

DEPARTMENT OF THE ARMY US ARMY ENGINEER DISTRICT (ALASKA) PO BOX 6898 JBER, ALASKA 99506-6898

REPLY TO ATTENTION OF

CEPOA-EN-G-CIH

30 October 2012

MEMORANDUM THRU CEPOA-EN-G

FOR CEPOA-PM-ESP (Brock)

SUBJECT: Report of Chemical Findings, Building 35-752, Fort Richardson, AK (12-073)

- Executive Summary: The U.S. Army Corps of Engineers, Alaska District, Engineering Division, Geotechnical Engineering Services Branch, Chemistry and Industrial Hygiene Section (CEPOA-EN-G-CIH) was tasked by the Environmental Branch (CEPOA-PM-ESP) to collect groundwater samples at Building 35-752 on Joint Base Elmendorf Richardson (JBER), Alaska. The objective of this sampling event was to provide data indicating that the No Further Action (NFA) remedy selected in the Operable Unit E Record of Decision (OUE ROD) is continuing to be protective of human health and the environment. The regulatory agencies (Alaska Department of Environmental Conservation [ADEC] and the Environmental Protection Agency [EPA]) and the Army agreed that continued monitoring of this site is necessary to ensure that the NFA decision continues to be protective.
- 2. References.
 - a. Alaska Department of Environmental Conservation (ADEC), <u>18 AAC 75 Oil and Other</u> <u>Hazardous Substances Pollution Control</u>, October 9, 2008.
 - b. Department of Defense Environmental Data Quality Workgroup (DoD EDQW), <u>DoD</u> <u>Quality Systems Manual</u>, Version 4.2, October 2010.
 - c. SGS, Sample Delivery Group 1122522
 - d. US Army Corps of Engineers (USACE), <u>Sampling and Analysis Plan, JBER Richardson</u> Former Building 35-752 Groundwater Monitoring (12-073); June 2012.
 - e. US Army Garrison, Alaska, <u>Remedial Design Work Plan, Operable Unit E</u>, Fort Richardson, September 2006.
- 3. Background.

The Building 35-752 site is located on JBER, Alaska (Figure 1). The eastern part of the current facility was formally known as Fort Richardson, and provides housing for resident military personnel and their dependents, and employment and services for civilians from the

surrounding area. Building 35-752 is located approximately 1/3 of a mile south of Davis Highway, in a relatively undeveloped part of JBER that includes high-frequency transmitter antennas. Building 35-752 is currently vacant and a locked chain-link fence surrounds the area to restrict access. However, access to the monitoring wells is not restricted.

Building 35-752 is a former generator/power supply building for a high-frequency transmitter facility. Several volatile organic compounds (VOCs), most notably trichloroethylene (TCE), have been detected at the site at concentrations that exceed the Federal maximum contaminant limits (MCLs) and ADEC cleanup levels (Ref 2.a, Table C). Other fuel-related contaminants and metals have been detected as well.

4. Field Activities and Observations.

Seven groundwater samples, two equipment blanks, one duplicate, and a trip blank were collected on 21-24 June 2012. USACE chemist Mike Utley (CEPOA-EN-G-CIH) and intern Alona Schue (CEPOA-PM-ESP) performed all sampling activities. The project location is presented in Figure 1 and well locations are presented in Figure 2. Attachment 2 provides the sample summary and presents all the analytical data collected for this event. Attachment 3 contains the chains of custody generated for the project and the ADEC data quality review sheets, Attachment 4 contains the field notes and Attachment 5 contains the purge logs of the sampling event. Samples were collected as prescribed in the Sampling and Analysis Plan (SAP, ref. 2.d) using a submersible pump. Wells AP-2982, AP-2983, AP-2987, AP-3231, AP-3232, AP-3458, and AP-3503 were sampled.

Most of the wells were in good condition. AP-3503 appears to have jacked – the inner casing extended above the outer casing by about one inch (see Photo #5), possibly causing damage to the casing. Due to an apparent bend in the well casing, the 2 inch submersible pump would not reach the desired pumping depth. As a result, a peristaltic pump was procured and utilized for this well only. AP-2982 is listed in the construction log as a stickup, but field observations proved differently. The well is actually a flushmount (see Photo #6). Lastly, the bentonite used in AP-3231 is very near the surface of the soil. A leg of a table used for sampling purposes became coated with bentonite during sampling of that well (see Photos #9 and #10). All other wells were in good condition. Also, the used 1-gallon oil can (approximately ¼ full) originally identified in 2008 was again found next to well AP-2983.

5. Investigation Derived Waste.

Investigation-derived waste consisting of plastic bags, nitrile gloves, and sample tubing were disposed of in facility trash receptacles. Purge water was passed through a granular activated carbon (GAC) filter prior to disposal on the ground.

6. Laboratory Assignment.

Samples were hand delivered to SGS Environmental Laboratory Services Inc. in Anchorage on 25 June 2012. Analytical methods utilized for this effort include Gasoline Range Organics by AK101, Diesel Range Organics by AK102, dissolved metals (aluminum, arsenic, cadmium, chromium, iron, lead, manganese, and nickel) by SW6020, polychlorinated biphenyls (PCBs) by SW8082, and volatile organic compounds (VOCs) by SW8260B. A trip blank was included to

assess any contamination introduced during shipping and handling, and was analyzed for GRO and VOCs.

7. Results.

All data results are presented in Attachment 2. All results are below the cleanup levels as defined in 18 AAC 75 Table C; detections of TCE in AP-3231 were noted but were below the cleanup level and below the levels reported in 2008 (0.00472 and a duplicate of 0.00500 mg/L; the 2012 result is 0.00312 mg/L).

8. Data Quality Review and Assessment.

An electronic copy of the analytical data package is provided in Attachment 6. A data review and quality assessment was performed by USACE chemist Mike Utley. The data review included an evaluation of sample collection, holding time and summary information for blanks (to assess contamination), sample duplicates (to assess precision), laboratory control samples (to assess accuracy) and matrix spike and surrogate recoveries (to assess matrix effects). Instrument calibration review and raw data verification were not performed. Attachment 2 contains comprehensive data tables and Attachment 3 contains the chains of custody and the ADEC laboratory data review checklists for each Sample Delivery Group (SDG). The review is summarized below:

a. All sample handling criteria were met with the following exceptions:

- i. Two of five total coolers were received at temperatures above the ADEC requirement of 6° C (6.6 and 9.7 degrees). Impacted analytes were DRO and PCBs. Temperature blanks were generated with fresh water the day of submittal to the laboratory, which might impact the elevated temperatures. Also, DRO and PCBs are not significantly impacted by temperature upon receipt, and thus data usability is not significantly impacted. See ADEC work sheet for details.
- ii. Two VOC containers were received with bubbles greater than six millimeters. However, these containers were not used in laboratory analyses, therefore data usability is not impacted.
- b. All samples were extracted and analyzed as per the Chains of custody. All quality control frequency criteria were met with the following exceptions:
 - i. Lab batch XXX27208 (AK102) and VXX23673 (SW8260B) did not contain the QSM mandated MS/MSD samples. However, both batches contain a LCSD for precision evaluation. Also, a MS/MSD was submitted with this sample group. Therefore, data usability is not impacted by this deviation.
- c. All blank results met the required frequency and criteria with the following exceptions:
 - i. Method blanks: All criteria were met.
 - ii. Trip blanks: All criteria were met.
- iii. Equipment blanks: DRO, manganese, nickel, bromodichloromethane, and chloroform were detected in the two equipment blanks. Trace amounts of these compounds detected in the project samples may be due to carryover and/or source

water contamination. All impacted results are qualified "B". However, all impacted results are well below the project action limits. Data usability is not impacted.

- d. All laboratory control sample/laboratory control sample duplicates (LCS/LCSD) were within the specified control limits.
- e. All surrogate criteria met recovery limits or exceedances do not impact data usability. Details are presented in the ADEC data quality worksheet (Attachment 3).
- f. All matrix spike/matrix spike duplicate (MS/MSD) results met the laboratory acceptance limits or do not impact data usability with the following exceptions:
 - i. DRO failed low in the MS/MSD associated with sample 12AP2983WG and is flagged QL. However, the result is well below the ADEC cleanup level, and data usability is not impacted.
- g. All laboratory Limits of Detection (LODs, defined in Ref. 2.b) were below ADEC 18 AAC 75.345 Table C limits except analytes 1,2-dibromoethane and 1,2,3trichloropropane. As such, the results for these compounds cannot be used to prove the definitive absence of these compounds at the cleanup level. However, these compounds are not contaminants of concern at this site, and the nondetect results are usable to show that these compounds are not a concern. Results for these compounds are flagged "E" to indicate that the cleanup limits were not met.
- 9. Conclusions and Recommendations.

These results demonstrate that the concentrations of all target analytes are below ADEC cleanup levels. In addition, the concentration of TCE seems to be decreasing from the 2008 levels.

10. Questions and comments should be addressed to Mike Utley (907-753-2691).

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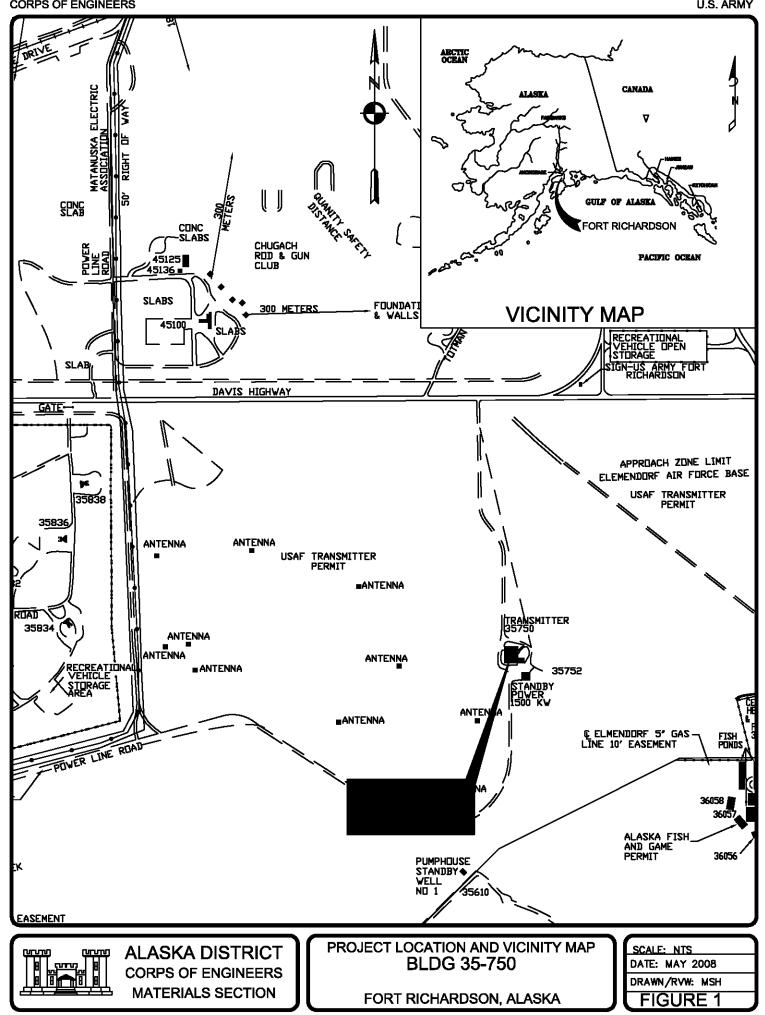
Mike Utley, Chemist Chemistry and Industrial Hygeine Section, Geotechnical and Engineering Services Branch, Engineering Division

- Attachment 1: Figures and Photographs
- Attachment 2: Data Tables
- Attachment 3: Project Chains of Custody & ADEC Data Quality Worksheets
- Attachment 4: Field Notes
- Attachment 5: Purge Logs
- Attachment 6: Analytical Data Package (on CD)

Attachment 1 Figures & Photos



U.S. ARMY



JBER Richardson Bldg 35-752 Groundwater Monitoring Well Locations

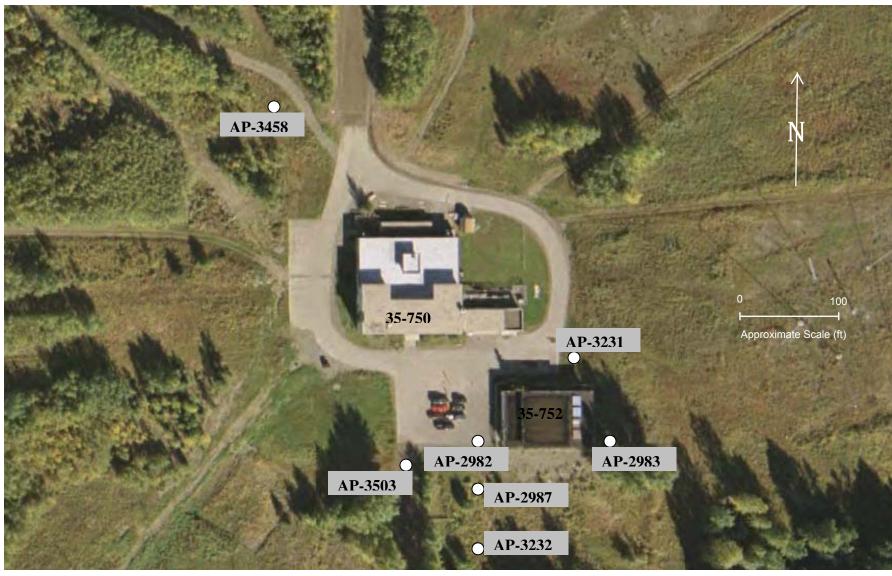


Figure 2



Photo 1: AP-3458, looking SE



Photo 2: AP-3232



Photo 3: AP-2983 (note presence of oil can)



Photo 4: Setup on AP-2983, looking NW



Photo 5: AP-3503, looking W; note cock-eyed lid due to inner casing jacking



Photo 6: AP-2982, looking E. Yellow tape is on a plastic cup which is sitting on well cap.



Photo 7: AP-2987, looking S.



