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August 24, 2013 DCN No.: TL01-13-02-005-DCN564

Mr. Rich Rupert, OSC
US EPA Region 3
1650 Arch Street
Philadelphia, PA 19103-2029

RE: Summary Letter Report: Groundwater Split Sampling Event, May 21-22, 2013; Kiskimere Groundwater Well Investigation Site, Vandergrift, Armstrong County, Pennsylvania; Technical Direction Document No. TL01-13-02-005, EPA Contract Number EP-S3-10-04

Dear Mr. Rupert:

This letter provides a summary of TechLaw, Inc. (TechLaw) sampling support activities and validated laboratory results relating to U.S. Environmental Protection Agency Region III (EPA) collection of groundwater split samples from Shallow Land Disposal Area (SLDA) monitoring wells at the Kiskimere Groundwater Well Investigation Site (Site) located in Vandergrift, Armstrong County, Pennsylvania on May 21-22, 2013. Support activities provided by TechLaw were directed by EPA and performed under the Superfund Technical Assessment and Response Team – Western Area (START) contract as part of the removal site evaluation. The work was conducted in accordance with the EPA-approved Sampling QA/QC Work Plan (SQAP) dated March 29, 2013 as amended by Addendum 1 on May 8, 2013.

The scope of work included TechLaw personnel supporting EPA during collection of five groundwater split samples from monitoring wells located in the SLDA plus associated quality control (QC) samples. The EPA Hydrogeologist accompanied United States Army Corps of Engineers (USACE) personnel and collected split samples from pre-determined SLDA monitoring wells. Property access to the SLDA was limited to EPA personnel only during this event. TechLaw START personnel remained outside of the SLDA fenced boundary where they received and prepared samples for shipment to off-site laboratories and provided EPA with necessary sampling supplies.

The following paragraphs summarize the field and sample preparation support provided by TechLaw and includes a brief synopsis of the sample analyses performed along with the respective analytical results. In addition, a sample location map, data summary tables and the data validation reports are attached for reference.

Split Sampling Support Activities – SLDA Groundwater Monitoring Wells

On May 20, 2013, two TechLaw START personnel and the EPA Hydrogeologist mobilized to the Site area and met to discuss anticipated sampling activities related to the split sampling event scheduled to begin the next morning. The sampling plan was discussed including schedule, monitoring well locations, QA/QC samples, and chain-of-custody and sample management logistics.

On the morning of May 21, 2013, EPA and START met near the Site and prepared for sampling activities. Coolers of sample bottles and ice were prepared by START and provided to the EPA Hydrogeologist. START collected a trip blank (TB03) from deionized ultra-filtered (DIUF) water and preserved it with hydrochloric acid (HCl) to pH<2. The trip blank was placed in the volatile organic compounds (VOC) sample cooler on ice to accompany VOC samples throughout the sampling event. Containers provided to the EPA Hydrogeologist for collection of samples for trace VOC analysis were pre-preserved with approximately 0.5 milliliter (ml) of HCL.

Three representatives from the USACE met with EPA and START at 08:35 hours, and then all personnel drove to the Site. START personnel set up a sample receiving area in the gravel lot located next to and outside of the SLDA's northwest fence line which was adjacent to Route 66. The EPA Hydrogeologist and USACE personnel proceeded to the monitoring well locations which were located within the secured SLDA parcel boundary. START personnel were generally not in the line-of-sight with the EPA/USACE sampling team and were unable to closely observe and document sample collection activities.

At 11:25 hours, a chief photographer/reporter from the Valley News Dispatch stopped at the sample receiving station and identified himself. START notified the EPA representative on-site. The reporter took a photograph and drafted a write-up in the local newspaper which may be found in Attachment 3 – Press Clippings.

Split samples MW13, MW14, MW39, and duplicate pair 10L31/10L31-D were collected by the EPA Hydrogeologist during the day and provided to START at the sample receiving station under chain-of-custody. START preserved the inorganic and radiochemical portions of the samples with nitric acid to achieve pH<2 and confirmed it with pH indicator paper. START populated the SCRIBE™ sample management database with sample information. Bottle labels and tags were printed and placed on the bottles in accordance with the sampling plan. START maintained ice in the sample coolers throughout the day.

On May 22, 2013, split sample MW08 was collected by the EPA Hydrogeologist and provided to START under chain-of-custody. START preserved the sample and checked the adequacy of ice

on all samples. START demobilized at 12:10 hours and returned to the Wheeling, WV TechLaw office to complete sample labeling, packaging and shipping.

The weather throughout the event was sunny and breezy with high temperatures in the 80's.

Analytical Parameters

Four of the monitoring well split samples including the duplicate pair were analyzed for Target Compound List (TCL) trace volatile organic compounds (TVOCs) and semi-volatile organic compounds (SVOCs) plus tentatively identified compounds (TICs); 1,4-dioxane; Target Analyte List (TAL) total metals; mercury; uranium; and radiochemical analyses including radium (Ra)-226, Ra-228, gross alpha/beta, and gamma spec. Two additional samples were analyzed for a partial suite of analyses that did not include the radiochemical methods. Table I below summarizes the sample identifiers, sample type, and analyses performed on each sample.

Table I
Sample Identification, Type, and Analyses

Location ID	Sample ID	Sample Type	TVOCs	SVOCs	1,4-Dioxane (aqueous)	Total Metals/ Hg/U	Ra-226	Ra-228	Gross Alpha/ Beta	Gamma Spec
FIELD SAMPLES										
MW13	MW13	Monitoring Well	X	X	X	X				
MW14	MW14	Monitoring Well (MS/MSD)	X	X	X	X	X	X	X	X
MW39	MW39	Monitoring Well	X	X	X	X				
10L31	10L31	Monitoring Well	X	X	X	X	X	X	X	X
10L31	10L31-D	Monitoring Well (Dupe of 10L31)	X	X	X	X	X	X	X	X
MW08	MW08	Monitoring Well	X	X	X	X	X	X	X	X
BLANK SAMPLES										
TB01	Z	Field Blank (aqueous)	X							

Quality Assurance Samples

One trip blank was collected from DIUF water and placed in the VOA cooler prior to the field sampling event to assess contamination introduced during field handling and sample shipping activities. One field duplicate sample was collected by EPA from the groundwater matrix to assess the reproducibility of laboratory and field procedures and to check for non-homogeneity. Split samples were not collected from USACE field blanks and rinsate blanks. It is recommended that USACE laboratory results be obtained to assess comparability of split sample

results, assess contamination from field conditions during water sampling activities (field blanks) and to determine the adequacy of the decontamination process on non-dedicated sampling implements (rinsate blanks) during the dates of the split sampling event.

Sample Shipment - Laboratories

TechLaw START packaged and shipped the EPA split-samples to off-site laboratories scheduled through the EPA Region III Client Services Team (CST). Samples to KAP Technologies, Inc. (KAP) and Bonner Analytical Testing Company (Bonner) were shipped on May 22, 2013. Samples shipped to the EPA National Air and Radiation Environmental Laboratory (NAREL) were shipped on May 23, 2013. Table II below lists the respective Case Nos., laboratories, analytical methods, parameters and matrices associated with the samples.

Table II
Case Numbers, Laboratories and Analytical Methods

Case No.	Laboratory	Method	M.A.	Parameters	Matrix
43524	KAP	CLP SOM01.2	-	TCL TVOCs + TICs	Groundwater from Monitoring Wells and Trip Blank
				TCL SVOCs + TICs	Groundwater from Monitoring Wells
			1564.8	1,4-Dioxane	
43524	Bonner	ISM01.3	-	TAL Metals + Hg	Groundwater from Monitoring Wells
			2183.1	Uranium	
R34188	NAREL	EPA 903.1	-	RA-226	Groundwater from Monitoring Wells
		EPA 904.0	-	RA-228	
		EPA 901.1	-	Gamma Spec	
		EPA 900.0	-	Gross Alpha/Beta	

Monitoring Well Information

Monitoring well construction and coordinate information was obtained from USACE following the split sampling event. Wells MW13 and MW14 are screened in the surficial water bearing (WB) unit located in the sub-soil zone above weathered bedrock. Well MW39 is screened in the Upper Freeport Coal seam. Well 10L31 is listed as being a boring advanced during site characterization (1990-1993) in the Upper Freeport Coal. No screen data was provided for 10L31. The Upper Freeport will be relatively close to the surface (e.g. within 20 feet est.) at 10L31 which is located downgradient of Trench 10 (see Figure 1). Well construction data for

the respective split sample locations are provided in Table III below. Well construction data for SLDA wells may be found in Attachment 4 – Well Construction Table (USACE).

