworth Blvd  
#6200  
Lakewood, CO 80227

# Chain-Of-Custody

Project Name and Number: Bickley AFB Env Rest / 07030.007 Laboratory Name: Accutest Lab SE, Inc. Date: 7/7/2010  
 Project Manager: Kelly Ruder Address: 4405 Vineland Rd Contact Name: Sue Bell Page: 1 of 1  
 Site Location: Alameda, CO Address: 56415 Orlando FL 32811 Phone: 407-425-6700

Sample I.D.	Date	Time	Sample Depth	No. of Containers	Sample Matrix	Analysis:				Special Instructions/Comments	
						Preservative:	Container Type:	Analysis:	Analysis:		
FWA-MW42-07072010	7/7/10	1005	46'	6	GW	HCl	500 mL	H2	N/A	N/A	
FWA-TW58-07062010	7/6/10	1758	53'	6	GW	HCl	500 mL	H2	N/A	N/A	
PW22-07072010	7/7/10	1320	35.5'	14	GW	HCl	500 mL	H2	N/A	N/A	
FWA-NW50-07062010	7/6/10	1350	50'	3	GW	HCl	500 mL	H2	N/A	N/A	
FWA-MW51-07062010	7/6/10	1209	30'	3	GW	HCl	500 mL	H2	N/A	N/A	
FDA-MW35-07062010	7/6/10	1440	63'	3	GW	HCl	500 mL	H2	N/A	N/A	
FWA-TW53-07072010	7/7/10	1136	58'	3	GW	HCl	500 mL	H2	N/A	N/A	
FWA-MW17-07072010	7/7/10	1410	27'	3	GW	HCl	500 mL	H2	N/A	N/A	
Equipment Blank-07072010	7/7/10	1700	-	3	DI						
TB-07072010	7/7/10	-	-	2	-						

Sampled By: Whitney Littlejohn/Brooks Dillard Sampler: Whitney Littlejohn/Brooks Dillard Courier/Airbill No.: 8731 0943 0663

Signature: [Signature] Relinquished By/Affiliation: [Signature] Date: 7/10 Time: 1730 Received By/Affiliation: FedEx Date: 7/7/10 Time: 1830

Special Instructions: [Signature] Date: 7/9/10 Time: 9:00

Send Results to: edawson@itsi.com

Turnaround Time: standard

Original - Laboratory Yellow - Field/Office

**ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION**

ACCUTEST'S JOB NUMBER: F74970 CLIENT: 1751 PROJECT: Buckley AFB  
 DATE/TIME RECEIVED: 7/9/10 9:00 (MM/DD/YY 24:00) NUMBER OF COOLERS RECEIVED: 1  
 METHOD OF DELIVERY:  FEDEX  UPS  ACCUTEST COURIER  GREYHOUND  DELIVERY  OTHER  
 AIRBILL NUMBERS: 8731 0943 0003

**COOLER INFORMATION**

- CUSTODY SEAL NOT PRESENT OR NOT INTACT
- CHAIN OF CUSTODY NOT RECEIVED (COC)
- ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- TEMPERATURE CRITERIA NOT MET
- WET ICE PRESENT

**TRIP BLANK INFORMATION**

- TRIP BLANK PROVIDED
- TRIP BLANK NOT PROVIDED
- TRIP BLANK NOT ON COC
- TRIP BLANK INTACT
- TRIP BLANK NOT INTACT
- RECEIVED WATER TRIP BLANK
- RECEIVED SOIL TRIP BLANK

**MISC. INFORMATION**

NUMBER OF ENCORES ? 0  
 NUMBER OF 5035 FIELD KITS ? 0  
 NUMBER OR LAB FILTERED METALS ? 0

**TEMPERATURE INFORMATION**

IR THERM ID T01 CORR. FACTOR 1.4  
 OBSERVED TEMPS: 1.8  
 CORRECTED TEMPS: 2.2

**SAMPLE INFORMATION**

- SAMPLE LABELS PRESENT ON ALL BOTTLES
  - INCORRECT NUMBER OF CONTAINERS USED
  - SAMPLE RECEIVED IMPROPERLY PRESERVED
  - INSUFFICIENT VOLUME FOR ANALYSIS
  - DATES/TIMES ON COC DO NOT MATCH SAMPLE LABEL
  - ID'S ON COC DO NOT MATCH LABEL
  - VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
  - BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
  - NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
  - UNCLEAR FILTERING OR COMPOSITING INSTRUCTIONS
  - SAMPLE CONTAINER(S) RECEIVED BROKEN
  - % SOLIDS JAR NOT RECEIVED
  - 5035 FIELD KIT FROZEN WITHIN 48 HOUR'S
  - RESIDUAL CHLORINE PRESENT
- {APPLICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS}