Photo 8: AP-3231, looking SSE



Photo 9: AP-3231 uplift around base of well



Photo 10: Bentonite from AP-3231 on table leg



Photo 11: AP-3503, looking SE, peristaltic pump setup

Attachment 2 Data Tables

Sample Summary Bldg 35-752 Groundwater Monitoring

LOCID	SAMPID	LABSAMPID	LOGDATE	LOGTIME	MATRIX	LABCODE	SUB	AK101	AK102	SW6020	SW8082A	SW8260B
AP-3983	12AP3983WG	1122522001	21-Jun-12	1750	WG	SGSA	NA	1	1	1	1	1
AP-2982	12AP2982WG	1122522002	22-Jun-12	1231	WG	SGSA	NA	1	1	1	1	1
AP-2987	12AP2987WG	1122522003	22-Jun-12	1445	WG	SGSA	NA	1	1	1	1	1
AP-3232	12AP3232WG	1122522004	21-Jun-12	1605	WG	SGSA	NA	1	1	1	1	1
AP-3458	12AP3458WG	1122522005	21-Jun-12	1136	WG	SGSA	NA	1	1	1	1	1
EB-01	12EB1WG	1122522006	21-Jun-12	1800	WG	SGSA	NA	1	1	1	1	1
AP-3231	12AP3231WG	1122522007	22-Jun-12	1630	WG	SGSA	NA	1	1	1	1	1
AP-3503	12AP3503WG	1122522008	24-Jun-12	1410	WG	SGSA	NA	1	1	1	1	1
EB-02	12EB2WG	1122522009	22-Jun-12	1830	WG	SGSA	NA	1	1	1	1	1
AP-2983	12AP2983WG	1122522010	21-Jun-12	1735	WG	SGSA	NA	1	1	1	1	1
Trip Blank	12TB1WG	1122522013	24-Jun-12	1500	WG	SGSA	NA	1				1

		Sa	ample ID	AP-2982	AP-2983	AP-2983	AP-2987	AP-3231
		Location I	D, Depth	12AP2982WG	12AP2983WG	12AP3983WG	12AP2987WG	12AP3231WG
		Sample D	-	1122522	1122522	1122522	1122522	1122522
		Collect	ion Date	6/22/2012	6/21/2012	6/21/2012	6/22/2012	6/22/2012
Method	ANALYTE	UNITS	ADEC			DUPLICATE		
AK101	Gasoline Range Organics	MG/L	2.2	0.0554 [0.062] J	ND [0.062]	ND [0.062]	0.399 [0.062]	ND [0.062]
AK102	Diesel Range Organics	MG/L	1.5	0.337 [0.36] J,B	ND [0.36] QL	ND [0.372]	0.443 [0.376] J,B	ND [0.36]
SW6020	Aluminum (Lab Filtered)	MG/L	NA	ND [0.3]	ND [0.3]	ND [0.3]	ND [0.3]	ND [0.3]
SW6020	Arsenic (Lab Filtered)	MG/L	0.01	ND [0.003]	ND [0.003]	ND [0.003]	ND [0.003]	ND [0.003]
SW6020	Cadmium (Lab Filtered)	MG/L	0.005	ND [0.0012]	ND [0.0012]	ND [0.0012]	ND [0.0012]	ND [0.0012]
SW6020	Chromium (Lab Filtered)	MG/L	0.1	ND [0.0024]	ND [0.0024]	ND [0.0024]	ND [0.0024]	ND [0.0024]
SW6020	Iron (Lab Filtered)	MG/L	NA	ND [0.62]	ND [0.62]	ND [0.62]	ND [0.62]	ND [0.62]
SW6020	Lead (Lab Filtered)	MG/L	0.015	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW6020	Manganese (Lab Filtered)	MG/L	NA	0.551 [0.00124]	0.000847 [0.00124] J,B	0.000751 [0.00124] J,B	0.22 [0.00124]	0.000678 [0.00124] J,B
SW6020	Nickel (Lab Filtered)	MG/L	0.1	0.00212 [0.00124] B	0.000859 [0.00124] J,B	0.00096 [0.00124] J,B	0.00139 [0.00124] J,B	0.000915 [0.00124] J,B
SW8082A	PCB-1016 (Aroclor 1016)	MG/L	0.0005	ND [0.000062]	ND [0.000062]	ND [0.000062]	ND [0.000062]	ND [0.0000632]
SW8082A	PCB-1221 (Aroclor 1221)	MG/L	0.0005	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.000306]
SW8082A	PCB-1232 (Aroclor 1232)	MG/L	0.0005	ND [0.000062]	ND [0.000062]	ND [0.000062]	ND [0.000062]	ND [0.0000632]
SW8082A	PCB-1242 (Aroclor 1242)	MG/L	0.0005	ND [0.000062]	ND [0.000062]	ND [0.000062]	ND [0.000062]	ND [0.0000632]
SW8082A	PCB-1248 (Aroclor 1248)	MG/L	0.0005	ND [0.000062]	ND [0.000062]	ND [0.000062]	ND [0.000062]	ND [0.0000632]
SW8082A	PCB-1254 (Aroclor 1254)	MG/L	0.0005	ND [0.000062]	ND [0.000062]	ND [0.000062]	ND [0.000062]	ND [0.0000632]
SW8082A	PCB-1260 (Aroclor 1260)	MG/L	0.0005	ND [0.000062]	ND [0.000062]	ND [0.000062]	ND [0.000062]	ND [0.0000632]
SW8260B	1,1,1,2-Tetrachloroethane	MG/L	NA	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]
SW8260B	1,1,1-Trichloroethane	MG/L	0.2	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	1,1,2,2-Tetrachloroethane	MG/L	0.0043	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]
SW8260B	1,1,2-Trichloroethane	MG/L	0.005	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	1,1-Dichloroethane	MG/L	7.3	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	1,1-Dichloroethene	MG/L	0.007	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	1,1-Dichloropropene	MG/L	NA	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	1,2,3-Trichlorobenzene	MG/L	NA	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	1,2,3-Trichloropropane	MG/L	0.00012	ND [0.00062] E	ND [0.00062] E	ND [0.00062] E	ND [0.00062] E	ND [0.00062] E
SW8260B	1,2,4-Trichlorobenzene	MG/L	0.07	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	1,2,4-Trimethylbenzene	MG/L	1.8	0.00643 [0.00062]	ND [0.00062]	ND [0.00062]	0.0511 [0.00062]	ND [0.00062]
SW8260B	1,2-Dibromo-3-chloropropane	e MG/L	NA	ND [0.00124]	ND [0.00124]	ND [0.00124]	ND [0.00124]	ND [0.00124]
SW8260B	1,2-Dibromoethane	MG/L	0.00005	ND [0.00062] E	ND [0.00062] E	ND [0.00062] E	ND [0.00062] E	ND [0.00062] E
SW8260B	1,2-Dichlorobenzene	MG/L	0.6	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	1,2-Dichloroethane	MG/L	0.005	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]
SW8260B	1,2-Dichloropropane	MG/L	0.005	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
	1,3,5-Trimethylbenzene	MG/L	1.8	ND [0.00062]	ND [0.00062]	ND [0.00062]	0.00215 [0.00062]	ND [0.00062]
SW8260B	1,3-Dichlorobenzene	MG/L	3.3	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	1,3-Dichloropropane	MG/L	NA	ND [0.00024]	ND [0.00024]	ND [0.00024]	ND [0.00024]	ND [0.00024]
SW8260B	1,4-Dichlorobenzene	MG/L	0.075	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]

ADEC - most stringent of 18 AAC 75 Method 2 Table C Cleanup Levels [] - Laboratory LOD Solid shade indicates screening value exceedance Data Flags are defined at the end of the table

		Sa	ample ID	AP-2982	AP-2983	AP-2983	AP-2987	AP-3231
	1	ocation II	D, Depth	12AP2982WG	12AP2983WG	12AP3983WG	12AP2987WG	12AP3231WG
		Sample De	el Group	1122522	1122522	1122522	1122522	1122522
			ion Date	6/22/2012	6/21/2012	6/21/2012	6/22/2012	6/22/2012
Method	ANALYTE	UNITS	ADEC			DUPLICATE		
SW8260B	2,2-Dichloropropane	MG/L	NA	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	2-Butanone	MG/L	22	ND [0.0062]	ND [0.0062]	ND [0.0062]	ND [0.0062]	ND [0.0062]
SW8260B	2-Chlorotoluene	MG/L	NA	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	2-Hexanone	MG/L	NA	ND [0.0062]	ND [0.0062]	ND [0.0062]	ND [0.0062]	ND [0.0062]
SW8260B	4-Chlorotoluene	MG/L	NA	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	4-Isopropyltoluene	MG/L	NA	0.0006 [0.00062] J	ND [0.00062]	ND [0.00062]	0.00243 [0.00062]	ND [0.00062]
SW8260B	4-Methyl-2-pentanone	MG/L	2.9	ND [0.0062]	ND [0.0062]	ND [0.0062]	ND [0.0062]	ND [0.0062]
SW8260B	Benzene	MG/L	0.005	0.00037 [0.00024] J	ND [0.00024]	ND [0.00024]	0.00223 [0.00024]	ND [0.00024]
	Bromobenzene	MG/L	NA	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
	Bromochloromethane	MG/L	NA	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	Bromodichloromethane	MG/L	0.014	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]
SW8260B	Bromoform	MG/L	0.11	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	Bromomethane	MG/L	0.051	ND [0.00188]	ND [0.00188]	ND [0.00188]	ND [0.00188]	ND [0.00188]
SW8260B	Carbon disulfide	MG/L	3.7	ND [0.00124]	ND [0.00124]	ND [0.00124]	ND [0.00124]	ND [0.00124]
	Carbon tetrachloride	MG/L	0.005	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	Chlorobenzene	MG/L	0.005	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]
SW8260B	Chloroethane	MG/L	0.29	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	Chloroform	MG/L	0.14	ND [0.0006]	0.00042 [0.0006] J,B	0.00048 [0.0006] J,B	ND [0.0006]	0.0004 [0.0006] J,B
SW8260B	Chloromethane	MG/L	0.066	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	cis-1,2-Dichloroethene	MG/L	0.07	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
	cis-1,3-Dichloropropene	MG/L	0.0085	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]
SW8260B	Dibromochloromethane	MG/L	0.0005	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]
SW8260B	Dibromomethane	MG/L	0.37	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	Dichlorodifluoromethane	MG/L	7.3	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	Ethylbenzene	MG/L	0.7	0.00427 [0.00062]	ND [0.00062]	ND [0.00062]	0.0329 [0.00062]	ND [0.00062]
SW8260B	Hexachlorobutadiene	MG/L	0.0073	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	Isopropylbenzene	MG/L	3.7	0.00164 [0.00062]	ND [0.00062]	ND [0.00062]	0.00488 [0.00062]	ND [0.00062]
SW8260B	Methylene chloride	MG/L	0.005	ND [0.002]	ND [0.002]	ND [0.002]	ND [0.002]	ND [0.002]
3002000		NIC/L	0.005	ND [0.002]	ND [0.002]	ND [0.002]	ND [0.002]	ND [0.002]
SW8260B	Methyl-tert-butyl ether (MTBE)	MG/L	0.47	ND [0.003]	ND [0.003]	ND [0.003]	ND [0.003]	ND [0.003]
SW8260B	Naphthalene	MG/L	0.73	0.00163 [0.00124] J	ND [0.00124]	ND [0.00124]	0.0104 [0.00124]	ND [0.00124]
SW8260B	n-Butylbenzene	MG/L	0.37	0.00071 [0.00062] J	ND [0.00062]	ND [0.00062]	0.0013 [0.00062]	ND [0.00062]
SW8260B	n-Propylbenzene	MG/L	0.37	0.00244 [0.00062]	ND [0.00062]	ND [0.00062]	0.00733 [0.00062]	ND [0.00062]
SW8260B	o-Xylene	MG/L	10	0.00383 [0.00062]	ND [0.00062]	ND [0.00062]	0.385 [0.031]	ND [0.00062]
SW8260B	sec-Butylbenzene	MG/L	0.37	0.00072 [0.00062] J	ND [0.00062]	ND [0.00062]	0.00174 [0.00062]	ND [0.00062]
SW8260B	Styrene	MG/L	0.1	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	tert-Butylbenzene	MG/L	0.37	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	Tetrachloroethene (PCE)	MG/L	0.005	ND [0.00062]	ND [0.00062]	ND [0.00062]	0.00064 [0.00062] J	ND [0.00062]
SW8260B	Toluene	MG/L	1	ND [0.00062]	ND [0.00062]	ND [0.00062]	0.00066 [0.00062] J	ND [0.00062]
SW8260B	trans-1,2-Dichloroethene	MG/L	0.1	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	trans-1,3-Dichloropropene	MG/L	0.0085	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]

ADEC - most stringent of 18 AAC 75 Method 2 Table C Cleanup Levels [] - Laboratory LOD Solid shade indicates screening value exceedance Data Flags are defined at the end of the table

		Sample ID AP-2982 Location ID, Depth 12AP2982WG Sample Del Group 1122522 Collection Date 6/22/2012				AP-2983 12AP3983WG 1122522 6/21/2012	AP-2987 12AP2987WG 1122522 6/22/2012	AP-3231 12AP3231WG 1122522 6/22/2012
Method	ANALYTE	UNITS	ADEC			DUPLICATE		
SW8260B	Trichloroethene (TCE)	MG/L	0.005	0.0007 [0.00062] J	0.00082 [0.00062] J	0.00086 [0.00062] J	0.0007 [0.00062] J	0.00312 [0.00062]
SW8260B	Trichlorofluoromethane	MG/L	11	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	Vinyl chloride	MG/L	0.002	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	Xylene, Isomers m & p	MG/L	10	0.00176 [0.00124] J	ND [0.00124]	ND [0.00124]	0.0452 [0.00124]	ND [0.00124]
SW8260B	Xylenes	MG/L	10	0.00559 [0.00188]	ND [0.00188]	ND [0.00188]	0.121 [0.00188]	ND [0.00188]