Table III
Well Construction Measurements

Well/Sample ID	Latitude [1]	Longitude [1]	Hydro Unit	Surface Elevation (ft amsl)	Top of Screen (ft bgs)	Bot of Screen (ft bgs)	Total Depth (ft bgs)
MW13	40.62146	-79.579732	WB	946.30	27.0	40.0	41.0
MW14	40.621044	-79.580454	WB	946.38	17.0	30.0	32.0
MW39	40.623408	-79.58417	UF	890.00	43.5	56.45	60.5
10L31 [3]	40.624409	-79.583822	UF	857.00	-	-	-
MW08	40.621804	-79.581049	1S	929.30	22.0	34.0	34.0

1 – Datum State Plane NAD83
2 – Hydro Unit: WB=Subsoil Water Bearing Unit; UF=Upper Freeport Coal; 1S=First Shallow Bedrock
3 - Well construction measurements not available at time of report
amsl = Above mean sea level

Analytical Results

Validated data packages and associated electronic data deliverables (EDDs) were received during the time period of June 21, 2013 through July 24, 2013. Laboratory data received from KAP and Bonner were validated by the EPA Region III Environmental Services Assistance Team (ESAT) according to National Functional Guidelines for Validation of Organic Data (KAP) and Inorganic Data (Bonner), utilizing the Environmental Data Exchange and Evaluation System (EXES). The EPA NAREL laboratory conducted internal data validation and reported the findings in case narratives included with the respective data reports. The validated organic, inorganic and radiological data packages including the respective sample results as reported by the laboratories may be found in Attachment 2- Data Validation Reports.

The groundwater VOC, SVOC, and TAL metals results were compared to drinking water benchmarks established under the *National Primary Drinking Water Regulations Maximum Contaminant Levels* (MCL) and the *Pennsylvania Medium-Specific Concentrations for Residential Used Aquifers with Total Dissolved Solids (TDS) Less Than 2,500 mg/L* (MSC, 1/8/2011). Although groundwater is not produced or used in the SLDA or Parks sites, comparison of the data to drinking water benchmarks is appropriate considering likely extension of the hydrostratigraphic zones under the community of Kiskimere where there is a presence of residential private-use wells and an apparent lack of well construction data available for those wells. In addition, the data were screened using the *EPA Regional Screening Levels for Tap Water* (RSLs, 6/2013). Consistent with EPA Region 3 screening procedures, the RSL table considered a 1E-6 cancer risk and target hazard quotient of 0.1 to account for chemicals that may have additive effects. The comparisons are provided in data summary tables that may be found in Attachment 1.

Radiochemical laboratory results are also summarized in Attachment 1 – Data Summary Tables. The summary includes the result, uncertainty and minimum detectable concentration (MDC) values for the respective sample-specific isotope or method. Cells are shaded where the result exceeds the uncertainty and/or MDC. Comparison of gross Alpha/Beta, Ra-226 and Ra-228 results with MCLs is discussed below. It is recommended that a qualified health physicist review the radiochemical data including isotope-specific activity identified in the gamma spectroscopy to evaluate potential risk to human or ecological receptors and determine if additional investigation is necessary. A general discussion regarding the radiochemical sample results is provided below.

Volatile and Semi-Volatile Organic Compounds

There were no VOC or SVOC compounds detected in the monitoring well samples. Accordingly, a data summary table is not provided in Attachment 1 for VOC and SVOC parameters. Attachment 2 provides the data validation report and laboratory results.

TAL Metals, Mercury and Uranium

Beryllium (Be) was found at a concentration of 4 ug/L in sample MW39; a concentration equivalent to the MCL of 4 ug/L. Well MW39 is screened in the Upper Freeport (UF) coal seam south of Trench 10 (down dip). This was the only occurrence of a TAL metal in the split samples that met or exceeded the MCL. The concentration also equated to the 4 ug/L MSC benchmark and exceeded the RSL concentration of 1.6 ug/L. Beryllium was not detected in the other samples. There appears to be an association between elevated beryllium concentrations and the water zone in the UF coal seam. Beryllium is naturally occurring in soils and rock and can be present in low-pH water, dissolved from parent material. Comparatively, beryllium was not detected in groundwater at significant concentrations during the Site Inspection (SI). Beryllium was previously identified at 3.9 ug/L in SW06 (TechLaw 2012) and at 2.4 ug/L in SW01 (TechLaw 2013). Both samples were surface water samples collected from the coal mine outfall located on the steep bank west of Lee's Lake. The pH of the outfall water was acidic and field measured to be 3.58. Anthropogenic sources of beryllium have been documented at the site. According to the Remedial Investigation Report (RI), beryllium wastes from the Apollo nuclear fuel fabrication facility were buried in the SLDA and included beryllium-uranium scrap solutions and zirconium-beryllium waste. Additionally, the Parks nuclear fuel fabrication facility located adjacent to and northwest of the SLDA site was used for the production of plutonium-beryllium neutron sources and devices containing Americium-241 (Am-241). Parks facility equipment was reportedly stored in the area of Trench 10 where elevated levels of plutonium and Am-241 were found in subsurface soils. During the RI, the range

of beryllium concentrations detected in groundwater was 1-20 ug/L with the maximum value recorded from the UF coal seam water zone at MW-03 (USACE 2005). Interestingly, beryllium was not detected at well location 10L31 during the split sampling event. This may be attributed to 10L31 being located on the north side of Trench 10 (up dip) where it is reported to tap the UF coal seam.

Cobalt (Co) was detected at a concentration of 20.9 ug/L in sample MW39 which exceeded both the MSC of 11 ug/L and the RSL concentration of 0.47 ug/L. It also exceeded the RSL in MW14 where it was detected at a concentration of 2.6 ug/L. Cobalt was not detected in the other samples. Historically (during RI), cobalt was detected in SLDA groundwater ranging in concentration from 11 to 130 ug/L and the average concentration was 50 ug/L with the maximum concentration found in MW-03 (USACE 2005). During the SI, cobalt was not-detected at significant concentrations in residential well water. However, it was previously detected in mine outfall samples SW06 and SW01 at concentrations of 56.4 and 35.8 ug/L, respectively during the SI and seep sampling events. Cobalt naturally occurs in small amounts in the environment and can come from man-made sources such as alloy production and coal-fired power plants.

Manganese (Mn) was detected at a concentration of 328 ug/L in sample MW14 which exceeded both the MSC concentration of 300 ug/L and the RSL concentration of 32 ug/L. It was detected at concentrations greater than the RSL in each monitoring well sample. The concentration is within range of historical RI concentrations found in SLDA wells where Mn was detected between 40 and 3,430 ug/L with an average concentration of 675 ug/L. Manganese was also widely detected in groundwater and surface water samples collected during the previous SI and seep sampling events. Manganese is ubiquitous in the environment and is naturally occurring in surface water and groundwater. It is typically present in clay minerals, pyrite, carbonate minerals and some coals. It is used in manufacturing of iron and steel alloys, in batteries, glass, cleaning and disinfection agents, fertilizers, and fungicides among other uses.

Aluminum, arsenic, barium, iron and nickel concentrations exceeded the RSLs for tap water. The metals fell within the range of previous concentrations detected in SLDA groundwater as reported from the RI.

Summarized in Table IV below are those samples containing metals concentrations that exceeded one or more of the MSC, MCL and/or RSL. In addition, Table 1 in Attachment 1 provides a more-comprehensive data summary. The data validation report and laboratory data is provided in Attachment 2. As previously indicated, USACE laboratory results should be obtained to compare split sample results.

Table IV
Inorganic MSC, MCL and RSL Benchmark Exceedances

			Sample #:	10L31		10L31-D		MW08		MW13		MW14		MW39	
			Units:	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Parameter	MSC [1]	MCL [2]	RSL (tap) [3]	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aluminum			1600			31.8								**5230**	
Arsenic	10	10	0.045									**1.3**			
Barium	2000	2000	290	31.5		31.7		**325**		**453**		**310**		18.8	
Beryllium	4	4	1.6											**4**	
Cobalt	11		0.47									**2.6**		**20.9**	
Iron			1100					257		587		**6220**		**8660**	
Manganese	300		32	**35.5**		**43.4**		**80.3**		**50.7**		**328**		**175**	
Nickel	100		30	1.7		1.9						3.2		**55.3**	

Only parameters showing benchmark exceedances are listed.
A shaded cell indicates the value exceeds one or more benchmarks. Shading is applied in the following order: MCL (pink), MSC (yellow); RSL (cyan)
1 - Pennsylvania Median-Specific Concentration for Residential Used Aquifers with Total Dissolved Solids (TDS) Less Than 2,500 mg/L (MSC, 1/8/2011).
2 - National Primary Drinking Water Regulations Maximum Contaminant Levels (MCL)
3 - EPA Regional Screening Level for Tap Water, June 2013 (carcinogens 10E-6, THQ=0.1)

Gamma Spec, Gross Alpha and Beta, Ra-226, Ra-228

National Primary Drinking Water MCLs exist for adjusted gross alpha particles (15 picocuries per liter (pCi/L)), beta particles (4 millirems per year (mrem/yr)), combined Ra-226/Ra-228 (5 pCi/L), and uranium (30 ug/L). There were no MCL exceedances for gross alpha, combined Ra-226/Ra-228, or uranium in the monitoring well split samples. Gross beta ranged from 1.84 to 6.96 pCi/L. The results are summarized including radionuclides identified from gamma spectrometry in Attachment 1, Table 2. NAREL laboratory reports may be found in Attachment 2 – Data Validation Reports.