SUMMARY OF COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

TECHNICIAN SIGNATURE/DATE CR 7/9/10 REVIEWER SIGNATURE/DATE JE 07-09-10  
 NF 10/09 RECEIPT CONFIRMATION 100609 (2).xls

4  
4



Technical Report for

Innovative Technical Solutions, Inc

Buckley AFB, Aurora, CO

07030.0007

Accutest Job Number: F75011

Sampling Dates: 07/08/10 - 07/09/10

Report to:

ITSI, CO

pschwarzweiler@itsi.com

ATTN: Paul Schwarzweiler

Total number of pages in report: **33**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

  
Harry Behzadi, Ph.D.  
Laboratory Director

Client Service contact: Sue Bell 407-425-6700

Certifications: FL (DOH E83510), NC (573), NJ (FL002), MA (FL946), IA (366), LA (03051), KS (E-10327), SC, AK  
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Test results relate only to samples analyzed.



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## Sample Summary

Innovative Technical Solutions, Inc

**Job No:** F75011

Buckley AFB, Aurora, CO

Project No: 07030.0007

Sample Number	Collected		Matrix Received	Code	Type	Client Sample ID
	Date	Time By				
F75011-1	07/09/10	11:00 WLBD	07/10/10	AQ	Ground Water	FWA-TW68-07092010
F75011-2	07/09/10	09:40 WLBD	07/10/10	AQ	Ground Water	FDA-MW28-07092010
F75011-3	07/09/10	10:59 WLBD	07/10/10	AQ	Ground Water	FWA-DPT19-07092010
F75011-4	07/08/10	16:45 WLBD	07/10/10	AQ	Ground Water	FDA-MW15-07082010
F75011-5	07/08/10	12:05 WLBD	07/10/10	AQ	Ground Water	PW-20-07082010
F75011-6	07/09/10	10:26 WLBD	07/10/10	AQ	Ground Water	FWA-DPT8-07092010
F75011-7	07/08/10	14:10 WLBD	07/10/10	AQ	Ground Water	FWA-DPT12-07082010
F75011-8	07/08/10	16:05 WLBD	07/10/10	AQ	Ground Water	FWA-DPT9-07082010
F75011-9	07/09/10	14:30 WLBD	07/10/10	AQ	Ground Water	FWA-DPT17-07092010
F75011-10	07/08/10	12:40 WLBD	07/10/10	AQ	Ground Water	FWA-DPT18-07082010
F75011-11	07/08/10	17:10 WLBD	07/10/10	AQ	Equipment Blank	EQUIPMENTBLANK-07082010
F75011-12	07/09/10	12:00 WLBD	07/10/10	AQ	Equipment Blank	EQUIPMENTBLANK-07092010
F75011-13	07/08/10	17:05 WLBD	07/10/10	AQ	Equipment Blank	EQUIPMENTBLANK-070820102



## Sample Summary

(continued)

Innovative Technical Solutions, Inc

Job No: F75011

Buckley AFB, Aurora, CO

Project No: 07030.0007

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
F75011-14	07/09/10	15:12	WLBD07/10/10	AQ	Equipment Blank	EQUIPMENTBLANK-070920102
F75011-15	07/09/10	00:00	WLBD07/10/10	AQ	Trip Blank Water	TB-07092010

## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** Innovative Technical Solutions, Inc

**Job No:** F75011

**Site:** Buckley AFB, Aurora, CO

**Report Date** 7/28/2010 1:06:28 PM

14 Samples, 1 Trip Blank were collected on between 07/08/2010 and 07/09/2010 and received at Accutest on 07/10/2010 properly preserved, at 2.6 Deg. C and intact. These Samples received an Accutest job number of F75011. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Volatiles by GCMS By Method SW846 8260B

**Matrix:** AQ                      **Batch ID:** VE23

All samples were analyzed within the recommended method holding time.

Sample(s) F75198-14MS, F75198-14MSD were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

Matrix Spike Recovery(s) for 1,2-Dichloroethane, cis-1,2-Dichloroethylene are outside control limits.