		Sa	ample ID	AP-3232	AP-3458	AP-3503	EB-01	EB-02	Trip Blank
		Location II	D, Depth	12AP3232WG	12AP3458WG	12AP3503WG	12EB1WG	12EB2WG	12TB1WG
		Sample De		1122522	1122522	1122522	1122522	1122522	1122522
			ion Date	6/21/2012	6/21/2012	6/24/2012	6/21/2012	6/22/2012	6/24/2012
Method	ANALYTE		ADEC						
AK101	Gasoline Range Organics	MG/L	2.2	ND [0.062]	0.0311 [0.062] J	ND [0.062]	ND [0.062]	ND [0.062]	ND [0.062]
AK102	Diesel Range Organics	MG/L	1.5	ND [0.36]	0.442 [0.36] J,B	ND [0.36]	0.465 [0.36] J	0.294 [0.36] J	
SW6020	Aluminum (Lab Filtered)	MG/L	NA	ND [0.3]	ND [0.3]	ND [0.3]	ND [0.3]	ND [0.3]	
SW6020	Arsenic (Lab Filtered)	MG/L	0.01	ND [0.003]	ND [0.003]	ND [0.003]	ND [0.003]	ND [0.003]	
SW6020	Cadmium (Lab Filtered)	MG/L	0.005	ND [0.0012]	ND [0.0012]	ND [0.0012]	ND [0.0012]	ND [0.0012]	
SW6020	Chromium (Lab Filtered)	MG/L	0.1	ND [0.0024]	ND [0.0024]	ND [0.0024]	ND [0.0024]	ND [0.0024]	
SW6020	Iron (Lab Filtered)	MG/L	NA	ND [0.62]	0.786 [0.62] J	ND [0.62]	ND [0.62]	ND [0.62]	
SW6020	Lead (Lab Filtered)	MG/L	0.015	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	
SW6020	Manganese (Lab Filtered)	MG/L	NA	0.0017 [0.00124] J,B	1.49 [0.00124]	0.000665 [0.00124] J,B	0.00179 [0.00124] J	0.00172 [0.00124] J	
SW6020	Nickel (Lab Filtered)	MG/L	0.1	0.000875 [0.00124] J,B	0.00527 [0.00124] B	0.000744 [0.00124] J,B	0.00548 [0.00124]	0.00426 [0.00124]	
SW8082A	PCB-1016 (Aroclor 1016)	MG/L	0.0005	ND [0.000062]	ND [0.000062]	ND [0.000062]	ND [0.0000626]	ND [0.0000632]	
SW8082A	PCB-1221 (Aroclor 1221)	MG/L	0.0005	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.000304]	ND [0.000306]	
SW8082A	PCB-1232 (Aroclor 1232)	MG/L	0.0005	ND [0.000062]	ND [0.000062]	ND [0.000062]	ND [0.0000626]	ND [0.0000632]	
	· · ·	MG/L	0.0005	ND [0.000062]	ND [0.000062]	ND [0.000062]	ND [0.0000626]	ND [0.0000632]	
	PCB-1248 (Aroclor 1248)	MG/L	0.0005	ND [0.000062]	ND [0.000062]	ND [0.000062]	ND [0.0000626]	ND [0.0000632]	
SW8082A	PCB-1254 (Aroclor 1254)	MG/L	0.0005	ND [0.000062]	ND [0.000062]	ND [0.000062]	ND [0.0000626]	ND [0.0000632]	
SW8082A	PCB-1260 (Aroclor 1260)	MG/L	0.0005	ND [0.000062]	ND [0.000062]	ND [0.000062]	ND [0.0000626]	ND [0.0000632]	
SW8260B	1,1,1,2-Tetrachloroethane	MG/L	NA	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]
SW8260B	1,1,1-Trichloroethane	MG/L	0.2	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	1,1,2,2-Tetrachloroethane	MG/L	0.0043	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]
SW8260B	1,1,2-Trichloroethane	MG/L	0.005	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	1,1-Dichloroethane	MG/L	7.3	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	1,1-Dichloroethene	MG/L	0.007	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	1,1-Dichloropropene	MG/L	NA	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	1,2,3-Trichlorobenzene	MG/L	NA	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
	1,2,3-Trichloropropane	MG/L	0.00012	ND [0.00062] E	ND [0.00062] E	ND [0.00062] E	ND [0.00062] E	ND [0.00062] E	ND [0.00062] E
SW8260B	1,2,4-Trichlorobenzene	MG/L	0.07	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	1,2,4-Trimethylbenzene	MG/L	1.8	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	1,2-Dibromo-3-chloropropane	MG/L	NA	ND [0.00124]	ND [0.00124]	ND [0.00124]	ND [0.00124]	ND [0.00124]	ND [0.00124]
SW8260B	1,2-Dibromoethane	MG/L	0.00005	ND [0.00062] E	ND [0.00062] E	ND [0.00062] E	ND [0.00062] E	ND [0.00062] E	ND [0.00062] E
SW8260B	1,2-Dichlorobenzene	MG/L	0.6	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	1,2-Dichloroethane	MG/L	0.005	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]
	1,2-Dichloropropane	MG/L	0.005	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
	1,3,5-Trimethylbenzene	MG/L	1.8	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
	1,3-Dichlorobenzene	MG/L	3.3	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
	1,3-Dichloropropane	MG/L	NA	ND [0.00024]	ND [0.00024]	ND [0.00024]	ND [0.00024]	ND [0.00024]	ND [0.00024]
	1,4-Dichlorobenzene	MG/L	0.075	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]

ADEC - most stringent of 18 AAC 75 Method 2 Table C Cleanup Levels [] - Laboratory LOD Solid shade indicates screening value exceedance Data Flags are defined at the end of the table

		Sa	ample ID	AP-3232	AP-3458	AP-3503	EB-01	EB-02	Trip Blank
		Location II	D, Depth	12AP3232WG	12AP3458WG	12AP3503WG	12EB1WG	12EB2WG	12TB1WG
		Sample De		1122522	1122522	1122522	1122522	1122522	1122522
			ion Date	6/21/2012	6/21/2012	6/24/2012	6/21/2012	6/22/2012	6/24/2012
Method	ANALYTE	UNITS	ADEC				1	L	
SW8260B	2,2-Dichloropropane	MG/L	NA	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
	2-Butanone	MG/L	22	ND [0.0062]	ND [0.0062]	ND [0.0062]	ND [0.0062]	ND [0.0062]	ND [0.0062]
SW8260B	2-Chlorotoluene	MG/L	NA	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	2-Hexanone	MG/L	NA	ND [0.0062]	ND [0.0062]	ND [0.0062]	ND [0.0062]	ND [0.0062]	ND [0.0062]
SW8260B	4-Chlorotoluene	MG/L	NA	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	4-Isopropyltoluene	MG/L	NA	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	4-Methyl-2-pentanone	MG/L	2.9	ND [0.0062]	ND [0.0062]	ND [0.0062]	ND [0.0062]	ND [0.0062]	ND [0.0062]
SW8260B	Benzene	MG/L	0.005	ND [0.00024]	ND [0.00024]	ND [0.00024]	ND [0.00024]	ND [0.00024]	ND [0.00024]
SW8260B	Bromobenzene	MG/L	NA	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	Bromochloromethane	MG/L	NA	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	Bromodichloromethane	MG/L	0.014	ND [0.0003]	ND [0.0003]	ND [0.0003]	0.00046 [0.0003] J	0.00049 [0.0003] J	ND [0.0003]
SW8260B	Bromoform	MG/L	0.11	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	Bromomethane	MG/L	0.051	ND [0.00188]	ND [0.00188]	ND [0.00188]	ND [0.00188]	ND [0.00188]	ND [0.00188]
SW8260B	Carbon disulfide	MG/L	3.7	ND [0.00124]	ND [0.00124]	ND [0.00124]	ND [0.00124]	ND [0.00124]	ND [0.00124]
SW8260B	Carbon tetrachloride	MG/L	0.005	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	Chlorobenzene	MG/L	0.1	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]
SW8260B	Chloroethane	MG/L	0.29	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	Chloroform	MG/L	0.14	0.00032 [0.0006] J,B	ND [0.0006]	ND [0.0006]	0.0166 [0.0006]	0.0197 [0.0006]	ND [0.0006]
SW8260B	Chloromethane	MG/L	0.066	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	cis-1,2-Dichloroethene	MG/L	0.07	ND [0.00062]	0.00502 [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	cis-1,3-Dichloropropene	MG/L	0.0085	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]
SW8260B	Dibromochloromethane	MG/L	0.01	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]	ND [0.0003]
SW8260B	Dibromomethane	MG/L	0.37	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	Dichlorodifluoromethane	MG/L	7.3	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	Ethylbenzene	MG/L	0.7	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	Hexachlorobutadiene	MG/L	0.0073	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	Isopropylbenzene	MG/L	3.7	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	Methylene chloride	MG/L	0.005	ND [0.002]	ND [0.002]	ND [0.002]	ND [0.002]	ND [0.002]	ND [0.002]
SW8260B	Methyl-tert-butyl ether (MTBE	MG/L	0.47	ND [0.003]	ND [0.003]	ND [0.003]	ND [0.003]	ND [0.003]	ND [0.003]
SW8260B	Naphthalene	MG/L	0.73	ND [0.00124]	ND [0.00124]	ND [0.00124]	ND [0.00124]	ND [0.00124]	ND [0.00124]
SW8260B	n-Butylbenzene	MG/L	0.37	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	n-Propylbenzene	MG/L	0.37	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	o-Xylene	MG/L	10	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	sec-Butylbenzene	MG/L	0.37	ND [0.00062]	0.00085 [0.00062] J	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	Styrene	MG/L	0.1	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	tert-Butylbenzene	MG/L	0.37	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	Tetrachloroethene (PCE)	MG/L	0.005	ND [0.00062]	ND [0.00062]	0.00055 [0.00062] J	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	Toluene	MG/L	1	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	trans-1,2-Dichloroethene	MG/L	0.1	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	trans-1,3-Dichloropropene	MG/L	0.0085	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]

ADEC - most stringent of 18 AAC 75 Method 2 Table C Cleanup Levels [] - Laboratory LOD Solid shade indicates screening value exceedance Data Flags are defined at the end of the table

	Sample ID Location ID, Depth Sample Del Group Collection Date), Depth el Group	12AP3232WG 1122522	AP-3458 12AP3458WG 1122522 6/21/2012	AP-3503 12AP3503WG 1122522 6/24/2012	EB-01 12EB1WG 1122522 6/21/2012	EB-02 12EB2WG 1122522 6/22/2012	Trip Blank 12TB1WG 1122522 6/24/2012
Method	ANALYTE	UNITS	ADEC						
SW8260B	Trichloroethene (TCE)	MG/L	0.005	0.00046 [0.00062] J	0.00076 [0.00062] J	0.00097 [0.00062] J	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	Trichlorofluoromethane	MG/L	11	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	Vinyl chloride	MG/L	0.002	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]	ND [0.00062]
SW8260B	Xylene, Isomers m & p	MG/L	10	ND [0.00124]	ND [0.00124]	ND [0.00124]	ND [0.00124]	ND [0.00124]	ND [0.00124]
SW8260B	Xylenes	MG/L	10	ND [0.00188]	ND [0.00188]	ND [0.00188]	ND [0.00188]	ND [0.00188]	ND [0.00188]

Data Flag Explanations

ND - Analyte is not detected;

[] - Laboratory Limit of Detection (LOD)

Qualifier	Definition
J	Analyte result is considered an estimated value because the level is below the laboratory LOQ but above the DL
В	Analyte result is considered a high estimated value due to contamination present in the method blank.
QL	Analyte result is considered an estimated value biased low due to a quality control failure
E	Laboratory Level of Detection exceeds the applicable cleanup level. Result cannot be used to prove definitive absence of analyte.
R	Analyte result is rejected - result is not usable.

Flags may be combined when more than one quality deficiency exists

Attachment 3 Project Chains of Custody & ADEC Data Quality Worksheets

				C	Chain	-of-Ci	ustody	Report						
	Collection Or	ganization: CPOA	Chain	of Custo	dy: FTR0	02		Cooler ID: B	LUE1	Ad	min Numb	er: 12	-073	
21	Pr	oject Name: 35752 GWM	> I	aborato	ory: SGS		•	Bill To: C	POA		Report '	To: CP	OA	
ZIN		· · · · · · · · · · · · · · · · · · ·	Collec	tion										
ん	Location ID	Sample ID	Date	Time	Matrix	Method(s		A-B	Preservative	Jars	Type	QC	Sampler	TAT
-P	AP-2983	12AP2983WG	6/21/2012	1735	WG	AK102 🕑	H-B(2)3	OUD Cr	4C_HCL	4	1 L AMB	MS/D	MU/AS	7DAYS
ZD	AP-2983	12AP2983WG	6/21/2012	1735	WG	SW8082	19-02 3	OUZC	4C 4C	. 4	1 L AMB	MS/D	MU/AS	7DAYS
(F)	AP-3983	12AP3983WG	6/21/2012	1750	WG	AK102	0 A-B		4C_HCL	2	1 L AMB		MU/AS	7DAYS
	AP-3983	12AP3983WG	6/21/2012	1750	WG	SW8082	O c-o		_ 4C	2	1 L AMB		MU/AS	7DAYS



Comments:			
Special Instructions			
Relinquished By:	Date/Time: <u>/25/12_0930</u> Date/Time:	Relinquished By Received By: (MWHMA	Date/Time: Date/Time:Q 25 121117
· · · · · · · · · · · · · · · · · · ·		le in	Printed 6/25/2012 9:30:3



Chain-of-Custody Report

Collection O	rganization: CPOA	Chain o	of Custo	dy: FTR0	01		Cooler ID: RED1			min Numb	er: 12-073	
Pr	Project Name: 35752 GWM			Laboratory: SGS			Bill To: CPOA		Report To: CPOA			
	······································	Collec	tion				· · ·				· · ·	
Location ID	Sample ID	Date	Time	Matrix	Method(s)			Preservative	Jars	Туре	QC Sampler	TAT
AP-3231	12AP3231WG AB	6/22/2012	1630	WG	AK102			4C_HCL	2	1 L AMB	MU	7DAYS
AP-3231	12AP3231WG 0 C-D	6/22/2012	1630	WG	SW8082			4C	2	1 L AMB	MU	7DAYS
AP-3503	12AP3503WG 🕥 A·B	6/24/2012	1410	WG	AK102			4C_HCL	2	1 L AMB	MU	7DAYS
AP-3503	12AP3503WG ⑧ C-15	6/24/2012	1410	WG	SW8082			4C	2	1 L AMB	MU	7DAYS
EB-02	12EB2WG (DAB	6/22/2012	1830	WG	AK102			4C_HCL	2	1 L AMB	MU	7DAYS
EB-02	12EB2WG	6/22/2012	1830	WG	SW8082			4C	2	1 L AMB	MU	7DAYS