References

USACE, 2005. Shallow Land Disposal Area Remedial Investigation Report, Final. October 2005.

TechLaw, 2012. Kiskimere Groundwater Well Investigation Site Trip Report/Site Inspection. November 30, 2012.

TechLaw, 2013. Draft Summary Letter Report: Groundwater Seep, Spring, Outfall and Sediment Sampling Event. June 25, 2013.

If you have any questions or comments regarding this document, please contact me at [redacted] or [redacted] (mobile).

Sincerely,

[redacted]

START Site Leader

Enclosures:

Figures

Figure 1 – Split Sampling Map – Groundwater

Attachment 1 – Data Summary Tables

Table 1 – TAL Metals, Mercury and Uranium Split Groundwater Samples from Monitoring Wells

Table 2 – Radiological Data, Split Groundwater Samples from Monitoring Wells

Attachment 2 – Data Validation Reports

Case 43524, SDG# C0AB7, Trace VOA, Semi-VOA, 1,4-Dioxane

Case 43524, SDGs# MC0AB7, MC0AC2, Total Metals, Mercury, and Uranium

Case R34188, 1300046-GAMMA, Gamma Spectrometry

Case R34188, 1300046- ALPBET, Gross Alpha and Beta on Water Samples

Case R34188, 1300046- RA226, Radium-226 in Water; Rapid Method for High-Activity Samples

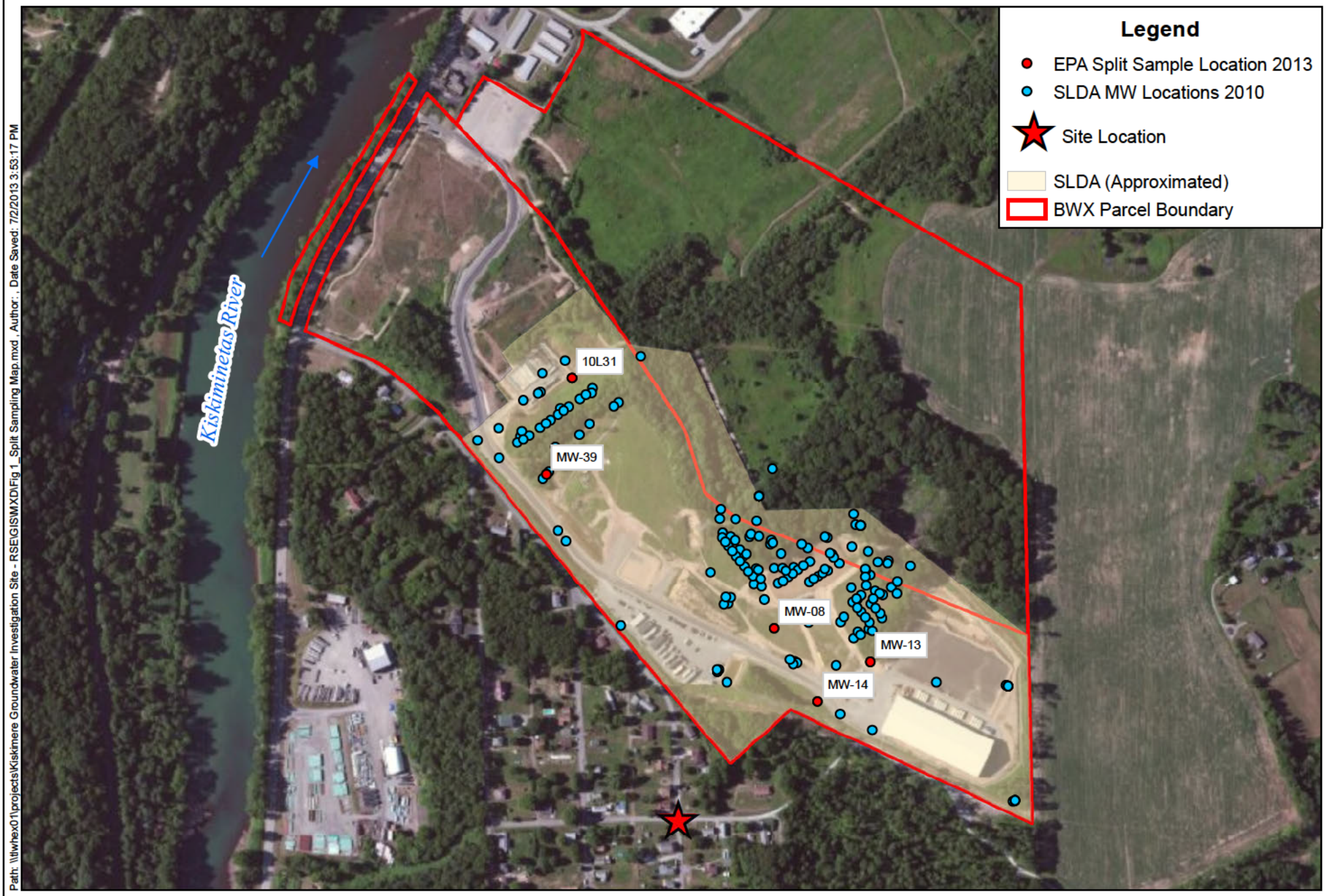
Case R34188, 1300046- RA228, Radium-228 in Environmental Matrices

Attachment 3 – Press Clipping

Attachment 4 – Well Construction Table (USACE)

cc: TL Central Files

FIGURES



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TDD: TL01-13-02-005

Figure 1 – Split Sampling Map - Groundwater
Kiskimere Groundwater Well Investigation Site
Vandergrift, Armstrong County, Pennsylvania

0 250 500 1,000 Feet

ESRI Online World Imagery Layer

ATTACHMENT 1

DATA SUMMARY TABLES

KEY – Data Summary Tables 1 and 2

MSC (U_res)	Pennsylvania Medium-Specific Concentrations for Residential Used Aquifers with Total Dissolved Solids (TDS) Less Than 2,500 mg/L (MSC, 1/8/2011).
MCL	National Primary Drinking Water Regulations Maximum Contaminant Levels (MCL)
RSL Tap	EPA Regional Screening Levels for Tap Water (RSLs, 6/2013)

Shading (Table 1 – Inorganic Results):

Purple indicates that the result exceeds the MCL; the MSC and RSL may be exceeded also.
Pale yellow indicates that the result exceeds the MSC; the RSL may also be exceeded.
Cyan shading indicates that the result only exceeds the RSL

Shading (Table 2 – Radiological Results):

Yellow Shading: The absolute value of the result is greater than the uncertainty and Minimum Detectable Concentrations.
Blue Shading: The absolute value of the result is greater than the Minimum Detectable Concentration.
Brown Shading: The absolute value of the result is greater than the uncertainty.

CAS No.	Chemical Abstracts Service Number
Q	Validated Qualifier
ug/L	micrograms per liter
ug/kg	micrograms per kilogram
ug/g	micrograms per gram (equivalent to milligrams per kilogram)
PCI/L	picocuries per liter (Rad)
Uncert. +/-2σ	2-sigma measurement of uncertainty (Rad)
MDC	Sample-specific estimate of the minimum detectable concentration (Rad)

GLOSSARY OF DATA QUALIFIER CODES (ORGANIC)

U	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method.
J	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL).
B	Analyte is presumed to be a blank contamination artifact.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
UJ	The analyte was not detected at a level greater than or equal to the adjusted CRQL. However, the reported adjusted CRQL is approximate and may be inaccurate or imprecise.
R	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.

GLOSSARY OF DATA QUALIFIER CODES (INORGANIC)

U	Not detected. The associated number indicates approximate sample concentration necessary to be detected.
R	Unusable result. Analyte may or may not be present in the sample. Supporting data is necessary to confirm result.
J	Analyte present. Reported value may not be accurate or precise.
J+	Analyte present. Reported value may be biased high. Actual value is expected to be lower.
J-	Analyte present. Reported value may be biased low. Actual value is expected to be higher.
UJ	Not detected, quantitation limit may be inaccurate or imprecise.