Matrix Spike Duplicate Recovery(s) for cis-1,2-Dichloroethylene, trans-1,2-Dichloroethylene are outside control limits. Outside control limits due to high level in sample relative to spike amount.

F75011-1 for Tetrachloroethylene: Results from different vials are not consistent; higher results were reported.

**Matrix:** AQ                      **Batch ID:** VE24

All samples were analyzed within the recommended method holding time.

Sample(s) F74990-1DUP, F75034-3MS, F75034-3MSD were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

Matrix Spike Recovery(s) for trans-1,2-Dichloroethylene are outside control limits. Probable cause due to matrix interference.

RPD(s) for Duplicate for cis-1,2-Dichloroethylene, Tetrachloroethylene, trans-1,2-Dichloroethylene, Trichloroethylene, Vinyl chloride are outside control limits for sample F74990-1DUP. Probable cause due to sample homogeneity.

**Matrix:** AQ                      **Batch ID:** VE25

All samples were analyzed within the recommended method holding time.

Sample(s) F75185-1MS, F75185-1MSD were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

F75011-1: Sample was not preserved to a pH < 2; reported results are considered minimum values.

### Volatiles by GC By Method RSKSOP-147/175

**Matrix:** AQ                      **Batch ID:** GFF288

All samples were analyzed within the recommended method holding time.

Sample(s) F75010-1MS, F75011-1DUP were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

F75011-5: Sample was not preserved to a pH < 2.

F75011-1: Sample was not preserved to a pH < 2.

### Metals By Method SW846 6010B

**Matrix:** AQ                      **Batch ID:** MP18642

All samples were digested within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F74877-7DUP, F74877-7MS, F74877-7MSD, F74877-7SDL were used as the QC samples for metals.

Matrix Spike Recovery(s) for Sodium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

### Wet Chemistry By Method EPA 300/SW846 9056

**Matrix:** AQ                      **Batch ID:** GP15182





## Sample Results

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## Report of Analysis

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## Report of Analysis

<b>Client Sample ID:</b> FWA-TW68-07092010	
<b>Lab Sample ID:</b> F75011-1	<b>Date Sampled:</b> 07/09/10
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 07/10/10
<b>Method:</b> SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	E000762.D	1	07/22/10	TD	n/a	n/a	VE25
Run #2	E000692.D	100	07/20/10	TD	n/a	n/a	VE23

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene <sup>b</sup>	212 <sup>c</sup>	100	44	ug/l	
79-01-6	Trichloroethylene	6.2	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	92%	98%	87-116%
17060-07-0	1,2-Dichloroethane-D4	86%	93%	76-127%
2037-26-5	Toluene-D8	108%	110%	86-112%
460-00-4	4-Bromofluorobenzene	107%	106%	84-120%

(a) Sample was not preserved to a pH < 2; reported results are considered minimum values.

(b) Results from different vials are not consistent; higher results were reported.

(c) Result is from Run# 2

U = Not detected      MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

3.1  
3

<b>Client Sample ID:</b> FWA-TW68-07092010	<b>Date Sampled:</b> 07/09/10
<b>Lab Sample ID:</b> F75011-1	<b>Date Received:</b> 07/10/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> RSKSOP-147/175	
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	FF06800.D	1	07/13/10	WV	n/a	n/a	GFF288
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	4.43	0.50	0.16	ug/l	
74-84-0	Ethane	0.32 U	1.0	0.32	ug/l	
74-85-1	Ethene	0.47	1.0	0.43	ug/l	J

(a) Sample was not preserved to a pH < 2.

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

3.1  
3

<b>Client Sample ID:</b> FWA-TW68-07092010	<b>Date Sampled:</b> 07/09/10
<b>Lab Sample ID:</b> F75011-1	<b>Date Received:</b> 07/10/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

### Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	778000	2000	200	ug/l	2	07/12/10 07/14/10	RS	SW846 6010B <sup>2</sup>	SW846 3010A <sup>3</sup>
Iron	164000	300	35	ug/l	1	07/12/10 07/14/10	RS	SW846 6010B <sup>2</sup>	SW846 3010A <sup>3</sup>
Magnesium	131000	5000	100	ug/l	1	07/12/10 07/14/10	RS	SW846 6010B <sup>2</sup>	SW846 3010A <sup>3</sup>
Potassium	15400	10000	500	ug/l	1	07/12/10 07/12/10	RS	SW846 6010B <sup>1</sup>	SW846 3010A <sup>3</sup>
Sodium	1280000	200000	15000	ug/l	20	07/12/10 07/14/10	RS	SW846 6010B <sup>2</sup>	SW846 3010A <sup>3</sup>