Comments:			· · · · · · · · · · · · · · · · · · ·	
pecial Instructions				
n A raiga				4
elinquished By: Mill THUL Date/Time: 6/25/12	0830	Relinquished By:	Date/Time:	
Received By: Date/Time:		Received By:	Date/Time: 632712	1177

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			C	Chain-	-of-Cust	ody	Report	•				
Collection O	Prganization: CPOA	Chain o	of Custo	dy: FTR0	03		Cooler ID: RE	D2	Ad	min Numb	er: 12-073	
Pr	roject Name: 35752 GWM	L	aborato	ory: SGS			Bill To: CP	OA		Report	Го: CPOA	
		Collec	tion				· · · · · · ·	,,,, <u>,</u> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
Location ID	Sample ID	Date	Time	Matrix	Method(s)			Preservative	Jars	Туре	QC Sampler	TAT
AP-2982	12AP2982WG 🥥 (-J	6/22/2012	1231	WG	SW8082			4C	2	1 L AMB	MU	7DAYS
AP-2987	12AP2987WG 3 -D	6/22/2012	1445	WG	SW8082			4C	2	1 L AMB	MU	7DAYS
AP-3232	12AP3232WG	6/21/2012	1605	WG	SW8082			4C	2	1 L AMB	MU/AS	7DAYS
AP-3458	12AP3458WG ŠČ-⊅	6/21/2012	1136	WG	SW8082			4C	2	1 L AMB	MU/AS	7DAYS
EB-01	12EB1WG 6C-D	6/21/2012	1800	WG	SW8082		1. A.	4C	2	1 L AMB	MU/AS	7DAYS

Comments:	· · · · · · · · · · · · · · · · · · ·	
Special Instructions		
Relinquished By: <u>Mile Wey</u> Received By:	Date/Time: <u>(//25/12 /000</u> Date/Time:	Relinquished By: Date/Time: Received By: Date/Time:
		Printed 6/25/2012 10:09: 2 · 8 13

			C	Chain [.]	-of-Cus	stody Repo	rt					
Collection O	rganization: CPOA	Chain o	of Custo	dy: FTR0	04	Cooler ID:	BLUE2	Ad	min Numb	er: 12	2-073	
Pr	roject Name: 35752 GWM	L	aborato	ory: SGS		Bill To:	CPOA		Report '	To: C	POA	
	نہے ہیتے میں بندر نہیں ہیں۔	Collect			. <u> </u>	······································						
Location ID	Sample ID	Date	Time	Matrix	Method(s)		Preservative	Jars	Type	QC	Sampler	TAT
AP-2982	12AP2982WG 2 A.B	6/22/2012	1231	WG	AK102		4C_HCL	2	1 L AMB		MU	7DAYS
AP-2987	12AP2987WG 34 13	6/22/2012	1445	WG	AK102		4C_HCL	2	1 L AMB		MU	7DAYS
AP-3232	12AP3232WG DAA-B	6/21/2012	1605	WG	AK102		4C_HCL	2	1 L AMB		MU/AS	7DAYS
AP-3458	12AP3458WG 5 A-B	6/21/2012	1136	WG	AK102		4C_HCL	2	1 L AMB		MU/AS	7DAYS
EB-01	12EB1WG 🔞 A B	6/21/2012	1800	WG	AK102		4C HCL	2	1 L AMB		MU/AS	7DAYS

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[Comments:			······································		
	Special Instructions			· · · ·		
	Relinquished By: Wille	When	Date/Time:	6/25/12 1030	Relinquished By:	Date/Time:
Į	Received By:	\sim	_ Date/Time:		Received By: (1)	Date/Time:D
						Printed 6/25/2012 10:33:
			•		Ć	1,7 # 203

Collection On	rganization: CPOA	Chain	of Custo	dy: FTR0	05	Cooler ID: RED5	Ad	min Numbo	er: 12	-073	
Pre	oject Name: 35752 GWM	I	aborato	ry: SGS		Bill To: CPOA		Report 7	Co: CI	POA	
	<u></u>	Collec	tion						•	· · · · ·	
Location ID	Sample ID	Date	Time	<u>Matrix</u>	Method(s)	Preservative	Jars	Туре	QC	Sampler	TAT
P-2982	12AP2982WG Q E-J	6/22/2012	1231	WG	AK101/8260B	4C_HCL	6	40ML VOA		MU	7DAYS
\P-2982	12AP2982WG	6/22/2012	1231	WG	SW6020	4C_NITRIC	1	500ML PL		MU	7DAYS
P-2983	12AP2983WG QQQE-J	6/21/2012	1735	WG	AK101/8260B	4C_HCL	18	40ML VOA	MS/D	MU/AS	7DAYS
P-2983	12AP2983WG OUR 1-L	6/21/2012	1735	WG	SW6020	4C_NITRIC	1	500ML PL	MS/D	MU/AS	7DAYS
\P-2987	12AP2987WG 3 E-J	6/22/2012	1445	WG	AK101/8260B	4C_HCL	6	40ML VOA		MU	7DAYS
P-2987	12AP2987WG 🗿 K.L	6/22/2012	1445	WG	SW6020	4C_NITRIC	1	500ML PL		MU	7DAYS
P-3231	12AP3231WG DET	6/22/2012	1630	WG	AK101/8260B	4C_HCL	6	40ML VOA		MU	7DAYS
\P-3231	12AP3231WG V K,	6/22/2012	1630	WG	SW6020	4C_NITRIC	1	500ML PL		MU	7DAYS
\P-3232	12AP3232WG	6/21/2012	1605	WG	AK101/8260B	4C_HCL	6	40ML VOA		MU/AS	7DAYS
AP-3232	12AP3232WG (4) K , 2	6/21/2012	1605	WG	SW6020	4C_NITRIC	1	500ML PL		MU/AS	7DAYS
\P-3458	12AP3458WG 🌀 E-Ĵ	6/21/2012	1136	WG	AK101/8260B	4C_HCL	6	40ML VOA	•	MU/AS	7DAYS
\P-3458	12AP3458WG SK-L	6/21/2012	1136	WG	SW6020	. 4C_NITRIC	1	500ML PL		MU/AS	7DAYS
AP-3503	12AP3503WG 8 E-T	6/24/2012	1410	WG	AK101/8260B	4C_HCL	6	40ML VOA		MU	7DAYS
AP-3503	12AP3503WG 🔇 K-Ĕ	6/24/2012	1410	WG	SW6020	4C_NITRIC	1	500ML PL		MU	7DAY
\P-3983	12AP3983WG 💭 E-J	6/21/2012	1750	WG	AK101/8260B	4C_HCL	6	40ML VOA		MU/AS	7DAY
AP-3983	12AP3983WG UK-L	6/21/2012	1750	WG	SW6020	4C_NITRIC	1	500ML PL		MU/AS	7DAY
EB-01	12EB1WG 🔘 E-J	6/21/2012	1800	WG	AK101/8260B	4C_HCL	6	40ML VOA		MU/AS	7DAY
B-01	12EB1WG 🔘 K-L	6/21/2012	1800	WG	SW6020	4C_NITRIC	1	500ML PL		MU/AS	7DAYS
B-02	12EB2WG (E-)	6/22/2012	1830	WG	AK101/8260B	4C_HCL	6	40ML VOA		MU	7DAY
EB-02	12EB2WG DK-L	6/22/2012	1830	WĠ	SW6020	4C_NITRIC	1	500ML PL		MU	7DAY
RIP BLANK	12TB1WG (3) A-F	6/24/2012	1500	WG	AK101/8260B	4C_HCL	6	40ML VOA		MU	7DAYS

Comments:	Hunnessen -		
Special Instructions SW6020 - AL	, AS, CD, CR, FE, MN, NI, PB		
Relinquished By: July Tolly	Date/Time: (0/25/1	Z /040 Relinquished By	Date/Time:
Received By:	Date/Time:	Received By: MMHHMA	Date/Time: 11:17 4/25/12
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Chain-of-Custody Report

1122522

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SAMPLE RECEIPT FORM



Review Criteria:	Condition:	Comments/Action Taken:
Were custody seals intact? Note # & location, if applicable.	Yes No WA	
COC accompanied samples?	Yes No N/A	
Temperature blank compliant* (i.e., 0-6°C after correction factor)?	Yes No N/A	Cluent OK wittemp
* Note: Exemption permitted for chilled samples collected less than 8 hours ago.		
Cooler ID: $BLUt = @ UO w/ Therm.ID: 202$		
Cooler ID: $\frac{1}{3}$ @ $\frac{1}{3}$ w/ Therm.ID: $\frac{1}{3}$		
Cooler ID: \underline{B} \underline{W} \underline{D} \underline{Q} \underline{Q} \underline{Q} \underline{Q} \underline{Q} \underline{W} \underline{D} \underline{W} \underline{D} \underline{D} \underline{D}		
Cooler ID: $\underline{\Omega_{lol}} \ \underline{2} \ \underline{a} \ \underline{a} \ \underline{b} \ w/$ Therm.ID: $\underline{3}$		
Cooler ID: \underline{Red} \underline{a} \underline{Q} \underline{Q} \underline{Q} w/ Therm.ID: $\underline{202}$		
Note: If non-compliant, use form FS-0029 to document affected samples/analyses. If samples are received without a temperature blank, the "cooler		
temperature" will be documented in lieu of the temperature blank &		
"COOLER TEMP" will be noted to the right. In cases where neither a		
temp blank nor cooler temp can be obtained, note "ambient" or "chilled."	\sim	
If temperature(s) <0°C, were all sample containers ice free?	Yes No N/A	
Delivery method (specify all that apply):	Note ABN/	
USPS Alert Courier Road Runner AK Air	tracking #	
Lynden Carlile ERA PenAir		
FedEx UPS NAC Other:	See Attached	
\rightarrow For WO# with airbills, was the WO# & airbill	Or N/A	
info recorded in the Front Counter eLog?	Yes NON/A	Þ
\rightarrow For samples received with payment, note amount (\$) and ca		circle one) or note:
→ For samples received in FBKS, ANCH staff will verify all criteria		SRF Initiated by: M/A
Were samples received within hold time?	Yes No N/A	
Note: Refer to form F-083 "Sample Guide" for hold time information.		
Do samples match COC* (i.e., sample IDs, dates/times collected)?	Yes No N/A	
* Note: Exemption permitted if times differ <1 hr; in which case, use times on COC.		TO THE LODALL BOILDON
Were analyses requested unambiguous?	Yes No N/A	5B recieved crockal terstacod
Were samples in good condition (no leaks/cracks/breakage)?	Yes No N/A	br.
Packing material used (specify all that apply): Bubble Wrap		- Appendian Late in the lower
Separate plastic bags Vermiculite Other:		samples 69, 12 E have
Were all VOA vials free of headspace (i.e., bubbles ≤ 6 mm)?	Yes No N/A	butbles > umm
Were all soil VOAs field extracted with MeOH+BFB?	Yes No N/A	
Were proper containers (type/mass/volume/preservative*) used?	Yes No N/A	Limited Wine
* Note: Exemption permitted for waters to be analyzed for metals. Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?		
	Yes No N/A	· · · · · · · · · · · · · · · · · · ·
For special handling (e.g., "MI" or foreign soils, lab filter, limited	Yes No ATA	added 4 m of Hil
volume, Ref Lab), were bottles/paperwork flagged (e.g., sticker)?	Yor No N/A	under and of the
For preserved waters (other than VOA vials, LL-Mercury or	Yes No N/A	
microbiological analyses), was pH verified and compliant ?	Yes No N/A	Rushove bitaly of
If pH was adjusted, were bottles flagged (i.e., stickers)? For RUSH/SHORT Hold Time or site-specific QC (e.g.,	Yes No N/A	Manne of line of
BMS/BMSD/BDUP) samples, were the COC & bottles flagged (e.g.,	Tes NO N/A	
		(1)
stickers) accordingly? For RUSH/SHORT HT, was email sent? For any question answered "No," has the PM been notified and the	Ves No N/A	SRF Completed by:
problem resolved (or paperwork put in their bin)?	TES ING IN/A	PM = S (ND) N/A
Was PEER REVIEW of <i>sample numbering/labeling completed</i> ?	Yes No (N/A)	Peer Reviewed by: N/A
was PEER REVIEW of sample numbering/labeling completea:		
A J J Marshan (if any line bla)		

Additional notes (if applicable):

Laboratory Data Review Checklist

Completed by: Mike Utley								
Title: Date: 8/8/2012								
CS Report Name: Bldg 35-752 Groundwater Monitoring Report Date: 8/8/2012								
Consultant Firm: US Army Corps of Engineers								
Laboratory Name: SGS Laboratory Report Number: 1122522								
ADEC File Number: 2102.38.005 ADEC RecKey Number:								
1. Laboratory a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses? ∑Yes ∑No ∑NA (Please explain.) Comments:								
 b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved? ☐ Yes ☐ No ☑NA (Please explain.) Comments: 								
Samples were not transferred.								
 2. <u>Chain of Custody (COC)</u> a. COC information completed, signed, and dated (including released/received by)? Yes No NA (Please explain.) Comments: 								
b. Correct analyses requested? Yes No NA (Please explain.) Comments:								
 3. <u>Laboratory Sample Receipt Documentation</u> a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)? □Yes ⊠No □NA (Please explain.) Comments: Cooler Red1 arrived at the lab with a temperature of 6.6° C. Cooler Blue2 arrived at the lab with a 								
temperature of 9.7° C.								