Table - 1
TAL Metals, Mercury and Uranium
Split Groundwater Samples from Monitoring Wells

Kiskimere Groundwater Well Investigation Site Removal Site Evaluation					Sample #: Sampling Location: Matrix: Units: Date Sampled: Date Analyzed:	10L31 10L31 Water ug/L 5/21/2013 6/7/2013		10L31-D 10L31 Water ug/L 5/21/2013 6/7/2013		MW08 MW08 Water ug/L 5/22/2013 6/7/2013		MW13 MW13 Water ug/L 5/21/2013 6/7/2013		MW14 MW14 Water ug/L 5/21/2013 6/7/2013		MW39 MW39 Water ug/L 5/21/2013 6/7/2013	
Parameter	CAS No.	MSC (U_res)	MCL	RSL tap		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aluminum	7429-90-5			1600		20	U	31.8		20	U	20	U	20	U	**5230**	
Antimony	7440-36-0	6	6	0.6		2	U	2	U	2	U	2	U	2	U	2	U
Arsenic	7440-38-2	10	10	0.045		1	U	1	U	1	U	1	U	**1.3**		1	U
Barium	7440-39-3	2000	2000	290		31.5		31.7		**325**		**453**		**310**		18.8	
Beryllium	7440-41-7	4	4	1.6		1	U	1	U	1	U	1	U	1	U	**4**	
Cadmium	7440-43-9	5	5	0.69		1	U	1	U	1	U	1	U	1	U	1	U
Calcium	7440-70-2					66000		65700		38300		33200		25200		37800	
Chromium	7440-47-3	100	100			2	U	2	U	2	U	2	U	2	U	2	U
Cobalt	7440-48-4	11		0.47		1	U	1	U	1	U	1	U	**2.6**		**20.9**	
Copper	7440-50-8	1000	1300	62		2	U	2	U	0.65	J	2	U	2	U	8.3	
Iron	7439-89-6			1100		200	U	200	U	257		587		**6220**		**8660**	
Lead	7439-92-1	5	15			1	U	1	U	1	U	1	U	1	U	1	U
Magnesium	7439-95-4					34100		34000		7990		6740		4680		16500	
Manganese	7439-96-5	300		32		**35.5**		**43.4**		**80.3**		**50.7**		**328**		**175**	
Nickel	7440-02-0	100		30		1.7		1.9		1	U	1	U	3.2		**55.3**	
Potassium	7440-09-7					2410	J	2400	J	1350	J	1060	J	592	J	2720	J
Selenium	7782-49-2	50	50	7.8		0.95	J	1.1	J	5	U	5	U	5	U	1.2	J
Silver	7440-22-4	100		7.1		1	UJ	1	UJ	1	UJ	1	UJ	1	UJ	1	UJ
Sodium	7440-23-5					7160		7070		2800		2190		2780		10900	
Thallium	7440-28-0	2	2	0.016		1	U	1	U	1	U	1	U	1	U	1	U
Uranium	7440-61-1		30	4.7		0.27	J	0.27	J	0.021	J	1	U	1	U	0.36	J
Vanadium	7440-62-2	260		6.3		5	U	5	U	5	U	5	U	5	U	5	U
Zinc	7440-66-6	2000		470		2.5		2	U	2	U	2	U	3.4		102	
Mercury	7439-97-6	2	2	0.063		0.2	UJ	0.2	UJ	0.2	UJ	0.2	UJ	0.2	UJ	0.2	UJ

Table - 2
Radiological Data
Split Groundwater Samples from Monitoring Wells

Sample #:		10L31				10L31-D				MW08				MW14			
Sampling Location:		10L31				10L31				MW08				MW14			
Matrix:		WATER-GROUND				WATER-GROUND				WATER-GROUND				WATER-GROUND			
Sample Type:		Field Duplicate				Field Duplicate				Field				Field + Lab QC			
Units:		PCI/L				PCI/L				PCI/L				PCI/L			
Date Sampled:		5/21/2013				5/21/2013				5/22/2013				5/21/2013			
Date Analyzed:		6/15/2013				6/15/2013				6/14/2013				6/14/2013			
Parameter	Analysis	Result	Q	Uncert. +/- 2σ	MDC	Result	Q	Uncert. +/- 2σ	MDC	Result	Q	Uncert. +/- 2σ	MDC	Result	Q	Uncert. +/- 2σ	MDC
Ba140	NAREL GAM-01	-1.77		152	48.9	13.1		28.5	47.9	6.53		26.2	44.4	2.3		27.7	47.4
Bi214	NAREL GAM-01									6.87	J	6.19	10	6.17	J	7.17	10.9
Co60	NAREL GAM-01	-0.385		15.4	3.82	0.194		1.67	2.99	0.299		1.3	2.38	-0.363		57.3	3.1
Cs137	NAREL GAM-01	-0.281		3.19	3.91	-0.564		4.95	4.04	0.152		2.29	4.04	-1.52		476	4.13
I131	NAREL GAM-01	3		18.6	31.5	-0.946		15.9	27.1	-6.67		17.4	29.1	0.745		17.2	29.1
K40	NAREL GAM-01	-30.5		39.7	58.6	-22.7		36.8	59.3	10.6		29.4	55.6	-8.36		32.3	56.4
Pb214	NAREL GAM-01													7.55	J	6.84	10.7
Ra226	NAREL GAM-01	3.9	J	60	98.1	-14.2	J	65.4	96	12.3	J	58.9	97.7	12.2	J	61.3	98.3
Ra228	NAREL GAM-01	5.42		10.5	17.7	9.05		10.8	17.8	-6.7		16.8	19	5.85		11.8	18.5
Alpha	NAREL GR-01	-1.59		5.96	5.64	-0.174		6.49	6.05	0.75		3.25	2.89	-0.146		5.42	5.05
Beta	NAREL GR-01	6.96		6.15	9.17	4.83		5.75	8.65	1.84		2.82	4.3	2.28		5.4	8.34
Ra228	NAREL RA-05	0.378		0.423	0.685	0.0988		0.406	0.699	0.883		0.506	0.759	0.499		0.464	0.741
Ra226	NAREL RA226-EICHROM	0.0764		0.0758	0.0661	0.193		0.14	0.183	0.245		0.131	0.0896	0.303		0.145	0.109

ATTACHMENT 2

DATA VALIDATION REPORTS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
Environmental Sciences Center
701 Mapes Road
Fort Meade, Maryland 20755-5350

DATE : June 27, 2013

SUBJECT: Region III Data QA Review

FROM : Colleen K. Walling
Region III ESAT RPO (3EA22)

TO : Rich Rupert
On-Scene Coordinator (3HS31)

Attached is the organic data validation report for the Kiskimere Groundwater Well site for Case No. 43524, SDG# C0AB7 completed by the Region III Environmental Services Assistance Team (ESAT) contractor under the direction of Region III EAID.

If you have any questions regarding this review, please call me at (410) 305-2763.

Attachments

cc: Joe Carter (TechLaw, Inc.)
Gene Nance (TechLaw, Inc.)

TO No.: 0042 TDF#: 06036E

Lockheed Martin IS&GS – Civil
ESAT Region 3
US EPA Environmental Science Center
701 Mapes Road Ft. Meade, MD 20755-5350
Telephone 410-305-3037 Facsimile 410-305-3597

LOCKHEED MARTIN
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DATE: June 25, 2013

SUBJECT: Organic Data Validation (Level S4VEM)
Site: Kiskimere Groundwater Well
Case: 43524, SDG: C0AB7

FROM: Kenneth W. Curry
Senior Data Reviewer

Kurt Roby
Oversight Chemist

TO: Colleen Walling
ESAT Region 3 Project Officer

OVERVIEW

Case 43524, Sample Delivery Group (SDG) C0AB7, from the Kiskimere Groundwater Well site consisted of six (6) aqueous samples including one (1) field duplicate pair analyzed for trace volatile and semivolatile compounds and one (1) trip blank analyzed for trace volatile compounds only. In addition, 1,4-dioxane was analyzed for as a semivolatile compound under flex clause 1564.8. All samples were analyzed by KAP Technologies Incorporated (KAP). Samples were analyzed according to Contract Laboratory Program (CLP) Statement of Work (SOW) SOM01.2 through the Routine Analytical Services (RAS) program.

SUMMARY

Validation of data was performed according to the National Functional Guidelines for Validation of Organic Data, utilizing Environmental Data Exchange and Evaluation System (EXES) and is assigned the Superfund Data Validation Label S4VEM (Stage_4_Validation_Electronic_Manual). No problems were noted during validation of these data.