- (1) Instrument QC Batch: MA8226
- (2) Instrument QC Batch: MA8231
- (3) Prep QC Batch: MP18642

RL = Reporting Limit  
MDL = Method Detection Limit

U = Indicates a result < MDL  
J = Indicates a result > = MDL but < RL

## Report of Analysis

31  
3

<b>Client Sample ID:</b> FWA-TW68-07092010	<b>Date Sampled:</b> 07/09/10
<b>Lab Sample ID:</b> F75011-1	<b>Date Received:</b> 07/10/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

### General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	2550	25	13	mg/l	1	07/12/10	CC	SM19 2320B
Chloride	456	100	50	mg/l	50	07/10/10 14:48	CC	EPA 300/SW846 9056
Nitrogen, Nitrate + Nitrite	3.7	2.5	1.3	mg/l	25	07/27/10 08:00	SJL	SM18 4500NO3E
Sulfate	1050	100	50	mg/l	50	07/10/10 14:48	CC	EPA 300/SW846 9056
Total Organic Carbon	1160	1.0	0.50	mg/l	1	07/21/10 13:40	LT	SM19 5310B/SW 9060A

RL = Reporting Limit  
MDL = Method Detection Limit

U = Indicates a result < MDL  
J = Indicates a result > = MDL but < RL

## Report of Analysis

<b>Client Sample ID:</b> FDA-MW28-07092010	<b>Date Sampled:</b> 07/09/10
<b>Lab Sample ID:</b> F75011-2	<b>Date Received:</b> 07/10/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8260B	
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E000693.D	1	07/20/10	TD	n/a	n/a	VE23
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

**VOA Special List**

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	11.7	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	7.9	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		87-116%
17060-07-0	1,2-Dichloroethane-D4	89%		76-127%
2037-26-5	Toluene-D8	105%		86-112%
460-00-4	4-Bromofluorobenzene	104%		84-120%

U = Not detected      MDL - Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> FWA-DPT19-07092010	
<b>Lab Sample ID:</b> F75011-3	<b>Date Sampled:</b> 07/09/10
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 07/10/10
<b>Method:</b> SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E000694.D	1	07/20/10	TD	n/a	n/a	VE23
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		87-116%
17060-07-0	1,2-Dichloroethane-D4	86%		76-127%
2037-26-5	Toluene-D8	108%		86-112%
460-00-4	4-Bromofluorobenzene	101%		84-120%

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	FDA-MW15-07082010	<b>Date Sampled:</b>	07/08/10
<b>Lab Sample ID:</b>	F75011-4	<b>Date Received:</b>	07/10/10
<b>Matrix:</b>	AQ - Ground Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	Buckley AFB, Aurora, CO		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E000695.D	1	07/20/10	TD	n/a	n/a	VE23
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	21.5	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	4.9	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		87-116%
17060-07-0	1,2-Dichloroethane-D4	85%		76-127%
2037-26-5	Toluene-D8	108%		86-112%
460-00-4	4-Bromofluorobenzene	103%		84-120%

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> PW-20-07082010	<b>Date Sampled:</b> 07/08/10
<b>Lab Sample ID:</b> F75011-5	<b>Date Received:</b> 07/10/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8260B	
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E000696.D	1	07/20/10	TD	n/a	n/a	VE23
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

### VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	42.2	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	8.0	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	4.3	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	17.9	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		87-116%
17060-07-0	1,2-Dichloroethane-D4	85%		76-127%
2037-26-5	Toluene-D8	108%		86-112%
460-00-4	4-Bromofluorobenzene	101%		84-120%

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

3.5  
3

<b>Client Sample ID:</b> PW-20-07082010	
<b>Lab Sample ID:</b> F75011-5	<b>Date Sampled:</b> 07/08/10
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 07/10/10
<b>Method:</b> RSKSOP-147/175	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	FF06805.D	1	07/13/10	WV	n/a	n/a	GFF288
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	836	0.50	0.16	ug/l	
74-84-0	Ethane	0.32 U	1.0	0.32	ug/l	
74-85-1	Ethene	0.43 U	1.0	0.43	ug/l	

(a) Sample was not preserved to a pH < 2.