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

	Yes No NA (Please explain.)	Comments:
с.	Sample condition documented – broken, leaking (Metha Yes No NA (Please explain.)	anol), zero headspace (VOC vials)? Comments:
d.	If there were any discrepancies, were they documented? containers/preservation, sample temperature outside of a samples, etc.?	± · .
	\bigvee Yes \Box No \Box NA (Please explain.)	Comments:
S	ample jars 6B and 12E are listed as having bubbles great	ter than 6 mm.
e.	Data quality or usability affected? (Please explain.)	Commentati
	amples in Coolers Red1 and Blue2 (temperature of receip	Comments:
un bla an qu Sa im are rep	alyzed for DRO and/or PCB. All samples were kept in a atil processing prior to delivery to the lab. The elevated to anks that were not in equilibrium with the project sample alytes are not subject to significant losses due to elevated halified, and usability is not impacted. ample jars -006B and -012E were reported to have bubble pacting any volatile sample results. However, jar 6B wa e not affected. Sample -012 is a MSD; since the lab does porting MS/MSD results, it is not possible to assess impa- mples are not impacted. Further qualification is not requ	emperatures are most likely due to temp es. Because of this and that the impacted d temperatures, results are not further es greater than six mm, potentially as not used in the analysis, so the results s not report which jar is used when act. However, the primary results for all
4. <u>Case N</u> a.	Present and understandable?	Comments:
b.	Discrepancies, errors or QC failures identified by the lab	b? Comments:
с.	Were all corrective actions documented? Xes No NA (Please explain.)	Comments:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

	Data is usable as reported and flagged
	a. Correct analyses performed/reported as requested on COC?
	Yes No NA (Please explain.) Comments:
	b. All applicable holding times met? ∑Yes □No □NA (Please explain.) Comments:
	 c. All soils reported on a dry weight basis? □Yes □No ⊠NA (Please explain.) Comments:
	Only water samples are reported in this SDG.
	 Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project? Yes No NA (Please explain.)
	Analytes PCB-1221, dibromoethane, and 1,2,3-trichloropropane have LOQs (PQLs) that are above ADEC Table C values. Also, dibromoethane and 1,2,3-trichloropropane have LODs (MDLs) that are also above ADEC Table C values.
	e. Data quality or usability affected? Comments:
	Results for dibromoethane and 1,2,3-trichloropropane cannot be used to prove that these analytes are not present at the site at the cleanup limits. However, these compounds are not contaminants of concern at this site, therefore the results are usable as noted.
-	Samples a. Method Blank i. One method blank reported per matrix, analysis and 20 samples? ∑Yes ☐No ☐NA (Please explain.) Comments:
	ii. All method blank results less than PQL? ∑Yes □No □NA (Please explain.) Comments:

6.

5.

iii.	If above	PQL,	what	samples	are	affected?
------	----------	------	------	---------	-----	-----------

Comments:

Not applicable.	
iv. Do the affected sample(s) have data flags and if Yes No NA (Please explain.)	f so, are the data flags clearly defined? Comments:
No flagging is necessary.	
v. Data quality or usability affected? (Please expl	ain.) Comments:
Not applicable.	
b. Laboratory Control Sample/Duplicate (LCS/LCSD)	
 i. Organics – One LCS/LCSD reported per matrix required per AK methods, LCS required per SW ∑Yes □No □NA (Please explain.) 	•
LCS/LCSD: All required samples are present. MS/MSD: Lab batch XXX27208 (AK102) and VXX236 mandated MS/MSD samples.	673 (SW8260B) do not contain the QSM
 ii. Metals/Inorganics – one LCS and one sample d samples? ∑Yes □No □NA (Please explain.) 	uplicate reported per matrix, analysis and 2 Comments:
 iii. Accuracy – All percent recoveries (%R) reporte And project specified DQOs, if applicable. (AK AK102 75%-125%, AK103 60%-120%; all oth ☐Yes ☐No ☐NA (Please explain.) 	X Petroleum methods: AK101 60%-120%,
LCS/LCSD: All analytes met the required recoveries. MS/MSD: DRO failed low in 12AP2983WG and 1,1-dic 12AP2983WG.	chloroethylene failed high in
 iv. Precision – All relative percent differences (RP laboratory limits? And project specified DQOs, LCS/LCSD, MS/MSD, and or sample/sample d other analyses see the laboratory QC pages) □Yes ⊠No □NA (Please explain.) 	, if applicable. RPD reported from
LCS/LCSD: Analyte 2-hexanone exceeded RPD limits of MS/MSD: Analyte PCB-1016 exceeded RPD limits of 3	

v. If %R or RPD is outside of acceptable limits, what samples are affected? Comments:

DRO in 12AP2983WG is flagged "QL" based on the MS/MSD failure. 1,1-dichloroethylene was not detected in the primary sample, therefore no further qualification is required. Because 2-hexanone and PCB-1016 were not detected in the project samples, further qualifications are not required due to these RPD exceedances.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined? Xes No NA (Please explain.) Comments:

DRO in 12AP2983WG is flagged "QL" based on the MS/MSD failure.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

DRO: Because the DRO result is well below the ADEC Table C cleanup limit, data usability is not impacted.

c. Surrogates – Organics Only

i.	Are s	surrogate	recoveries	reported for	organic	analyses -	– field,	QC and	laboratory	samples?
Ŋ	Yes [No 🗌]NA (Please	e explain.)		Comm	ents:			

 ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
 Yes No NA (Please explain.)

Sample 12AP3232WG surrogate for AK102 (DRO) failed high.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

 \bigvee Yes \square No \square NA (Please explain.)

Comments:

iv. Data quality or usability affected? (Use the comment box to explain.) Comments:

Since DRO in sample 12AP3232WG is nondetect, data usability is not impacted. Further qualification is not required.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and</u> <u>Soil</u>

i.	One trip blank reported per matrix, analysis and for each cooler containing volatile samples?
	(If not, enter explanation below.)

Yes No [NA (Please explain.)
----------	----------------------

Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC?(If not, a comment explaining why must be entered below)

\boxtimes Yes \square No	NA (Please explain.)	Comments:
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iii. All results less than PQL?∑Yes □No □NA (Please explain.)

iv. If above PQL, what samples are affected?

Comments:

Comments:

Not applicable.

v. Data quality or usability affected? (Please explain.)

Comments:

Not applicable.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples? Yes No NA (Please explain.) Comments:

iii. Precision – All relative percent differences (I (Recommended: 30% water, 50% soil) RPD (%) = Absolute value of: (R_1-R_2)	RPD) less than specified DQOs? x 100
$((R_1+R_2)/2)$ Where R_1 = Sample Concentration R_2 = Field Duplicate Concentration \square Yes \square No \square NA (Please explain.)	on Comments:
iv. Data quality or usability affected? (Use the c	comment box to explain why or why not.) Comments:
Not applicable	
f. Decontamination or Equipment Blank (If not used estimated as a second s	vnlain why)
	Comments:
i. All results less than PQL?	
$\Box Yes \Box No \Box NA (Please explain.)$	Comments:
DRO, manganese, nickel, bromodichloromethane, and equipment blanks.	chloroform were detected in the two
ii. If above PQL, what samples are affected?	
	Comments:
Trace amounts of these compounds detected in the pro- source water contamination. All impacted results are q	
iii. Data quality or usability affected? (Please ex	plain.)
	Comments:
All impacted results are well below the project action	limits. Data usability is not impacted.

7. <u>Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)</u>a. Defined and appropriate?

Yes No NA (Please explain.)	Comments:	

Attachment 4 Field Notes

"Rite in the Rain" ALL-WEATHER FIELD No. 351 e Bldg 35-752 Greundwarter Sampling

3 2 6/20\$ Blog 35-752 GW 1300 P/U glussware + suppling 1400 @ Fort Righ -Recon well locations 2982 - fluch mount, bet construction loy Says Z. S' stickup. - Mentioiel in Syr Review on wp as Rod that it was changed 1530 bock @ office. done pon dan

4/21 B/dg 35-75-2 56 overcast Start on AP-3232 1330-080 @ office, prep for day (not sampled in 2008) 1 Picture 0930 Leave pour site Int Prove not working 90 batter TO AFEES 0745 Nators A/F of witch to. Sample Welsch @ b/dg -> None" TO office plu another interface & piece 1440 Book @ site - AP3232 1000 Start on AP-3458 See GW Form 1646 1605 Samples taken YSI CONDUCTIVITY 1125 pictures (#5-#7) TRAEGALNE 1173 1645 Start on AP 2983 PH7 6.98 TRUE VALUE 7.0 Pictures - # 8 - # 12 1136 Sample AP-3458 (not sampled Nate - oil can + stained 502 $\rightarrow 43$ pretures - $(\pm 1 - \pm 4)$ in 2008) on ground Collec' EB# 1730 - Sampled AP 2983 1330 - Cone - lunch 1800 - Head back to office an pak, prep for sort day 1300 - Miet Emerald @ JBER-001 plu two drums. 1200 0 done 1915 My 1330 Back to set -

6 63 F 65F 6/22 6/22 35-752 GWM 35-752 GWM. CLON? 0800 0 office for Prep Time sheet 1320- Lunch AP. 2987 1345 - @ 1000 @ Site - AP-3503 Funny looking cap on well, -> can't put with down but other in good shape hole, see gets stuck ~ 4.2' BTOC. Done -1520 AP3231 1520-0 => Use Peri pump on collect this well. EBZ - SQUIP BCK #Z Done 1700 TTT has one available Head to office 1715 Sample well tomacrow. Unload for Saturdan Pup AP- 2982 1100 * Flush mount + Not as constructed (Peri panp @ AP 3503 How well Appears valie, const =7 No Equipment Blank drage while cleaning up -Noticed uplifter ~ VSI Calibration base Cond - 1206 TV 125+ pH 7- 7.33=77.28/720-70 -> Recalibrate pH Edont From 8-12" # originally thought was a ground feature, but Table les had bentonite on it. See Pies.

8 6/22 Bldg 35-752 GWM 6/24 Blog 35-75-2 55'F ACOTCAST 15 1745 Back @ office Prip for Saturday Put Samples away. 12:45 @ give for prep 1310 @ Sufe > AP-3503 1815 Dane for day-Use peri pamp for sample Calibration Cherk PH 7 Read 7.45 -> Calibrate @ 7.0 i Conductance - Reads 1222 True 1180 R= 103% => 6002/ Reread pH 7 ofth calibration = 7.02 1180 => 600A.' 1340 - Start Pusing 1410- start Sampling done Sampling 1430 1500 @ oppier, unprete trunk 1530 done bon day - prin

Attachment 5 Purge Logs

**

Groundwa	ater Sampli	ng Data Sh	eet						FRA-04		
	Site Name			Eve	ent	We	<u>ell ID</u>	Project Number			
Blo	19 35-7	152	2	012	60	Mon	AP-	1982	12-073		
W	eather Condition	<u>15</u>	In Well (IW) an	d Breathin	a Zone (B		- 1	Sampler Initials			
Ueo	r ~ 63	SF	•.	NA	-	ul:	22/12	our			
Well Information Well Integrity Well Type Well Casing Material Casing Diameter(in) / Gallons per linear foot(g)											
Well Inte	egrity	Well Type	ing Diameter(in	/ Gallons per	linear foot(g)						
Good Fa	ir Poor	Monitor Ext	raction	PVC	\geq	1/	0.041 2/0.10	3 4/0.653	6 / 1.469		
Depth to Pr	oduct (ft)	Depth to GW	(ft) <u>Tota</u>	al Depth of	Casing (ft) <u>Amount</u>	t of Product = D	epth to GW – [Depth to Product		
NV	4	12.20	> /4,	3-24.3/ EN	24,5/8 ACT	29.95 USA		NA			
Max purge vol	ume (3 well cas	ing volumes) = [t	I *			ater (ft)] x gal	lons per linear f	oot of casing x	3 .		
SHOW WOR	RK Max Pi	urge Volume = [(ft)-(ft)]	Х (g/ft) X (3) =	gallons 1 gai = 3.785 L		
			Well Pu	Irging	nform	ation					
<u>Start T</u>	<u>ime</u>	Finish Tim	<u>e [</u>	Depth of Tu	ibing (ft)		<u>Equipmen</u>	t Used for Pure	ging		
			· ·	20	-	Bailer	Peristaltic	· · · · · · · · · · · · · · · · · · ·	mersible Pump		
Cole		<u>Odor</u>			Purged Dr	Y	Meter Use	ed During Purc	ling		
Clear Cloud Other:				res No	Yes No		Multi Meter	Hach T	urbidimeter		
Water gene	erated during	purging was:	Treated	Stored	I Oth	er: 🖌 🗸	released				
		= 0.264 gallon awdown = 252				e)	·	1 ga	llon = 3.785 liters		
10 Mar 1997 - 19			cceptable Ran		al designed and a set	ter to Demo	nstrate Stabilit	у , , , ,	14.70		
		5,7/ ±0:2 S.U.	28.8	3.7		±10% /49 E1 NTU IF <	±10% //#.//	6 65 ± 20 mV	14,70		
	Rate	1.1.1				10 NTUs)	If < 2 mg/L)	076			
Time (HH:mm)	(mL/min)	pH	Conductivity (µS/cm)	Tempera (°C)		Turbidity (NTU)	DO (mg/L)	ORP (mV)	Water Level (feet bloc)		
1137	350					· · ·	·	a galan	12.21		
1142		6.60	223	7.0	5	42.2	12.81	-29	12.21		
1147		4:35	180	7.50	>	50.8	11.58	- 57			
1152		6.08	160	6:3	6 .	+4.4	10.68	- 50	•		
1200	*100	1	148	5.3		14.4	8.35	-47	12.41		
1205		5.06	148	4.4		30 mi	7.36	- 46	12.38		
1216	Upriable	e 5.03	146	3.7		4.25	7.44	- 55	12.57		
1221	1250	4.93	146			2.89	7.06	-55	12.55		
1226	1000	4.90	1	3.6		1.93	7.04	-54			
123		4.72	145	3.6		1.48		-59			
1031	+	4.12		ما , ز		· • • 0	7.05	-37	1255		
<u> </u>							<u></u>		· · · ·		

Sample Collection Information

	• • • • • • • • • • • • • • • • • • •		nacion
Start Time	Finish Time / Date	Depth of Tubing	Equipment Used for Sampling
1231	1320	20'	Peristaltic Pump Submersible Pump
Container/Preservative	Analysis Requested	Notes	Ferrous Iron (Fe 2+) mg/L =
6 × 40 ml Purse			*Rate changed w/o Change
2112	AKIOZ DRO		, ~ ~
2 × 1 L	5008082		to panys
1 × 500 ml Poly	metals		* * Rate changing & significan X/y
		Con universe side of this	a form for additional field record aton macaning and