NOTES

Compounds detected below Contract Required Quantitation Limits (CRQLs) were qualified "J" unless raised to the CRQL and qualified "U" due to blank contamination.

Tentatively Identified Compounds (TICs) were not validated. They are validated only at the specific request of the data users. TIC data are included on the Sample Summary Reports (SSRs).

Detected concentrations of common laboratory contaminant acetone <2X CRQL have been reported at CRQL and qualified "U" in samples for which the associated method or storage blanks had the same compound present.

No positive results were reported for field duplicate pair, samples C0AB9/C0AC0.

GLOSSARY OF DATA QUALIFIER CODES (ORGANIC)

U	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method.
J	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL).
B	Analyte is presumed to be a blank contamination artifact.
NJ	The analysis indicates the presence of an analyte that has been "tentatively indentified" and the associated numerical value represents its approximate concentration.
UJ	The analyte was not detected at a level greater than or equal to the adjusted CRQL. However, the reported adjusted CRQL is approximate and may be inaccurate or imprecise.
R	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
C	This qualifier applies to pesticide and Aroclor results when the identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).
X	This qualifier applies to pesticide and Aroclor results when GC/MS analysis was attempted but was unsuccessful.

DCN: 43524_C0AB7

Sample Summary Report

Case No:	43524	Contract:	EPW11031	SDG No:	C0AB7	Lab Code:	KAP
Sample Number:	C0AB7	Method:	VOA_Trace	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	MW08	pH:	2	Sample Date:	05/22/2013	Sample Time:	11:35:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Dichlorodifluoromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Vinyl chloride	0.50	UG/L	1.0	U	U	Yes	S3VE
Bromomethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Trichlorofluoromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1-Dichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Acetone	5.0	UG/L	1.0	U	U	Yes	S3VE
Carbon disulfide	0.50	UG/L	1.0	U	U	Yes	S3VE
Methyl acetate	0.50	UG/L	1.0	U	U	Yes	S3VE
Methylene chloride	0.50	UG/L	1.0	U	U	Yes	S3VE
trans-1,2-Dichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
Methyl tert-butyl ether	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1-Dichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
cis-1,2-Dichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
2-Butanone	5.0	UG/L	1.0	U	U	Yes	S3VE
Bromochloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chloroform	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,1-Trichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Cyclohexane	0.50	UG/L	1.0	U	U	Yes	S3VE
Carbon tetrachloride	0.50	UG/L	1.0	U	U	Yes	S3VE
Benzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Trichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
Methylcyclohexane	0.50	UG/L	1.0	U	U	Yes	S3VE

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
1,2-Dichloropropane	0.50	UG/L	1.0	U	U	Yes	S3VE
Bromodichloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
cis-1,3-Dichloropropene	0.50	UG/L	1.0	U	U	Yes	S3VE
4-Methyl-2-pentanone	5.0	UG/L	1.0	U	U	Yes	S3VE
Toluene	0.50	UG/L	1.0	U	U	Yes	S3VE
trans-1,3-Dichloropropene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,2-Trichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Tetrachloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
2-Hexanone	5.0	UG/L	1.0	U	U	Yes	S3VE
Dibromochloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dibromoethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
Ethylbenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
o-Xylene	0.50	UG/L	1.0	U	U	Yes	S3VE
m,p-Xylene	0.50	UG/L	1.0	U	U	Yes	S3VE
Styrene	0.50	UG/L	1.0	U	U	Yes	S3VE
Bromoform	0.50	UG/L	1.0	U	U	Yes	S3VE
Isopropylbenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,2,2-Tetrachloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,3-Dichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,4-Dichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dibromo-3-chloropropane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2,4-Trichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2,3-Trichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE

Case No:	43524	Contract:	EPW11031	SDG No:	C0AB7	Lab Code:	KAP
Sample Number:	C0AB7	Method:	BNA	Matrix:	Water	MA Number:	1564.8
Sample Location:	MW08	pH:	7.1	Sample Date:	05/22/2013	Sample Time:	11:35:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Benzaldehyde	5.0	UG/L	1.0	U	U	Yes	S3VE
Phenol	5.0	UG/L	1.0	U	U	Yes	S3VE
Bis(2-chloroethyl)ether	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Chlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Methylphenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2,2'-Oxybis(1-chloropropane)	5.0	UG/L	1.0	U	U	Yes	S3VE
Acetophenone	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Methylphenol	5.0	UG/L	1.0	U	U	Yes	S3VE
N-Nitroso-di-n-propylamine	5.0	UG/L	1.0	U	U	Yes	S3VE
Hexachloroethane	5.0	UG/L	1.0	U	U	Yes	S3VE
Nitrobenzene	5.0	UG/L	1.0	U	U	Yes	S3VE
Isophorone	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Nitrophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4-Dimethylphenol	5.0	UG/L	1.0	U	U	Yes	S3VE
Bis(2-chloroethoxy)methane	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4-Dichlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
Naphthalene	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Chloroaniline	5.0	UG/L	1.0	U	U	Yes	S3VE
Hexachlorobutadiene	5.0	UG/L	1.0	U	U	Yes	S3VE
Caprolactam	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Chloro-3-methylphenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Methylnaphthalene	5.0	UG/L	1.0	U	U	Yes	S3VE
Hexachlorocyclopentadiene	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4,6-Trichlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4,5-Trichlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
1,1'-Biphenyl	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Chloronaphthalene	5.0	UG/L	1.0	U	U	Yes	S3VE

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
2-Nitroaniline	10	UG/L	1.0	U	U	Yes	S3VE
Dimethylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
2,6-Dinitrotoluene	5.0	UG/L	1.0	U	U	Yes	S3VE
Acenaphthylene	5.0	UG/L	1.0	U	U	Yes	S3VE
3-Nitroaniline	10	UG/L	1.0	U	U	Yes	S3VE
Acenaphthene	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4-Dinitrophenol	10	UG/L	1.0	U	U	Yes	S3VE
4-Nitrophenol	10	UG/L	1.0	U	U	Yes	S3VE
Dibenzofuran	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4-Dinitrotoluene	5.0	UG/L	1.0	U	U	Yes	S3VE
Diethylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
Fluorene	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Chlorophenyl-phenylether	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Nitroaniline	10	UG/L	1.0	U	U	Yes	S3VE
4,6-Dinitro-2-methylphenol	10	UG/L	1.0	U	U	Yes	S3VE
N-Nitrosodiphenylamine	5.0	UG/L	1.0	U	U	Yes	S3VE
1,2,4,5-Tetrachlorobenzene	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Bromophenyl-phenylether	5.0	UG/L	1.0	U	U	Yes	S3VE
Hexachlorobenzene	5.0	UG/L	1.0	U	U	Yes	S3VE
Atrazine	5.0	UG/L	1.0	U	U	Yes	S3VE
Pentachlorophenol	10	UG/L	1.0	U	U	Yes	S3VE
Phenanthrene	5.0	UG/L	1.0	U	U	Yes	S3VE
Anthracene	5.0	UG/L	1.0	U	U	Yes	S3VE
Carbazole	5.0	UG/L	1.0	U	U	Yes	S3VE
Di-n-butylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
Fluoranthene	5.0	UG/L	1.0	U	U	Yes	S3VE
Pyrene	5.0	UG/L	1.0	U	U	Yes	S3VE
Butylbenzylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
3,3'-Dichlorobenzidine	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(a)anthracene	5.0	UG/L	1.0	U	U	Yes	S3VE
Chrysene	5.0	UG/L	1.0	U	U	Yes	S3VE
Bis(2-ethylhexyl)	5.0	UG/L	1.0	U	U	Yes	S3VE

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
phthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
Di-n-octylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(b)fluoranthene	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(k)fluoranthene	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(a)pyrene	5.0	UG/L	1.0	U	U	Yes	S3VE
Indeno(1,2,3-cd)pyrene	5.0	UG/L	1.0	U	U	Yes	S3VE
Dibenzo(a,h)anthracene	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(g,h,i)perylene	5.0	UG/L	1.0	U	U	Yes	S3VE
2,3,4,6-Tetrachlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
1,4-Dioxane	2.5	UG/L	1.0	U	U	Yes	S3VE