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> PW-20-07082010	<b>Date Sampled:</b> 07/08/10
<b>Lab Sample ID:</b> F75011-5	<b>Date Received:</b> 07/10/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

### General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Total Organic Carbon	20.3	1.0	0.50	mg/l	1	07/21/10 14:11	LT	SM19 5310B/SW 9060A

RL = Reporting Limit  
MDL = Method Detection Limit

U = Indicates a result < MDL  
J = Indicates a result > = MDL but < RL

## Report of Analysis

<b>Client Sample ID:</b> FWA-DPT8-07092010	
<b>Lab Sample ID:</b> F75011-6	<b>Date Sampled:</b> 07/09/10
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 07/10/10
<b>Method:</b> SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E000697.D	1	07/20/10	TD	n/a	n/a	VE23
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	1.2	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		87-116%
17060-07-0	1,2-Dichloroethane-D4	82%		76-127%
2037-26-5	Toluene-D8	108%		86-112%
460-00-4	4-Bromofluorobenzene	101%		84-120%

U = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> FWA-DPT12-07082010	<b>Date Sampled:</b> 07/08/10
<b>Lab Sample ID:</b> F75011-7	<b>Date Received:</b> 07/10/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8260B	
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E000714.D	1	07/21/10	TD	n/a	n/a	VE24
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

**VOA Special List**

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	2.7	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	92%		87-116%
17060-07-0	1,2-Dichloroethane-D4	86%		76-127%
2037-26-5	Toluene-D8	105%		86-112%
460-00-4	4-Bromofluorobenzene	105%		84-120%

U = Not detected      MDL - Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> FWA-DPT9-07082010	
<b>Lab Sample ID:</b> F75011-8	<b>Date Sampled:</b> 07/08/10
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 07/10/10
<b>Method:</b> SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E000715.D	1	07/21/10	TD	n/a	n/a	VE24
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	2.6	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		87-116%
17060-07-0	1,2-Dichloroethane-D4	85%		76-127%
2037-26-5	Toluene-D8	108%		86-112%
460-00-4	4-Bromofluorobenzene	103%		84-120%

U = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

3.9  
3

<b>Client Sample ID:</b> FWA-DPT17-07092010	<b>Date Sampled:</b> 07/09/10
<b>Lab Sample ID:</b> F75011-9	<b>Date Received:</b> 07/10/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8260B	
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E000716.D	1	07/21/10	TD	n/a	n/a	VE24
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

**VOA Special List**

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	1.5	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.46	1.0	0.24	ug/l	J
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		87-116%
17060-07-0	1,2-Dichloroethane-D4	83%		76-127%
2037-26-5	Toluene-D8	107%		86-112%
460-00-4	4-Bromofluorobenzene	106%		84-120%

U = Not detected      MDL - Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> FWA-DPT18-07082010	<b>Date Sampled:</b> 07/08/10
<b>Lab Sample ID:</b> F75011-10	<b>Date Received:</b> 07/10/10
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8260B	
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E000717.D	1	07/21/10	TD	n/a	n/a	VE24
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

### VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	5.8	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		87-116%
17060-07-0	1,2-Dichloroethane-D4	83%		76-127%
2037-26-5	Toluene-D8	106%		86-112%
460-00-4	4-Bromofluorobenzene	105%		84-120%

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	EQUIPMENTBLANK-07082010		
<b>Lab Sample ID:</b>	F75011-11	<b>Date Sampled:</b>	07/08/10
<b>Matrix:</b>	AQ - Equipment Blank	<b>Date Received:</b>	07/10/10
<b>Method:</b>	SW846 8260B	<b>Percent Solids:</b>	n/a
<b>Project:</b>	Buckley AFB, Aurora, CO		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E000718.D	1	07/21/10	TD	n/a	n/a	VE24
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		87-116%
17060-07-0	1,2-Dichloroethane-D4	83%		76-127%
2037-26-5	Toluene-D8	105%		86-112%
460-00-4	4-Bromofluorobenzene	105%		84-120%

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	EQUIPMENTBLANK-07092010		
<b>Lab Sample ID:</b>	F75011-12	<b>Date Sampled:</b>	07/09/10
<b>Matrix:</b>	AQ - Equipment Blank	<b>Date Received:</b>	07/10/10
<b>Method:</b>	SW846 8260B	<b>Percent Solids:</b>	n/a
<b>Project:</b>	Buckley AFB, Aurora, CO		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E000719.D	1	07/21/10	TD	n/a	n/a	VE24
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		87-116%
17060-07-0	1,2-Dichloroethane-D4	87%		76-127%
2037-26-5	Toluene-D8	107%		86-112%
460-00-4	4-Bromofluorobenzene	103%		84-120%