See reverse side of this form for additional field parameter measurements

constant. more

Groundwa	ter Samp	oling Data Sh	leet	•					FRADYY		
,	Site Name		2012	<u> </u>	Event		W	ell ID	Project Number		
Bldg	35-75	2		-	awpling.		AP-	2983	12-073		
We	eather Condit	<u>ions</u>	In Well (I		hing Zone (BZ		ate	Sampler Initials			
clear	N65F	-		N	A.		6/2	6/21/12 MU / AS			
		, , ,		Well Inf	ormatior			. I			
Well Inte	egrity	Well Typ	<u>e</u>	Well Cas	ing Material	Casir	ng Diameter(in) / Gallons per	linear foot(g)		
Good Fai	ir Poor	Monitor Ex	traction	Ē	vo	1/0	.041 2/0.1	3 4 / 0.653	6 / 1.469		
Depth to Pro	oduct (ft)	Depth to GV	<u>V (ft)</u>		of Casing (ft)	Amount	of Product = D	epth to GW –	Depth to Product		
NA		13.12	_	- /	24 / 25.7 XCT / MSK		l	IA			
Max purge volu	ume (3 well c	asing volumes) = [total depth				ons per linear f	oot of casing a	(3		
SHOW WORK Max Purge Volume = $[(ft) - (ft)] X (g/ft) X (3) = gallons 1 gal = 3.785 L$											
		<u></u>			g Informa	ation					
<u>Start T</u>	<u>ime</u>	<u>Finish Tin</u>	ne		f Tubing (ft)		Equipmen	t Used for Pu	rging		
171	7	1732	-		18'	Bailer	Peristaltic	Pump Sul	omersible Pump		
	<u>x</u>	<u>Odor</u>		<u>Sheen</u>	Purged Dr	<u> </u>	Meter Used During Purging				
Clear Cloud Other:	ly Brown	None Moderate	Faint Strong	Yes	Yes		Multi Meter	Hach T	urbidimeter		
		g purging was		-			elevrul				
		te = 0.264 gallo Drawdown = 25)		1 g	allon = 3.785 liters		
		NAMES OF TAXABLE PARTY OF TAXABLE PARTY.				er to Demor	strate Stabili	у.,			
С. 1917 г.		5171 ±0.25.0.	16	8 3).2°C (±	±10% 169 1 NTU if <	±10% /, <i>D(</i> (±0.2 mg/L	234 ±20 mV	15:55		
Time	l Rate	pH	Conduct		1	0 NTUs)	If < 2 mg/L)	ORP			
(HH:mm)	(mL/min)		CONDUC (μS/cr			urbidity (NTU)	DO (mg/L)	(mV)	Water Level (feet btoc)		
1717	375	5.21	14	7 5.	15	2.44	11.25	-110	13,15		
1722		5.13	15	2 5.	80 3	,70	11.10	-101			
1727		5,04	15	1 5	86 9	5.22-	10.92	-105			
1732		5.11	15			1.68	10.86	-110	13.16		
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Sample Collection Information

Start Time	Finish Time / Date	Depth of Tubing	Equipment Used for Sampling
1735	1300	181	Peristaltic Pump Submersible Pump
Container/Preservative	Analysis Requested	Notes	Ferrous Iron (Fe 2+) mg/L ≈
18 YONI PUNSI	e AKIVI/SW826	0B WS/D	
<u> </u>	AK102	1	
412	568082		
1 500ml Poly	Sweese		
6 your Pungy	2 JW6020 AK101/565		his form for additional field parameter measurements
216	AK102	Jeroy) doplied	
2 IL I corri Poly	5638082	<u>}</u>	

	-	Site Name					Ē	Event				<u>Well ID</u>	P	Project Number
BI	6g	35-79	52		· C	W	Saw	olim	Z	OIZ	AD-	3458		12-073
	We	ather Condit	ons		In Well (IW) and Breathing Zone (BZ) PID Re					PID Readi		Date	<u>S</u> a	ampler Initials
cloud	by	56°F			-		· /	1/A	•		6	121/12	- .	wu/AS
	4					We	ll Info	ormat	ion	•				
We	ell Integ	grity	Well	Type	-	W	ell Casin	ng Mater	ial	Cas	ing Diameter	(in) / Gallon	s per lin	near foot(g)
Good	Fair	Poor	Monito	Extr	Extraction				1/	0.041 270	.163 4/0	0.653	6 / 1.469	
Depth	to Pro	duct (ft)	Depth to	<u>GW</u>	<u>(ft)</u>		I Depth of			Amount	of Product =	Depth to G	W – De	pth to Product
M/A 25.					7	25-35 SCF	-/35 Att	151	,20			\mathcal{N}	A	
Max purg	je volu	me (3 well c	asing volumes	;) = [to	tal depth	of cas		/¢r∉ - depth t		(ft)] x gal	ons per linea	r foot of ca	sing x 3	
SHOW	WOR	K Max	Purge Volum	.e = [(ft)	- (ft)] X	ς (g/ft) 2	(3) =		gallons 1 gai = 3.78
•	<u>. </u>	. <u> </u>			Wel	II Pu	rging	ı Info	rmat	ion				1 yai - 5.76.
S	Start Tir	me	Finist	h Time			epth of				Equipn	ent Used fo	or Purgin	ng
· 11	00		112	510			37	2		Bailer	Peristal	ic Pump	Subm	nersible Pum
	Color	<u> </u>	<u>O</u> c	<u>5(0</u> dor		Sh	ieen	Purge	d Dry		Meter	Jsed During	g Purgin	lg
	Cloudy	y Brown	None		Faint	Y	és	Ye		(YS	SI Multi Meter Hach			bidimeter
Other:			5	Strong No No										
		ł												
	<u> </u>		ig purging v		Tréa) Store			θA	lans	l	4	
Maximu	um Pu	Imping Rat	ig purging v te = 0.264 ga Drawdown =	allons	s per mi	inúte	(1 liter	per mi	nute)	θΛ	lanse	l	1 gallo	on = 3.785 lite
Maximu	um Pu	Imping Rat	te = 0.264 ga	allons = <u>25%</u>	s per mi	inúte (betwee	(1 liter en screen	per mi	nute) ^{ske}		ństrate Stal		1 gallo	on = 3.785 liter
Maximu	um Pu	Imping Rat	te = 0.264 ga	allons = <u>25%</u> A(s per mi	inúte (betwee e Ranç	(1 liter en screen	per min and inta ield Par	nute) uke ameter ± (±1 h	to Demo 10% 1TU if <	nstrate Stal ±10% (±0.2 mg/L	ility 20	-	on = 3.785 liter
Maximu Maximu	um Pu um Wa	Imping Rat	te = 0.264 ga Drawdown = ± 0.2 S.	allons = <u>25%</u> A .u.	s per mi distance cceptable ± 3%	inúte (betwee e Ranç	(1 liter en screen ge for Fi ±0.	per min and inta ield Par 2 °C	nute) ake ameter (±1 M 10 J	to Demo 10% 1TU if < NTUs)	nstrate Stal ±10%	ility 20	- mV:	¥
Maximu Maximu Time (HH:m	um Pu um Wa	umping Rat ater Level	te = 0.264 ga Drawdown = ± 0.2 s.	allon: = <u>25%</u> A .u.	s per mi distance cceptabl	inute (betwee e Ranç 6	(1 liter en screen ge for Fi ±0. Tempe	per min and inta ield Par 2 °C 9 rature C)	nute) ike ameter (±1) 10] . Tu ()	to Demo 10% ITU if < NTUs) bidity. [TU]	nstrate Stal ±10% (±0.2 mg/L If < 2 mg/L .DO (mg/L)	illity ± 20 OF (m	- mV {} 	Water Level (feet bloc)
Maximu Maximu Time	um Pu um Wa	imping Rat ater Level	te = 0.264 ga Drawdown = ± 0.25. pH (S.U.)	alions = 25% A .U. 3 C	s per mi <u>distance</u> cceptabl ±3% Conduc (μS/cr	inute (betwee e Ranç 6 tivity m)	(1 liter en screen ge for Fi ±0: Tempe (*) 7,	per min and inta ield Par 2 °C 2 °C 9 rature C) 1 6	nute) ameter (±1) (±1) 10 (*	to Demo 10% 1TU If < VTUs) bidity (TU) 25. 2	nstrate Stal ±10% (to.2 mg/L Ir < 2 mg/L DO (mg/L)], 37	ility 2 20 OF (m	mv *P V) 35	Water Level (feet bloc) 2.6.64
Maximu Maximu Time (HH:mi	um Pu um Wa	ater Level Rate (mL/min)	te = 0.264 ga Drawdown = ± 0.2 s. pH (S.U.)	alions = 25% A .U. 3 C	s per mi <u>o distance</u> cceptable ± 3% Conduc (µS/ci	inute (betwee e Ranç 6 tivity m)	(1 liter en screen ge for Fi ±0: Tempe (*) 7,	per min and inta ield Par 2 °C 9 rature C)	nute) ameter (±1) (±1) 10 (*	to Demo 10% ITU if < NTUs) bidity. [TU]	nstrate Stal ±10% (±0.2 mg/L If < 2 mg/L .DO (mg/L)	ility 2 20 OF (m	- mV {} 	Water Level (feet bloc) 2.6.6
Maximu Maximu Time (HH:min JI O C	um Pu um Wa • •	ater Level Rate (mL/min)	te = 0.264 ga Drawdown = ± 0.25. pH (S.U.)	allons = 25% A .u. 3 2 2 4	s per mi <u>distance</u> cceptabl ±3% Conduc (μS/cr	inute (betwee e Rang 6 tivity m) 0	(1 liter an screen ge for Fi ±0.3 Tempe (% 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7,	per min and inta ield Par 2 °C c) i G 1 G 1 G 1 G 1 G 0 O	nute) ske ameter (±1) 101 Tu (f)	to Demo 10% 1TU If < vTUs) bidity 1TU) 25.2 8,93 7,2/	nstrate Stal ±10% (to.2 mg/L Ir < 2 mg/L DO (mg/L)], 37	ilify	mv 82 V) 35 25	Water Level (feet bloc) 2.6, 64 2.6, 58
Maximu Maximu Time (HH:mi) 0 ()))	m)	ater Level Rate (mL/min)	te = 0.264 gz Drawdown = ± 0.2 s. pH (S.U.) 5- 2	allons = 25% A U. U. S L 2 C 2 C 2 7	s per mi distance cceptable ± 39 Conduc (µS/ci 2/c	inute (betwee e Rang k tivity m) O S	(1 liter an screen ge for Fi ±0.3 Tempe (% 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7,	per min and inta ield Par 2 °C 2 °C C) 2 °C C) C C) 2 °C C) 2 °C 2 °C 2 °C C) 2 °C C) 2 °C C) 2 °C C)2	nute) ske ameter (±1) 101 Tu (f)	to Demo 10% 170 // < 170 // < bidity fr0) /5.2 8,93	nstrate Stal ±10% (t0.2 mg/L W<2 mg/L DO (mg/L)], 37 [.7 L	ilify	mv 82 35 2 5 -5	Water Level (feet bloc) 2.6, 64 2.6, 58
Maximu Maximu Time (HH:min] U (]] (] 1 (m) (p 1 1	ater Level Rate (mL/min)	e = 0.264 ga Drawdown = * 0.28 pH (S.U.) 5- 2 5- 2 5- 2	allons = 25% Au .u. 3L 2L 2L 29 -3	s per mi o distance cceptable ± 39 Conduc (µS/cr 21) 210 210	inute (betwee e Rang kivity m) O S 20	(1 liter screen ge for Fi ±0.3 Tempe 7. 7. 7. 7. 6.	per min and inta ield Par 2 °C c) i G 1 G 1 G 1 G 1 G 0 O	nute) ske ameter (±1) 10) Tu (r	to Demo 10% 1TU If < vTUs) bidity 1TU) 25.2 8,93 7,2/	nstrate Stal ±10% (±0.2 mg/L IV < 2 mg/L DO (mg/L)], 37], 75	ility + 20 OF (m 	₽ ¥) 35 25 -5 7	Water Level (feet bloc) 2.6.64
Maximu Maximu Time (HH:mr] 0 (] 1] 1 (] 1 (] 2	2 Jam Pu Jam Wa () () () () () () () () () ()	Rate (mL/min)	te = 0.264 gz Drawdown = ± 0.2 s. pH (S.U.) 5- 2 5- 2 5, 3	allons = 25% A U U 3 2 2 2 2 2 2 3 -3	s per mi o distance cceptabl 13% Conduc (μS/ci 210 210 210 22	inute (betwee e Rang e tivity m) O O S Q Q Q Q Q	(1 liter screen ± 0.3 Tempe (% 7, 7, 7, 7, 7, 6 6	per min and intr ield Par 2°C 2°C 2°C 1 2°C 2°C 2°C 2°C 2°C 2°C 2°C 2°C 2°C 2°C	nute) ske ameter ‡ (±11 r 10 Tu (f (to Demo 10% 110 /r < 110 /r < 100 /r	nstrate Stal ±10% (±0.2 mg/L) DO (mg/L)], 37 [.7 (],75],4/3	ilify ± 20 OF (m 	₩¥ V) 35 25 -5 7 4	Water Level (feet bloc) 2.6, 64 2.6, 58
Maximu Maximu Time (HH:min] 0 (/1 1 /1 (/1 2 / /1 2 / /1 3 /	ит Ри ит Wa (Rate (mL/min)	e = 0.264 ga Drawdown = * 0.2 s. pH (S.U.) 5 - 2 5 - 2	allons = 25% w w 3 2 9 3 3 2 7	s per mi odistance cceptable ± 39 Conduc (µS/co 210 210 210 210 22 210 22	inute (betwee 6 Rang 6 1ivity m) 0 0 5 20 9 9	(1 liter screen ± 0.: Tempe 7.: 7. 7. 7. 7. 6. 6.	per min and intr ield Par 2°C 2°C 2°C 2°C 2°C 2°C 2°C 2°C 2°C 2°C	nute) ike ameter (±1) 10 Tu (h	to Demo 10% 170 H < 170 H 170 H 170 H 170 H	$\begin{array}{c} \text{nstrate Stal} \\ \pm 10\% \\ (\text{to.2 mg/L}) \\ \text{IV < 2 mg/L} \\ \hline DO \\ (\text{mg/L}) \\ \hline 1, 37 \\ \hline 1, 7 \\ \hline 1, 7 \\ \hline 1, 75 \\ \hline 1, 43 \\ \hline 1, 12 \end{array}$	ility + 20 OF (m 	mv 12 25 -5 -7 -4 1	
Maximu Maximu Time (HH:mr) ()) 1 ()) 1 ()) 1 ()) 1 ()) 1 ()	ит Ри ит Wa (Rate (mL/min)	te = 0.264 ga Drawdown = + 0.2 s. pH (S.U.) 5 - 2 5 - 2 5 - 2 5 - 3 5 - 2 5 - 2 5 - 2 5 - 2 5 - 2	allons = 25% w w 3 2 9 3 3 2 7	s per mi <u> <u> </u> </u>	inute (betwee 6 Rang 6 1ivity m) 0 0 5 20 9 9	(1 liter screen ± 0.: Tempe 7.: 7. 7. 7. 7. 6. 6.	per min and intr ield Par 2°C 2°C 2°C 2°C 2°C 2°C 2°C 2°C 2°C 2°C	nute) ike ameter (±1) 10 Tu (h	to Demo 10% 170 # < vrus) bidity 170 5.2 8,93 7,2/ 10.69 3,68	nstrate Stal ±10% (t0.2 mg/L) P< 2 mg/L) DO (mg/L)]. 37 [.7] [.7] [.7] [.7] [.7] [.7] [.7] [.7	ility ÷ 20 OF (m 	mv 12 25 -5 -7 -4 1	
Maximu Maximu Time (HH:mi) 0 () 1 () 1 () 1 () 2 () 2 () 2 () 3 (ит Ри ит Wa (Rate (mL/min)	e = 0.264 ga Drawdown = * 0.2 s. pH (S.U.) 5 - 2 5 - 2	allons = 25% w w 3 2 9 3 3 2 7	s per mi odistance cceptable ± 39 Conduc (µS/co 210 210 210 210 22 210 22	inute (betwee 6 Rang 6 1ivity m) 0 0 5 20 9 9	(1 liter screen ± 0.: Tempe 7.: 7. 7. 7. 7. 6. 6.	per min and intr ield Par 2°C 2°C 2°C 2°C 2°C 2°C 2°C 2°C 2°C 2°C	nute) ike ameter (±1) 10 Tu (h	to Demo 10% 170 H < 170 H 170 H 170 H 170 H	nstrate Stal ±10% (t0.2 mg/L) P< 2 mg/L) DO (mg/L)]. 37 [.7] [.7] [.7] [.7] [.7] [.7] [.7] [.7	ility ÷ 20 OF (m 	mv 12 25 -5 -7 -4 1	
Maximu Maximu (HH:mr) U() 1 1) 1(0) 12/ 12/ 12/ 12(0) 2/	2 J m) 2 2 2 2 2 2 3 4 2 4 4 4 4 4 4 4 4 4 4 4 4 4	Rate (mL/min) 75	te = 0.264 gz Drawdown = ± 0.254 pH (SU) 5-2	allons = 25% u u 3 2 4 2 4 2 9 3 3 2 7 3 3 2 7 3 3	s per mi odistance cceptable ± 3% Conduc (µS/ci 2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/	inute (betwee e Rang 6 tivity m) 0 5 5 20 9 8 8	(1 liter screen ± 0.3 Tempe (% 7, 7, 7, 7, 7, 6 6 6 6 6	per min and intra ield Par 2 ° C 2	nute) ske ameter (±1 r 10 Tu (r ((((((() () () () () ()	to Demo 10% 110 II < 110 II < 110 II < 110 II < 10 II 10	nstrate Stal ±10% (to.2 mg/L P< 2 mg/L DO (mg/L)], 37], 7 [,7], 7], 7 [,7], 7 [,7], 7], 7 [,7], 7 [,7] [ilify + 20 OF (m) 2 2 3 3 3	mv 12 25 -5 -7 -4 1	
Maximu Maximu (HH:mr) U() 1 1) 1(0) 12() 2() 2() 2() 2() 2() 2() 2()	ит Ри ит Wa m) (/ 	Rate (mL/min) 75	e = 0.264 ga Drawdown = * 0.2 s. pH (S.U.) 5 - 2 5 - 2	allons = 25% u u 3 2 4 2 4 2 9 3 3 2 7 3 3 2 7 3 3	s per mi odistance cceptable ± 39 Conduc (µS/co 210 210 210 210 22 210 22	inute (betwee e Rang 6 tivity m) 0 5 5 20 9 8 8	(1 liter screen ± 0.3 Tempe (% 7, 7, 7, 7, 7, 6 6 6 6 6	per min and intra ield Par 2 ° C 2	nute) ske ameter (±1 r 10 Tu (r ((((((() () () () () ()	to Demo 10% 170 H < 170 H 170 H	nstrate Stal ±10% (t0.2 mg/L) P<2 mg/L DO (mg/L)]. 37 [.7]	ilify + 20 OF (m) 2 2 3 3 3	mv 12 25 -5 -7 -4 1	
Maximu Maximu Time (HH:mr] U (] 1 (] 1 (] 1 (] 2 (] 2 (] 3 (] 3 (] 3 (] 3 (] 3 (2 J m) 2 2 2 2 2 2 3 4 2 4 4 4 4 4 4 4 4 4 4 4 4 4	Rate (mL/min) 75	te = 0.264 gz Drawdown = ± 0.254 pH (SU) 5-2	allons = 25% u u 3 2 4 2 4 2 9 3 3 2 7 3 3 2 7 3 3	s per mi odistance cceptable ± 3% Conduc (µS/ci 2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/	inute (betwee e Rang 6 tivity m) 0 5 5 20 9 8 8	(1 liter screen ± 0.3 Tempe (% 7, 7, 7, 7, 7, 6 6 6 6 6	per min and intra ield Par 2 ° C 2	nute) ske ameter (±1 r 10 Tu (r ((((((() () () () () ()	to Demo 10% 110 II < 110 II < 110 II < 110 II < 10 II 10	nstrate Stal ±10% (to.2 mg/L P< 2 mg/L DO (mg/L)], 37], 7 [,7], 7], 7 [,7], 7 [,7], 7], 7 [,7], 7 [,7] [ilify + 20 OF (m) 2 2 3 3 3	mv 12 25 -5 -7 -4 1	
Maximu Maximu (HH:mr) U (1) 1)) 1(0 1)110 1)120 1)120 1)120 1)120	2 J m) 2 2 2 2 2 2 3 4 2 4 4 4 4 4 4 4 4 4 4 4 4 4	Rate (mL/min) 75	te = 0.264 gz Drawdown = ± 0.254 pH (SU) 5-2	allons = 25% a u u : 3L 24 24 29 3 27 3 27 3 27 3 27 3 27 3 27 3 27 4 3 27 4 4 4 4 4 4 4 4 4 4	s per mi distance cceptable ± 39 Conduc (µS/ci 21) 21) 210 210 210 210 210 210 210 210	inute (betwee e Rang e Rang e Rang e Rang e Rang e R	(1 liter m screen ± 0.3 Tempe (%) 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7.	per min and intra ield Par 2 °C 2 °C 3 °C 2 °C 2 °C 2 °C 3	nute) ike ameter t (±1) 10 Tu (h t t t t t t t t t t t t t t t t t t	to Demo 10% 110 If < VITUS) bidity 110) 25.2 8,93 7,21 2,69 3,69 3,69 -36 -36 -36 -36 -35 -36 -35 -35 -35 -35 -35 -35 -35 -35	nstrate Stal ±10% (to.2 mg/L P<2 mg/L DO (mg/L)]. 32].70 J.75 J.43 J.12 J.01 J.06 UAA (JAL	ilify + 20 OF (m) 2 2 3 3 3	mv 12 25 -5 -7 -4 1	
Maximu Maximu Iime (HH:mr 1) U 1) 11 1)16 1)17 1)24 1)24 1)34 1)34	лт Ри лт Wz (р))))))))))))))))))	Rate (mU/min): 175 290	$\frac{1}{2} = 0.264 \text{ gz}$ Drawdown = $2000000000000000000000000000000000000$	allons = 25% u u 3 2 4 2 9 3 3 2 7 3 3 2 7 3 3 2 7 3 3 2 7 3 3 2 7 3 3 2 7 3 3 2 7 3 3 3 2 7 3 3 3 2 7 3 3 3 2 7 3 3 3 3	s per mi <u>e</u> distance cceptable ± 39 Conduc (µS/cr 2/1 2/1 2/1 2/1 2/1 2/1 2/1 2/1	inute (betwee e Rang 6 tivity m) O S O S O S S S S S S S S S S	(1 liter m screen ± 0.3 Temps (************************************	per min and intra ield Par 2 °C 2	nute) ike ameter (±1) 10 Tu (f (2 2 ml	to Demo 10% 110 If < VITUS) bidity 110) 25.2 8,93 7,21 2,69 3,69 3,69 -36 -36 -36 -36 -35 -36 -35 -35 -35 -35 -35 -35 -35 -35	nstrate Stal ±10% (co.2 mg/L) DO (mg/L)]. 32].7 [.7].43].12].06 [.06 Uan (184	ility ± 20 OF (m 2 - 2 - 3 - 3 - 3 - 3 - 3 - 3 - 3 - 4 - 3 - 3 - 3 - 4 - 3 - 3 - 4 - 3 - 3 - 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4	₩ V) 35 25 -5 -7 -7 -7 -7 -7 -7 -7 -7 -7 -7	Water Level (feet bloc) 2.6.58 26.58 26.78 26.83 26.83 26.83 up 5.p. luniter to Cou
Maximu Maximu Time (HHIMT) 0() 1()12())12()12())12((_))12((_))12((_))12((_))12((_))12((_))12((_))12((_))12((_))12((2 J m) 2 2 2 2 2 2 3 4 2 4 4 4 4 4 4 4 4 4 4 4 4 4	Rate (mU/min): 175 290	te = 0.264 gz Drawdown = ± 0.254 pH (SU) 5-2	allons = 25% u u 3 2 2 3 3 2 7 3 3 2 7 3 3 2 7 3 3 2 7 3 3 2 7 3 3 2 7 3 3 3 2 7 3 3 3 3 3 3 3 3 3 3	s per mi <u>e</u> distance cceptable ± 39 Conduc (µS/cr 2/1 2/1 2/1 2/1 2/1 2/1 2/1 2/1	inute (betwee e Rang 6 tivity m) O S O S O S S S S S S S S S S	(1 liter m screen ± 0.3 Tempe 7, 7, 7, 7, 7, 7, 6 6 6 6 7 7 7 7 7 7 7	per min and intra ield Par 2 °C 2 °C 3 °C 2 °C 2 °C 2 °C 3	nute) ike ameter (±1) 10 Tu (f (2 2 ml	to Demo 10% 110 If < VITUS) bidity 110) 25.2 8,93 7,21 2,69 3,69 3,69 -36 -36 -36 -36 -35 -36 -35 -35 -35 -35 -35 -35 -35 -35	nstrate Stal ±10% (co.2 mg/L) DO (mg/L)]. 32].7 [.7].43].12].06 [.06 Uan (184	ility ± 20 OF (m 2 - 3 - 3 - 3 - 3 - 3 - 3 - 3 - 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4	₩ V) 35 25 -5 -7 -7 -7 -7 -7 -7 -7 -7 -7 -7	Water Level, (reet bloc) 26,58 26,58 26,78 26,78 26,83 26,83 0,00 0,00 0,00 0,00 0,00 0,00 0,00 0