Case No:	43524	Contract:	EPW11031	SDG No:	C0AB7	Lab Code:	KAP
Sample Number:	C0AB8	Method:	BNA	Matrix:	Water	MA Number:	1564.8
Sample Location:	MW14	pH:	6.2	Sample Date:	05/21/2013	Sample Time:	14:45:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Benzaldehyde	5.0	UG/L	1.0	U	U	Yes	S3VE
Phenol	5.0	UG/L	1.0	U	U	Yes	S3VE
Bis(2-chloroethyl)ether	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Chlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Methylphenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2,2'-Oxybis(1-chloropropane)	5.0	UG/L	1.0	U	U	Yes	S3VE
Acetophenone	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Methylphenol	5.0	UG/L	1.0	U	U	Yes	S3VE
N-Nitroso-di-n-propylamine	5.0	UG/L	1.0	U	U	Yes	S3VE
Hexachloroethane	5.0	UG/L	1.0	U	U	Yes	S3VE
Nitrobenzene	5.0	UG/L	1.0	U	U	Yes	S3VE
Isophorone	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Nitrophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4-Dimethylphenol	5.0	UG/L	1.0	U	U	Yes	S3VE
Bis(2-chloroethoxy)methane	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4-Dichlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
Naphthalene	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Chloroaniline	5.0	UG/L	1.0	U	U	Yes	S3VE
Hexachlorobutadiene	5.0	UG/L	1.0	U	U	Yes	S3VE
Caprolactam	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Chloro-3-methylphenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Methylnaphthalene	5.0	UG/L	1.0	U	U	Yes	S3VE
Hexachlorocyclopentadiene	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4,6-Trichlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4,5-Trichlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
1,1'-Biphenyl	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Chloronaphthalene	5.0	UG/L	1.0	U	U	Yes	S3VE

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
2-Nitroaniline	10	UG/L	1.0	U	U	Yes	S3VE
Dimethylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
2,6-Dinitrotoluene	5.0	UG/L	1.0	U	U	Yes	S3VE
Acenaphthylene	5.0	UG/L	1.0	U	U	Yes	S3VE
3-Nitroaniline	10	UG/L	1.0	U	U	Yes	S3VE
Acenaphthene	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4-Dinitrophenol	10	UG/L	1.0	U	U	Yes	S3VE
4-Nitrophenol	10	UG/L	1.0	U	U	Yes	S3VE
Dibenzofuran	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4-Dinitrotoluene	5.0	UG/L	1.0	U	U	Yes	S3VE
Diethylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
Fluorene	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Chlorophenyl-phenylether	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Nitroaniline	10	UG/L	1.0	U	U	Yes	S3VE
4,6-Dinitro-2-methylphenol	10	UG/L	1.0	U	U	Yes	S3VE
N-Nitrosodiphenylamine	5.0	UG/L	1.0	U	U	Yes	S3VE
1,2,4,5-Tetrachlorobenzene	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Bromophenyl-phenylether	5.0	UG/L	1.0	U	U	Yes	S3VE
Hexachlorobenzene	5.0	UG/L	1.0	U	U	Yes	S3VE
Atrazine	5.0	UG/L	1.0	U	U	Yes	S3VE
Pentachlorophenol	10	UG/L	1.0	U	U	Yes	S3VE
Phenanthrene	5.0	UG/L	1.0	U	U	Yes	S3VE
Anthracene	5.0	UG/L	1.0	U	U	Yes	S3VE
Carbazole	5.0	UG/L	1.0	U	U	Yes	S3VE
Di-n-butylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
Fluoranthene	5.0	UG/L	1.0	U	U	Yes	S3VE
Pyrene	5.0	UG/L	1.0	U	U	Yes	S3VE
Butylbenzylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
3,3'-Dichlorobenzidine	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(a)anthracene	5.0	UG/L	1.0	U	U	Yes	S3VE
Chrysene	5.0	UG/L	1.0	U	U	Yes	S3VE
Bis(2-ethylhexyl)	5.0	UG/L	1.0	U	U	Yes	S3VE

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
phthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
Di-n-octylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(b)fluoranthene	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(k)fluoranthene	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(a)pyrene	5.0	UG/L	1.0	U	U	Yes	S3VE
Indeno(1,2,3-cd)pyrene	5.0	UG/L	1.0	U	U	Yes	S3VE
Dibenzo(a,h)anthracene	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(g,h,i)perylene	5.0	UG/L	1.0	U	U	Yes	S3VE
2,3,4,6-Tetrachlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
1,4-Dioxane	2.5	UG/L	1.0	U	U	Yes	S3VE

Case No:	43524	Contract:	EPW11031	SDG No:	C0AB7	Lab Code:	KAP
Sample Number:	C0AB8	Method:	VOA_Trace	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	MW14	pH:	2	Sample Date:	05/21/2013	Sample Time:	14:45:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Dichlorodifluoromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Vinyl chloride	0.50	UG/L	1.0	U	U	Yes	S3VE
Bromomethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Trichlorofluoromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1-Dichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Acetone	5.0	UG/L	1.0	U	U	Yes	S3VE
Carbon disulfide	0.50	UG/L	1.0	U	U	Yes	S3VE
Methyl acetate	0.50	UG/L	1.0	U	U	Yes	S3VE
Methylene chloride	0.50	UG/L	1.0	U	U	Yes	S3VE
trans-1,2-Dichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
Methyl tert-butyl ether	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1-Dichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
cis-1,2-Dichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
2-Butanone	5.0	UG/L	1.0	U	U	Yes	S3VE
Bromochloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chloroform	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,1-Trichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Cyclohexane	0.50	UG/L	1.0	U	U	Yes	S3VE
Carbon tetrachloride	0.50	UG/L	1.0	U	U	Yes	S3VE
Benzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Trichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
Methylcyclohexane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dichloropropane	0.50	UG/L	1.0	U	U	Yes	S3VE
Bromodichloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
cis-1,3-Dichloropropene	0.50	UG/L	1.0	U	U	Yes	S3VE
4-Methyl-2-pentanone	5.0	UG/L	1.0	U	U	Yes	S3VE
Toluene	0.50	UG/L	1.0	U	U	Yes	S3VE
trans-1,3-Dichloropropene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,2-Trichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Tetrachloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
2-Hexanone	5.0	UG/L	1.0	U	U	Yes	S3VE
Dibromochloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dibromoethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
Ethylbenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
o-Xylene	0.50	UG/L	1.0	U	U	Yes	S3VE
m,p-Xylene	0.50	UG/L	1.0	U	U	Yes	S3VE
Styrene	0.50	UG/L	1.0	U	U	Yes	S3VE
Bromoform	0.50	UG/L	1.0	U	U	Yes	S3VE
Isopropylbenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,2,2-Tetrachloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,3-Dichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,4-Dichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dibromo-3-chloropropane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2,4-Trichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2,3-Trichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE

Case No:	43524	Contract:	EPW11031	SDG No:	C0AB7	Lab Code:	KAP
Sample Number:	C0AB9	Method:	VOA_Trace	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	10L31	pH:	2	Sample Date:	05/21/2013	Sample Time:	18:20:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Dichlorodifluoromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Vinyl chloride	0.50	UG/L	1.0	U	U	Yes	S3VE
Bromomethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Trichlorofluoromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1-Dichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Acetone	5.0	UG/L	1.0	U	U	Yes	S3VE
Carbon disulfide	0.50	UG/L	1.0	U	U	Yes	S3VE
Methyl acetate	0.50	UG/L	1.0	U	U	Yes	S3VE
Methylene chloride	0.50	UG/L	1.0	U	U	Yes	S3VE
trans-1,2-Dichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
Methyl tert-butyl ether	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1-Dichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
cis-1,2-Dichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
2-Butanone	5.0	UG/L	1.0	U	U	Yes	S3VE
Bromochloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chloroform	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,1-Trichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Cyclohexane	0.50	UG/L	1.0	U	U	Yes	S3VE
Carbon tetrachloride	0.50	UG/L	1.0	U	U	Yes	S3VE
Benzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Trichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
Methylcyclohexane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dichloropropane	0.50	UG/L	1.0	U	U	Yes	S3VE
Bromodichloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
cis-1,3-Dichloropropene	0.50	UG/L	1.0	U	U	Yes	S3VE
4-Methyl-2-pentanone	5.0	UG/L	1.0	U	U	Yes	S3VE
Toluene	0.50	UG/L	1.0	U	U	Yes	S3VE
trans-1,3-Dichloropropene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,2-Trichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Tetrachloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
2-Hexanone	5.0	UG/L	1.0	U	U	Yes	S3VE
Dibromochloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dibromoethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
Ethylbenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
o-Xylene	0.50	UG/L	1.0	U	U	Yes	S3VE
m,p-Xylene	0.50	UG/L	1.0	U	U	Yes	S3VE
Styrene	0.50	UG/L	1.0	U	U	Yes	S3VE
Bromoform	0.50	UG/L	1.0	U	U	Yes	S3VE
Isopropylbenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,2,2-Tetrachloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,3-Dichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,4-Dichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dibromo-3-chloropropane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2,4-Trichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2,3-Trichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE

Case No:	43524	Contract:	EPW11031	SDG No:	C0AB7	Lab Code:	KAP
Sample Number:	C0AB9	Method:	BNA	Matrix:	Water	MA Number:	1564.8
Sample Location:	10L31	pH:	6.3	Sample Date:	05/21/2013	Sample Time:	18:20:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Benzaldehyde	5.0	UG/L	1.0	U	U	Yes	S3VE
Phenol	5.0	UG/L	1.0	U	U	Yes	S3VE
Bis(2-chloroethyl)ether	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Chlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Methylphenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2,2'-Oxybis(1-chloropropane)	5.0	UG/L	1.0	U	U	Yes	S3VE
Acetophenone	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Methylphenol	5.0	UG/L	1.0	U	U	Yes	S3VE
N-Nitroso-di-n-propylamine	5.0	UG/L	1.0	U	U	Yes	S3VE
Hexachloroethane	5.0	UG/L	1.0	U	U	Yes	S3VE
Nitrobenzene	5.0	UG/L	1.0	U	U	Yes	S3VE
Isophorone	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Nitrophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4-Dimethylphenol	5.0	UG/L	1.0	U	U	Yes	S3VE
Bis(2-chloroethoxy)methane	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4-Dichlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
Naphthalene	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Chloroaniline	5.0	UG/L	1.0	U	U	Yes	S3VE
Hexachlorobutadiene	5.0	UG/L	1.0	U	U	Yes	S3VE
Caprolactam	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Chloro-3-methylphenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Methylnaphthalene	5.0	UG/L	1.0	U	U	Yes	S3VE
Hexachlorocyclopentadiene	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4,6-Trichlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4,5-Trichlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
1,1'-Biphenyl	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Chloronaphthalene	5.0	UG/L	1.0	U	U	Yes	S3VE

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
2-Nitroaniline	10	UG/L	1.0	U	U	Yes	S3VE
Dimethylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
2,6-Dinitrotoluene	5.0	UG/L	1.0	U	U	Yes	S3VE
Acenaphthylene	5.0	UG/L	1.0	U	U	Yes	S3VE
3-Nitroaniline	10	UG/L	1.0	U	U	Yes	S3VE
Acenaphthene	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4-Dinitrophenol	10	UG/L	1.0	U	U	Yes	S3VE
4-Nitrophenol	10	UG/L	1.0	U	U	Yes	S3VE
Dibenzofuran	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4-Dinitrotoluene	5.0	UG/L	1.0	U	U	Yes	S3VE
Diethylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
Fluorene	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Chlorophenyl-phenylether	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Nitroaniline	10	UG/L	1.0	U	U	Yes	S3VE
4,6-Dinitro-2-methylphenol	10	UG/L	1.0	U	U	Yes	S3VE
N-Nitrosodiphenylamine	5.0	UG/L	1.0	U	U	Yes	S3VE
1,2,4,5-Tetrachlorobenzene	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Bromophenyl-phenylether	5.0	UG/L	1.0	U	U	Yes	S3VE
Hexachlorobenzene	5.0	UG/L	1.0	U	U	Yes	S3VE
Atrazine	5.0	UG/L	1.0	U	U	Yes	S3VE
Pentachlorophenol	10	UG/L	1.0	U	U	Yes	S3VE
Phenanthrene	5.0	UG/L	1.0	U	U	Yes	S3VE
Anthracene	5.0	UG/L	1.0	U	U	Yes	S3VE
Carbazole	5.0	UG/L	1.0	U	U	Yes	S3VE
Di-n-butylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
Fluoranthene	5.0	UG/L	1.0	U	U	Yes	S3VE
Pyrene	5.0	UG/L	1.0	U	U	Yes	S3VE
Butylbenzylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
3,3'-Dichlorobenzidine	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(a)anthracene	5.0	UG/L	1.0	U	U	Yes	S3VE
Chrysene	5.0	UG/L	1.0	U	U	Yes	S3VE
Bis(2-ethylhexyl)	5.0	UG/L	1.0	U	U	Yes	S3VE

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
phthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
Di-n-octylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(b)fluoranthene	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(k)fluoranthene	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(a)pyrene	5.0	UG/L	1.0	U	U	Yes	S3VE
Indeno(1,2,3-cd)pyrene	5.0	UG/L	1.0	U	U	Yes	S3VE
Dibenzo(a,h)anthracene	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(g,h,i)perylene	5.0	UG/L	1.0	U	U	Yes	S3VE
2,3,4,6-Tetrachlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
1,4-Dioxane	2.5	UG/L	1.0	U	U	Yes	S3VE

Case No:	43524	Contract:	EPW11031	SDG No:	C0AB7	Lab Code:	KAP
Sample Number:	C0AC0	Method:	VOA_Trace	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	10L31-D	pH:	2	Sample Date:	05/21/2013	Sample Time:	18:34:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Dichlorodifluoromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Vinyl chloride	0.50	UG/L	1.0	U	U	Yes	S3VE
Bromomethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Trichlorofluoromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1-Dichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Acetone	5.0	UG/L	1.0	JB	U	Yes	S3VE
Carbon disulfide	0.50	UG/L	1.0	U	U	Yes	S3VE
Methyl acetate	0.50	UG/L	1.0	U	U	Yes	S3VE
Methylene chloride	0.50	UG/L	1.0	U	U	Yes	S3VE
trans-1,2-Dichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
Methyl tert-butyl ether	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1-Dichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
cis-1,2-Dichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
2-Butanone	5.0	UG/L	1.0	U	U	Yes	S3VE
Bromochloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chloroform	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,1-Trichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Cyclohexane	0.50	UG/L	1.0	U	U	Yes	S3VE
Carbon tetrachloride	0.50	UG/L	1.0	U	U	Yes	S3VE
Benzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Trichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
Methylcyclohexane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dichloropropane	0.50	UG/L	1.0	U	U	Yes	S3VE
Bromodichloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
cis-1,3-Dichloropropene	0.50	UG/L	1.0	U	U	Yes	S3VE
4-Methyl-2-pentanone	5.0	UG/L	1.0	U	U	Yes	S3VE
Toluene	0.50	UG/L	1.0	U	U	Yes	S3VE
trans-1,3-Dichloropropene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,2-Trichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Tetrachloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
2-Hexanone	5.0	UG/L	1.0	U	U	Yes	S3VE
Dibromochloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dibromoethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
Ethylbenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
o-Xylene	0.50	UG/L	1.0	U	U	Yes	S3VE
m,p-Xylene	0.50	UG/L	1.0	U	U	Yes	S3VE
Styrene	0.50	UG/L	1.0	U	U	Yes	S3VE
Bromoform	0.50	UG/L	1.0	U	U	Yes	S3VE
Isopropylbenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,2,2-Tetrachloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,3-Dichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,4-Dichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dibromo-3-chloropropane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2,4-Trichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2,3-Trichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE

Case No:	43524	Contract:	EPW11031	SDG No:	C0AB7	Lab Code:	KAP
Sample Number:	C0AC0	Method:	BNA	Matrix:	Water	MA Number:	1564.8
Sample Location:	10L31-D	pH:	6.3	Sample Date:	05/21/2013	Sample Time:	18:34:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Benzaldehyde	5.0	UG/L	1.0	U	U	Yes	S3VE
Phenol	5.0	UG/L	1.0	U	U	Yes	S3VE
Bis(2-chloroethyl)ether	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Chlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Methylphenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2,2'-Oxybis(1-chloropropane)	5.0	UG/L	1.0	U	U	Yes	S3VE
Acetophenone	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Methylphenol	5.0	UG/L	1.0	U	U	Yes	S3VE
N-Nitroso-di-n-propylamine	5.0	UG/L	1.0	U	U	Yes	S3VE
Hexachloroethane	5.0	UG/L	1.0	U	U	Yes	S3VE
Nitrobenzene	5.0	UG/L	1.0	U	U	Yes	S3VE
Isophorone	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Nitrophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4-Dimethylphenol	5.0	UG/L	1.0	U	U	Yes	S3VE
Bis(2-chloroethoxy)methane	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4-Dichlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
Naphthalene	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Chloroaniline	5.0	UG/L	1.0	U	U	Yes	S3VE
Hexachlorobutadiene	5.0	UG/L	1.0	U	U	Yes	S3VE
Caprolactam	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Chloro-3-methylphenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Methylnaphthalene	5.0	UG/L	1.0	U	U	Yes	S3VE
Hexachlorocyclopentadiene	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4,6-Trichlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4,5-Trichlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
1,1'-Biphenyl	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Chloronaphthalene	5.0	UG/L	1.0	U	U	Yes	S3VE