U = Not detected      MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	EQUIPMENTBLANK-070820102		
<b>Lab Sample ID:</b>	F75011-13	<b>Date Sampled:</b>	07/08/10
<b>Matrix:</b>	AQ - Equipment Blank	<b>Date Received:</b>	07/10/10
<b>Method:</b>	SW846 8260B	<b>Percent Solids:</b>	n/a
<b>Project:</b>	Buckley AFB, Aurora, CO		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E000720.D	1	07/21/10	TD	n/a	n/a	VE24
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		87-116%
17060-07-0	1,2-Dichloroethane-D4	89%		76-127%
2037-26-5	Toluene-D8	107%		86-112%
460-00-4	4-Bromofluorobenzene	103%		84-120%

U = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	EQUIPMENTBLANK-070920102		
<b>Lab Sample ID:</b>	F75011-14	<b>Date Sampled:</b>	07/09/10
<b>Matrix:</b>	AQ - Equipment Blank	<b>Date Received:</b>	07/10/10
<b>Method:</b>	SW846 8260B	<b>Percent Solids:</b>	n/a
<b>Project:</b>	Buckley AFB, Aurora, CO		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E000721.D	1	07/21/10	TD	n/a	n/a	VE24
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		87-116%
17060-07-0	1,2-Dichloroethane-D4	93%		76-127%
2037-26-5	Toluene-D8	107%		86-112%
460-00-4	4-Bromofluorobenzene	103%		84-120%

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> TB-07092010	
<b>Lab Sample ID:</b> F75011-15	<b>Date Sampled:</b> 07/09/10
<b>Matrix:</b> AQ - Trip Blank Water	<b>Date Received:</b> 07/10/10
<b>Method:</b> SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b> Buckley AFB, Aurora, CO	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E000722.D	1	07/21/10	TD	n/a	n/a	VE24
Run #2							

Run #1	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	0.28 U	1.0	0.28	ug/l	
75-35-4	1,1-Dichloroethylene	0.29 U	1.0	0.29	ug/l	
107-06-2	1,2-Dichloroethane	0.33 U	1.0	0.33	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.34 U	1.0	0.34	ug/l	
127-18-4	Tetrachloroethylene	0.44 U	1.0	0.44	ug/l	
79-01-6	Trichloroethylene	0.24 U	1.0	0.24	ug/l	
75-01-4	Vinyl chloride	0.28 U	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		87-116%
17060-07-0	1,2-Dichloroethane-D4	99%		76-127%
2037-26-5	Toluene-D8	108%		86-112%
460-00-4	4-Bromofluorobenzene	103%		84-120%

U = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



## Misc. Forms

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### Custody Documents and Other Forms

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Includes the following where applicable:

- Certification Exceptions
- Chain of Custody

F75011

005860



2730 Shadelands Drive, Suite 100  
Walnut Creek, California 94598  
(925) 946-3100 (925) 256-8998 (fax)

Local Address: 3533 S. Wadsworth Blvd  
Ste 220  
Lakewood, CO 80227 80227

# Chain-Of-Custody

Project Name and Number: Buckley AFB Env Rest/07030.0007  
Project Manager: Kelly Rader  
Site Location: Aurora, CO

Laboratory Name: Accutest Lab SE, Inc.  
Address: 4405 Vine land Rd  
Ste C15 Orlando, FL Phone: 407-425-6700

Date: 7/9/2010  
Page: 1 of 2

Analysis: 32811

8260B  
5310B SM19  
SW906DA (TOC)  
6010B  
Ca, Mg, K, Na, Fe  
SM164500 NO<sub>3</sub>-E  
(NO<sub>3</sub>-NO<sub>3</sub>)  
SM1320B  
(ALKALINITY)  
EPA 300.0  
(CHLORIDE+SDM)  
RSK 175  
(MEE)

Preservative: Z/P  
Container Type: 500 mL

Special Instructions/Comments

Sample I.D.	Date	Time	Sample Depth	No. of Containers	Sample Matrix
1 FWA-MW05-07092010	7/9/10	1100	39.5'	11	GW
2 FDA-MW28-07092010	7/9/10	0940	32'	3	GW
3 FWA-DPT19-07092010	7/9/10	1059	20'	3	GW
4 FDA-MW15-07082010	7/8/10	1645	30'	3	GW
5 PW-20-07082010	7/8/10	1205	32.5'	8	GW
6 FWA-DPT8-07092010	7/9/10	1026	30'	3	GW
7 FWA-DPT12-07082010	7/8/10	1410	32'	3	GW
8 FWA-DPT9-07082010	7/8/10	1605	32'	3	GW
9 FWA-DPT17-07092010	7/9/10	1430	40'	3	GW
10 FWA-DPT18-07082010	7/8/10	1240	44'	3	GW