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order	1136	1150	36'	Peristaltic Pump Submersible Pump
	Container/Preservative	Analysis Requested	Notes	Ferrous Iron (Fe 2+) mg/L =
3	21L/HC/	ARIOZ		
(\mathfrak{T})	216	508082		
Ø	500ml Poly	metals		
0	6× 40mL Purge	AKIDI/8200B		
Ū		. <u> </u>	See reverse side of the	is form for additional field parameter measurements

	Groundwa	ater Samp	ling Data Sl	neet	•						FRADYLY		
		Site Name				Event			We	ell <u>ID</u>	Project Number		
	Blda	35-	752					Mousen	2 AD.	3503	12-073		
	<u>VV</u>	eather Conditi	ions	In Well (IW) and Breathing Zone (BZ) PID Reading					∮ <u>D</u>	ate	Sampler Initials		
	Cloud	<u>~ 53</u>	<u>5 F</u>		/	N/A			6/2	4/12	mer		
		/ .			Well Information Well Casing Material Casing Diameter(in) / Gallons per linear foot(g)								
	Well Inte		Well Typ				Casino	Diameter(in) / Gallons pe	r linear foot(g)			
	Good (Fai	ir) Poor	(Monitor E	draction		(PVC)		1/0.0	<u> </u>	3 4/0.65			
	Depth to Pro	oduct (ft)	Depth to G	<u>V (ft)</u>	Total De	pth of Casin	g (ft)	Amount of	f Product = D	epth to GW –	Depth to Product		
• .	NA		14.55	-	SCR	/ AET/	MSD			NA			
	Max purge vol	ume (3 well ca	asing volumes) =	(total depth	of casing ((ft) – depth t	o wate	r (ft)] x gallor	ns per linear fé	oot of casing	x 3		
	SHOW WOF	K Max	Purge Volume =	[(ft) – (×	ft)])	Κ (g/ft) X (1	3) =	gallons 1 gal = 3.785 L		
				We	ll Purgi	ing Info	rmat	ion					
	<u>Start T</u>	<u>ime</u>	<u>Finish Tir</u>	ne	Depth	n of Tubing (<u>(ft)</u>		and the second s	t Used for Pu			
	1350	>	1410	>		16		Bailer	<u> </u>		bmersible Pump		
			Odor	· · ·	Sheen				Meter Used During Purging				
•	Clear Cloud Other:	y Brown	None Moderate	Faint Strong	Yes Yes Yes YSI Mu			Multi Meter	ulti Meter Hach Turbidimeter				
	Water gene	rated durin	g purging was	: Trea	ated S	tored	Other	: rel	ensel				
			e = 0.264 gallo Drawdown = 25						· · · · ·	1 g	allon = 3.785 liters		
				Acceptabl	ble Range for Field Parameter to Demonstra					у.			
			± 0.2 S.U.	± 39	6	± 0.2 °C	(±1)	and a second	±10% (±0.2 mg/L	± 20 mV			
	Time	Rate	pH	Conduc		emperature	- Tu	rbidity	If < 2 mg/L) DO	ORP	Water Level		
	(HH:mm)	<u>(m∐min)</u> 280		(µS/c		(°C)	1) 2000	<u>vtu)</u>	(mg/L)	(WM)	(feet bloc)		
	1350	200				<u>5.03</u>	· .	-1			14.59		
	1355	· · ·	6.02			5.63	3.		6.63	- 13			
	1400		5.77	17		5.28		30	6.38	-53			
	1405		5.72			5.26		59	601	-46			
	1410		5.72	14	6	5.28	2.0	>2	5.77	- 43	14.59		
			_										
			-										
	L	L	<u> </u>				I	ļ					