Sampled By: Whitney Littleton/ Brooks Dillard  
Signature: [Signature]  
Special Instructions:  
Send Results to: edawson@itsi.com  
Turnaround Time: Standard

Sampler: Whitney Littleton/ Brooks Dillard  
Relinquished By/Affiliation: [Signature]  
Date: 7/9/10 Time: 1630  
7/10/10 900

Courier/Airbill No.: 8731 0943 0685  
Received By/Affiliation: FedEx  
Ch2 Accutest  
Date: 7/9/10 Time: 1700  
7/10/10 900  
2.6

Original - Laboratory Yellow - Field/Office

Graphics/Stationery/chain\_custody0408.ai

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F75011

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2730 Shadelands Drive, Suite 100  
Walnut Creek, California 94598  
(925) 946-3100 (925) 256-8998 (fax)

Local Address: 3333 SWADSWORTH BLVD  
STE 220  
LAKEWOOD CO 80227

# Chain-Of-Custody

Project Name and Number: BUCKLEY AFB ENV. REST. 87030  
Project Manager: KELLY RUDER  
Site Location: AURORA CO

Laboratory Name: ACCUTEST LAB SE, INC.  
Address: 4405 VINELAND RD Contact Name: SUE BELL  
STE C15 ORLANDO FL Phone: 407.425.6700

Date: 7/9/2010  
Page: 2 of 2

Sample I.D.	Date	Time	Sample Depth	No. of Containers	Sample Matrix	Analysis	Preservative:	Container type:	Special Instructions/Comments
						8260 B			
11 EQUIPMENT BLANK-07082010	7/8/10	1710		3	DI		HC	VOA	
12 EQUIPMENT BLANK-07092010	7/9/10	1200		3	DI				
13 EQUIPMENT BLANK-07082010 2	7/8/10	1705		3	DI				
H EQUIPMENT BLANK-07092010 2	7/9/10	1512		3	DI				

Sampled By: <u>WHITNEY LITTLETON</u>   <u>BROOKS DILLARD</u>	Sampler: <u>WHITNEY LITTLETON</u>   <u>BROOKS DILLARD</u>	Courier/Airbill No.: <u>8731 0943 0685</u>				
Signature: <u>[Signature]</u>	Relinquished By/Affiliation: <u>[Signature]</u>	Date:	Time:	Received By/Affiliation:	Date:	Time:
Special Instructions:	<u>fx</u>	<u>7/9/10</u>	<u>1630</u>	<u>Fed Ex</u>	<u>7/9/10</u>	<u>1700</u>
Send Results to: <u>EDAWSON@ITSI.COM</u>		<u>7/10/10</u>	<u>9100</u>	<u>OR Accutest</u>	<u>7/10/10</u>	<u>9100</u>
Turnaround Time: <u>STANDARD</u>				<u>2.6</u>		

Original - Laboratory Yellow - Field/Office

Graphics/Stationery/chain\_custody0408.ai

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**ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION**

ACCUTEST'S JOB NUMBER: F75011 CLIENT: ITS1 PROJECT: Buckley AFB  
 DATE/TIME RECEIVED: 7/10/10 9:00 (MM/DD/YY 24:00) NUMBER OF COOLERS RECEIVED: 1  
 METHOD OF DELIVERY:  FEDEX  UPS  ACCUTEST COURIER  GREYHOUND  DELIVERY  OTHER  
 AIRBILL NUMBERS: 8731 0943 2885

**COOLER INFORMATION**

- CUSTODY SEAL NOT PRESENT OR NOT INTACT
- CHAIN OF CUSTODY NOT RECEIVED (COC)
- ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- TEMPERATURE CRITERIA NOT MET
- WET ICE PRESENT

**TRIP BLANK INFORMATION**

- TRIP BLANK PROVIDED
- TRIP BLANK NOT PROVIDED
- TRIP BLANK NOT ON COC
- TRIP BLANK INTACT
- TRIP BLANK NOT INTACT
- RECEIVED WATER TRIP BLANK
- RECEIVED SOIL TRIP BLANK

**MISC. INFORMATION**

NUMBER OF ENCORES ? 0  
 NUMBER OF 5035 FIELD KITS ? 0  
 NUMBER OR LAB FILTERED METALS ? 2

**TEMPERATURE INFORMATION**

IR THERM ID I 21 CORR. FACTOR 1.4  
 OBSERVED TEMPS: 2.2  
 CORRECTED TEMPS: 2.6

**SAMPLE INFORMATION**

- SAMPLE LABELS PRESENT ON ALL BOTTLES
- INCORRECT NUMBER OF CONTAINERS USED
- SAMPLE RECEIVED IMPROPERLY PRESERVED
- INSUFFICIENT VOLUME FOR ANALYSIS
- DATES/TIMES ON COC DO NOT MATCH SAMPLE LABEL
- ID'S ON COC DO NOT MATCH LABEL
- VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- UNCLEAR FILTERING OR COMPOSITING INSTRUCTIONS
- SAMPLE CONTAINER(S) RECEIVED BROKEN
- % SOLIDS JAR NOT RECEIVED
- 5035 FIELD KIT FROZEN WITHIN 48 HOUR'S
- RESIDUAL CHLORINE PRESENT

(APPLICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS)

SUMMARY OF COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

TECHNICIAN SIGNATURE/DATE [Signature] 7/10/10 REVIEWER SIGNATURE/DATE [Signature] 8/7/10

NF 10/09

RECEIPT CONFIRMATION 100609 (2).xls

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**F75011: Chain of Custody**

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F75011

005861



2730 Shadelands Drive, Suite 100  
Walnut Creek, California 94598  
(925) 946-3100 (925) 256-8998 (fax)

Local Address: 3333 SNADSWORTH BLVD  
STE 220  
LAKEWOOD CO 80227

# Chain-Of-Custody

Project Name and Number: BUCKLEY AFB ENV. REST. 07030-0007  
Project Manager: KELLY RUDER  
Site Location: AURORA CO

Laboratory Name: ACCUTEST LAB SE, INC.  
Address: 4405 VINELAND RD Contact Name: SUE BELL  
STE CIS ORLANDO FL Phone: 407.425.6700

Date: 7/9/2010  
Page: 2 of 2

Sample I.D.	Date	Time	Sample Depth	No. of Containers	Sample Matrix	Analysis	Preservative	Container Type	Special Instructions/Comments
11 EQUIPMENT BLANK-07092010	7/8/10	1710		1	DI	8260B	HCL	VOA	
12 EQUIPMENT BLANK-07092010	7/9/10	1200		1	DI				
13 EQUIPMENT BLANK-07092010 2	7/8/10	1705		1	DI				
H EQUIPMENT BLANK-07092010 2	7/9/10	1512		1	DI				
TB-07092010	7/9/10	00:00		2	WR				
am 7/14/10									

Sampled By: WHITNEY LITTLETON | BROOKS DILLARD      Sampler: WHITNEY LITTLETON | BROOKS DILLARD      Courier/Airbill No.: 8731 0943 0685

Signature: [Signature]

Special Instructions: \_\_\_\_\_

Send Results to: EDAWSON@ITSI.COM

Turnaround Time: STANDARD

Relinquished By/Affiliation:	Date:	Time:	Received By/Affiliation:	Date:	Time:
<u>[Signature]</u>	7/9/10	1630	<u>Fed Ex</u>	7/9/10	1700
	7/14/10	9100	<u>Accutest</u>	7/14/10	9100

J.B

Original - Laboratory    Yellow - Field/Office

Graphics/Stationery/chain\_custody0408.ai

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4

**Job Change Order:** F75011\_7/14/2010

<b>Requested Date:</b>	7/14/2010	<b>Received Date:</b>	7/10/2010
<b>Account Name:</b>	Innovative Technical Solutions, Inc	<b>Due Date:</b>	7/26/2010
<b>Project Description:</b>	Buckley AFB, Aurora, CO	<b>Deliverable:</b>	FULT1
<b>CSR:</b>	SB	<b>TAT (Days):</b>	14

**Sample #:** F75011-Trip Blank  
**Change:** Per Eric M at ITSI via -email 07.14.10, run this Trip Blank, TB-07092010, for V8260TCL. Revised COC submitted.

**Above Changes** Eric M at ITSI **Date:** 7/14/2010

To Client: This Change Order is confirmation of the revisions, previously discussed with the Accutest Client Service Representative.

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