Sample Collection Information

	<u> </u>		
Start Time	Finish Time / Date	Depth of Tubing	Equipment Used for Sampling
1410	1450	16	Peristaltic Pump Submersible Pump
Container/Preservative	Analysis Requested	Notes	Ferrous Iron (Fe 2+) mg/L =
G & YOWI Purge	AKIOI/SZCOB		
ZXIL	AK102		well-joeked.
Zr IL	SWEDEZ-		
500 wi Poly	SWUDLO		
		See reverse side of th	his form for additional field parameter measurements

_See reverse side of this form for additional field parameter measurements

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Groundwater bang	ing Data on							FRA.044		
Site Name	,			Event	We	<u>IID</u>	Project Number			
Blog 35-	752	2012	L GW	Samplin	n	AP	3503 ate	12-073		
Weather Condit	ions	In Well (I	2012 GW Sampling n Well (IW) and Breathing Zone (BZ) PID Reading				ate	Sampler Initials		
Clear - 63F			\cdot \mathcal{N}	A		6/2	2/12	me		
			Well Inf	ormation						
Well Integrity	Well Type	2	Well Casi	ng Material	Diameter(in)	/ Gallons pe	r linear foot(g)			
Good Fair Poor		traction	Ć	vc)		41 2/0.16	/			
Depth to Product (ft)	Depth to GW	<u>(ft)</u>	Total Depth	of Casing (ft)	Amount of			Depth to Product		
NA	14.50	24.5	SCR A	922 22 SC T MS	ľ	Λ	1 A			
Max purge volume (3 well c	Max purge volume (3 well casing volumes) = [total depth of casing (ft) – depth to water (ft)] x gallons per linear foot of casing x 3									
SHOW WORK Max Purge Volume = $[(ft) - (ft)] X (g/ft) X (3) = gallons 1 gat = 3.785$										
		We		g Informa	tion					
Start Time	<u>Finish Tim</u>	e	<u>Depth of</u>	Tubing (ft)		Equipment	Used for Pu	rging		
				18	Bailer	Peristaltic F	Pump Su	bmersible Pump		
Color	<u>Odor</u>		<u>Sheen</u>	Purged Dry		Meter Use	d During Pu	rging		
Clear Cloudy Brown Other:		Faint Strong	Yes No	Yes No	YSI M	lulti Meter	Hach ⁻	Turbidimeter		
Water generated durin	g purging was:	Trea	ted Stor	ed Other	· · · · · · · · · · · · · · · · · · ·					
Maximum Pumping Rat Maximum Water Level							1 g	allon = 3.785 liters		
	· · · · ·	an a		ield Paramete	r to Demonst	rate Stabilit	y			
	± 0.2 S.U.	± 39	(+)		:10% NTU if < (±10% ±0.2 mg/L	± 20 mV	•		
- Dete				10	NTUS) I	f < 2 mg/L)				
Time Rate (HH:mm) (mL/min)	рН (S.U.)	Conduc (µS/c			irbidity NTU)	DO (mg/L)	ORP (mV)	Water Level (feet bloc)		
•		e		· · · ·			· · ·	•		
		1 A			$\rightarrow -$			· .		
				TY/X		/				
·	+	\vee		¥~			· · ·			
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			111	/		1				
)\\	1 and the second s						
				10				1		
		U	/							
· · · · · · · · · · · · · · · · · · ·		+				· .				
· ·		<u> </u>								
								<u> </u>		

Sample Collection Information

Start Time	Finish Time / Date	Depth of Tubing	Equipment Used for Sampling
			Peristaltic Pump Submersible Pump
Container/Preservative	Analysis Requested	Notes	Ferrous Iron (Fe 2+) mg/L =
			Well may have jacked. Morrison
			Rend in PUC corner On 4.2"
			Bend in PUC CARING ON 442
			Connot get subm. pamp down hole,

See reverse side of this form for additional field parameter measurements for some $\omega/f^{2}r^{2}c$

Groundwa	iter Samp	oling Data She	eet							FRADUL	
[Site Name		· · · · ·		<u>Event</u>			W	ell ID	Project Number	
Blde	\$ 35-	752	(50 5	awplie		545	AP	3232	12-073	
	eather Condil	ions		W) and Brea		_			ate	Sampler Initials	
ower	cost/	Clear (654	5)	l	1A			6/2	1/12	mu /AS.	
			<i></i>	Well In	formati	on					
Well Inte	egrity	Well Type		Well Cas	sing Materia	<u>al</u>	Casing	Diameter(in) / Gallons per	linear foot(g)	
Good Fai	ir Poor	Monitor Extr	Extraction				1/0.0	41 2/0.1	3 4 / 0.653	6 / 1.469	
Depth to Pro	oduct (ft)	Depth to GW	(ft)		h of Casing	<u>(ft)</u>	Amount of	Product = D	epth to GW –	Depth to Product	
NA		9,95		5-15 /	15		-				
Max purge volu	ume (3 well c	asing volumes) = [to	tal depth		-	water	(ft)] x gallor	s per linear f	oot of casing :	< 3	
SHOW WOR	K Max	Purge Volume = [(ft) – (1	it)] X	ζ (g/ft) X (3) =	gallons 1 gal = 3.785	
		- <u></u>	We	II Purgin		mat	ion				
Start T	ime	Finish Time			of Tubing (fl			Equipmen	t Used for Pu	raing	
151	, 19,90	-			u	-	Bailer	Peristatic	Pump Su	bmersible Pump	
<u></u> <u>Colo</u>		iU <u>Odor</u>	•	Sheen	9 Purged	Dry		$\sim \sim$	ed During Pur		
Clear Cloud	y Brown		aint	dias"	Yes		Voi				
Other:	- · ·		Strong	No	No			Aulti Meter	Hach	urbidimeter	
Water gene	rated durir	ng purging was:	Trea	ated Sto	ored C	ther:	+ Ne	leased	7		
		te = 0.264 gallon Drawdown = 25%							1 g	allon = 3.785 liters	
Time (HH:mm)	Rate (mL/min):	± 0.2 S.U.	£ 3% £ 3% Conduc (µS/c	tivity Terr	0.2 °C	± (±11 101 Tu	10% NTU If < NTUs) tbidity	±10% ±10% (±0.2 mg/L ft < 2 mg/L) DO (mg/L)	± 20 mV	Water Level. (feet btoc)	
1530	716	1. 4.301.12	1.47	- 4	.39			14.49	-65	10.33	
1540	333	0.65	149	; 4	1,80	Ĵ,	16 1	13.07	-86		
1548		0,64	150) 5	5,00			12.66	-82	10.10	
1555		1.86	149		1,87	0.		12.30	-9/		
1602		2.83	14		1.88			2.20	- 84		
·					·	_					
		· · ·	Samn	le Collec	tion In	forn	nation		•		
Start T	ime	Finish Time / [of Tubing			Equipment	Used for San	pling	
1603	5				4'		Pe	ristaltic Pum	p Submersi	ble Pump	
Container/Pro		Analysis Reque At iol / 52 At ioz	ested COB	I	<u>Votes</u>			Peristaltic Pump Submersible Pump errous Iron (Fe 2+) mg/L =			
12 11	A	HRIDZ									
2 16	DI.	5W8002 5W6024	-								
1 500,	ri ray	506020	>								

See reverse side of this form for additional field parameter measurements

258-1515

·		eet						FLA044	
Site Name			Event				<u>ell ID</u>	Project Number	
Blog 35-	201	2 61	JM		AP-2	987	12-073		
Weather Conditions		In Well (IW) and Breathing Zone (BZ) PID Reading						Sampler Initials	
USF CL	ear		I	A-		6/2	2/12	and	
<u> </u>	· · · · · · · · · · · · · · · · · · ·	W	ell Infor				<u></u>		
Well Integrity	Well Typ		Well Casing I		Cas	ing Diameter(in) / Gallons per	inear foot(g)	
Good Fair Poor	Monitor Ex	traction	PVC	>	1/	0.041 2/0.10	3 4/0.653	6 / 1.469	
Depth to Product (ft)	Depth to GV				Amount of Product = Depth to GW – Depth to Product				
NA	11.40		9-19 19 20.15 SCEN ACT MSD			NA			
lax purge volume (3 well o	. –			· · · · · · · · · · · · · · · · · · ·	r (ft)] x gal	llons per linear f	oot of casing x	3	
SHOW WORK Max	k Purge Volume =	[(ft) — (ft)] 2	Х (g/ft) X (3) =	gallons 1 gal = 3.785 L	
			Purging I		tion				
Start Time	Finish Tin	ne	Depth of Tu		Equipment Used for Purging			ing	
1412	144		15		Bailer	Peristaltic	-	bmersible Pump	
Color	<u>Odor</u>		<u>Sheen</u> <u>F</u>	Purged Dry		Meter Use	ed During Purg	ing	
Clear Cloudy Brown Other:	None Moderate	Eaint Strong	Yes No	Yes No	(VS	SI Multi Meter	Hach T	urbidimeter	
Nater generated duri	ng purging was	: Treated	Stored	Other	: 6	released	1 oni	te	
Maximum Pumping Ra Maximum Water Level	Drawdown = 25	% distance betw	veen screen ar	id intake				llon = 3.785 liters	
	5,54	121.9 my	m 2.3	1 1	r to Demo 10% //S		y. ,/5_/ ±20 mV	10.78	
	± 0.2 S.U.	±3%	± 0.2 °		NTU if < NTUs)	(±0.2 mg/L) If < 2 mg/L)	1 20 MV		
Time Rate (HH:mm) (mL/min)	рН. (S.U.)	Conductivity (µS/cm)	Temperal (°C)	ure Tu	irbidity NTU)	DO (mg/L)	ORP (mV)	Water Level (feet bloc)	
1412 1250					. ·			11.48	
1417 -6.14	6.14	159	6.0	2 4	1.29	10.38	- 101	11.48	
1422	5.63	147	7.10		1.86	9.09	- 92	11.52	
1427	5.47	147	4.a		.26	8.42	-91	C	
1432	5,39	148			08	7.69	- 89	ea	
1437	5,31	151	4.0	·	.20	6.86	-93	t t	
1442-	5.27	153	4.1		.95	6.12	-97	* ·····	
1996-		133			- 73				
					-		•		

Start lime	Finish Lime / Date	Depth of Tubing	Equipment Used for Sampling
1445	1500	15 1	Peristaltic Pump Submersible Pump
Container/Preservative	Analysis Requested	<u>Notes</u>	Ferrous Iron (Fe 2+) mg/L =
UX 40 or 1 Punge ZX 1L ZX 1L	AK101/82603 AK102 SWB082		Funky well "Ap- See pretanes
IX 500 ml Poly	Swcozo/wetal		
۷. ۲		See reverse side of this	s form for additional field parameter measurements

See reverse side of this form for additional field parameter measurements

Groundwater Samp	oling Data Sh	eet						FRAOY	د/
Site Name	Site Name			Event	· · · · ·	We	ell ID	Project Number	
B/09 35-	B/19 35-752			ZOIZ GWM			231	12-073	
Weather Condit	ions	In Well (I)	W) and Breath	ing Zone (I	3Z) PID Readir	ng D	ate	Sampler Initials	
Clean 16	SF		, d	A	-	6/2	2/12	Mel	
			Well Info						
Well Integrity	Well Type	2		ng Material		ng Diameter(in			
Good Fair * Poor		raction		vc)		0.041 (2/0.16	/		
Depth to Product (ft)	Depth to GW		Total Depth of Casing (ft)Amount of I/3-232343				Product = Depth to GW – Depth to Product		
·	14.97		SCRN ALT MSD			, v A			
Max purge volume (3 well c	asing volumes) = [t	otal depth	of casing (ft) -	- depth to w	/ater (ft)] x gall	ons per linear f	oot of casing	x 3	
SHOW WORK Max	Purge Volume = [(ft) – (_ ft)) X (g/ft) X (3) =	gallons 1 gal = 3.785 L	,
			l Purging		nation				
Start Time	Finish Tim	<u>e</u> .	Depth of	Tubing (ft)			t Used for Pu	rging	
1407	162-				Bailer Peristaltic Pump Submersible Pur				
Color	<u>Odor</u>	-	Sheen	Purged D		Meter Use	ed During Pu	rging	
Clear) Cloudy Brown Offier:		Faint Strong	Yes <_No			I Multi Meter		Furbidimeter	•
Water generated durin			ted Stor			Released			
Maximum Pumping Ra Maximum Water Level					te)		1g	allon = 3.785 liters	
		100 mm - 2008 page 200 mm - 201 P			eter to Demo	nstrate Stabilit	v ·		
	5.76 ±0.25.0.	19.5	- J.	4 . T	50% 4Se	6 ±10%/7% (±0.2 mg/L *		14.0	
		±3%			±1 NTU if < 10 NTUs)	If < 2 mg/L)		<u>(7.8)</u>	
Time Rate	рН (S.U.)	Conduct (µS/cr		erature C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Water Level (feet bloc)	
1607 500		-			·].	•		-14.97-	15.0
1612	6.28	140	5 4	.47	7.24	13.05	- 12-	1 15.10	
1617	5.95	145	- 4.	.33	5.13	12.41	- 113		
1622	5.82	14-	7 4.	66	4.01	12.37	-109	15.02	
1427	5.76	148		.91	2.94	12.30	-107	· _	
					<u> </u>				
		,							
		<u> </u>							
						<u> </u>		····	
	· I						L	· · · · ·	l
			e Collect		ormation	· ·			
Start Time	<u>Finish Time /</u>	<u>Date</u>		of Tubing		Equipment	Used for San	npling	

1	Start Time	Finish Time / Date	Depth of Tubing	Equipment Used for Sampling	
	1630	1645	19'	Peristaltic Pump Submersible Pump	
I	Container/Preservative	Analysis Requested	<u>Notes</u>	Ferrous Iron (Fe 2+) mg/L =	
	6 x AS (MAP) Purg.	e AK101/8260B	×	whole cleaning up, notices	ĺ
	2 × 1L	AKIOZ		base of well up lifted.	
	2×1L DI	SW8082		Bentonite squeshed onto table &	er
ł	I & SOO ml Poly	e SWEDLO	<u> </u>	Sel DATTALLS	C

_See reverse side of this form for additional field parameter measurements

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