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
2-Nitroaniline	10	UG/L	1.0	U	U	Yes	S3VE
Dimethylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
2,6-Dinitrotoluene	5.0	UG/L	1.0	U	U	Yes	S3VE
Acenaphthylene	5.0	UG/L	1.0	U	U	Yes	S3VE
3-Nitroaniline	10	UG/L	1.0	U	U	Yes	S3VE
Acenaphthene	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4-Dinitrophenol	10	UG/L	1.0	U	U	Yes	S3VE
4-Nitrophenol	10	UG/L	1.0	U	U	Yes	S3VE
Dibenzofuran	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4-Dinitrotoluene	5.0	UG/L	1.0	U	U	Yes	S3VE
Diethylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
Fluorene	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Chlorophenyl-phenylether	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Nitroaniline	10	UG/L	1.0	U	U	Yes	S3VE
4,6-Dinitro-2-methylphenol	10	UG/L	1.0	U	U	Yes	S3VE
N-Nitrosodiphenylamine	5.0	UG/L	1.0	U	U	Yes	S3VE
1,2,4,5-Tetrachlorobenzene	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Bromophenyl-phenylether	5.0	UG/L	1.0	U	U	Yes	S3VE
Hexachlorobenzene	5.0	UG/L	1.0	U	U	Yes	S3VE
Atrazine	5.0	UG/L	1.0	U	U	Yes	S3VE
Pentachlorophenol	10	UG/L	1.0	U	U	Yes	S3VE
Phenanthrene	5.0	UG/L	1.0	U	U	Yes	S3VE
Anthracene	5.0	UG/L	1.0	U	U	Yes	S3VE
Carbazole	5.0	UG/L	1.0	U	U	Yes	S3VE
Di-n-butylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
Fluoranthene	5.0	UG/L	1.0	U	U	Yes	S3VE
Pyrene	5.0	UG/L	1.0	U	U	Yes	S3VE
Butylbenzylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
3,3'-Dichlorobenzidine	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(a)anthracene	5.0	UG/L	1.0	U	U	Yes	S3VE
Chrysene	5.0	UG/L	1.0	U	U	Yes	S3VE
Bis(2-ethylhexyl)	5.0	UG/L	1.0	U	U	Yes	S3VE

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
phthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
Di-n-octylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(b)fluoranthene	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(k)fluoranthene	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(a)pyrene	5.0	UG/L	1.0	U	U	Yes	S3VE
Indeno(1,2,3-cd)pyrene	5.0	UG/L	1.0	U	U	Yes	S3VE
Dibenzo(a,h)anthracene	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(g,h,i)perylene	5.0	UG/L	1.0	U	U	Yes	S3VE
2,3,4,6-Tetrachlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
1,4-Dioxane	2.5	UG/L	1.0	U	U	Yes	S3VE

Case No:	43524	Contract:	EPW11031	SDG No:	C0AB7	Lab Code:	KAP
Sample Number:	C0AC1	Method:	BNA	Matrix:	Water	MA Number:	1564.8
Sample Location:	MW13	pH:	7.2	Sample Date:	05/21/2013	Sample Time:	13:40:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Benzaldehyde	5.0	UG/L	1.0	U	U	Yes	S3VE
Phenol	5.0	UG/L	1.0	U	U	Yes	S3VE
Bis(2-chloroethyl)ether	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Chlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Methylphenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2,2'-Oxybis(1-chloropropane)	5.0	UG/L	1.0	U	U	Yes	S3VE
Acetophenone	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Methylphenol	5.0	UG/L	1.0	U	U	Yes	S3VE
N-Nitroso-di-n-propylamine	5.0	UG/L	1.0	U	U	Yes	S3VE
Hexachloroethane	5.0	UG/L	1.0	U	U	Yes	S3VE
Nitrobenzene	5.0	UG/L	1.0	U	U	Yes	S3VE
Isophorone	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Nitrophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4-Dimethylphenol	5.0	UG/L	1.0	U	U	Yes	S3VE
Bis(2-chloroethoxy)methane	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4-Dichlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
Naphthalene	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Chloroaniline	5.0	UG/L	1.0	U	U	Yes	S3VE
Hexachlorobutadiene	5.0	UG/L	1.0	U	U	Yes	S3VE
Caprolactam	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Chloro-3-methylphenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Methylnaphthalene	5.0	UG/L	1.0	U	U	Yes	S3VE
Hexachlorocyclopentadiene	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4,6-Trichlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4,5-Trichlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
1,1'-Biphenyl	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Chloronaphthalene	5.0	UG/L	1.0	U	U	Yes	S3VE

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
2-Nitroaniline	10	UG/L	1.0	U	U	Yes	S3VE
Dimethylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
2,6-Dinitrotoluene	5.0	UG/L	1.0	U	U	Yes	S3VE
Acenaphthylene	5.0	UG/L	1.0	U	U	Yes	S3VE
3-Nitroaniline	10	UG/L	1.0	U	U	Yes	S3VE
Acenaphthene	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4-Dinitrophenol	10	UG/L	1.0	U	U	Yes	S3VE
4-Nitrophenol	10	UG/L	1.0	U	U	Yes	S3VE
Dibenzofuran	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4-Dinitrotoluene	5.0	UG/L	1.0	U	U	Yes	S3VE
Diethylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
Fluorene	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Chlorophenyl-phenylether	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Nitroaniline	10	UG/L	1.0	U	U	Yes	S3VE
4,6-Dinitro-2-methylphenol	10	UG/L	1.0	U	U	Yes	S3VE
N-Nitrosodiphenylamine	5.0	UG/L	1.0	U	U	Yes	S3VE
1,2,4,5-Tetrachlorobenzene	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Bromophenyl-phenylether	5.0	UG/L	1.0	U	U	Yes	S3VE
Hexachlorobenzene	5.0	UG/L	1.0	U	U	Yes	S3VE
Atrazine	5.0	UG/L	1.0	U	U	Yes	S3VE
Pentachlorophenol	10	UG/L	1.0	U	U	Yes	S3VE
Phenanthrene	5.0	UG/L	1.0	U	U	Yes	S3VE
Anthracene	5.0	UG/L	1.0	U	U	Yes	S3VE
Carbazole	5.0	UG/L	1.0	U	U	Yes	S3VE
Di-n-butylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
Fluoranthene	5.0	UG/L	1.0	U	U	Yes	S3VE
Pyrene	5.0	UG/L	1.0	U	U	Yes	S3VE
Butylbenzylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
3,3'-Dichlorobenzidine	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(a)anthracene	5.0	UG/L	1.0	U	U	Yes	S3VE
Chrysene	5.0	UG/L	1.0	U	U	Yes	S3VE
Bis(2-ethylhexyl)	5.0	UG/L	1.0	U	U	Yes	S3VE

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
phthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
Di-n-octylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(b)fluoranthene	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(k)fluoranthene	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(a)pyrene	5.0	UG/L	1.0	U	U	Yes	S3VE
Indeno(1,2,3-cd)pyrene	5.0	UG/L	1.0	U	U	Yes	S3VE
Dibenzo(a,h)anthracene	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(g,h,i)perylene	5.0	UG/L	1.0	U	U	Yes	S3VE
2,3,4,6-Tetrachlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
1,4-Dioxane	2.5	UG/L	1.0	U	U	Yes	S3VE

Case No:	43524	Contract:	EPW11031	SDG No:	C0AB7	Lab Code:	KAP
Sample Number:	C0AC1	Method:	VOA_Trace	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	MW13	pH:	2	Sample Date:	05/21/2013	Sample Time:	13:40:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Dichlorodifluoromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Vinyl chloride	0.50	UG/L	1.0	U	U	Yes	S3VE
Bromomethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Trichlorofluoromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1-Dichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Acetone	5.0	UG/L	1.0	JB	U	Yes	S3VE
Carbon disulfide	0.50	UG/L	1.0	U	U	Yes	S3VE
Methyl acetate	0.50	UG/L	1.0	U	U	Yes	S3VE
Methylene chloride	0.50	UG/L	1.0	U	U	Yes	S3VE
trans-1,2-Dichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
Methyl tert-butyl ether	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1-Dichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
cis-1,2-Dichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
2-Butanone	5.0	UG/L	1.0	U	U	Yes	S3VE
Bromochloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chloroform	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,1-Trichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Cyclohexane	0.50	UG/L	1.0	U	U	Yes	S3VE
Carbon tetrachloride	0.50	UG/L	1.0	U	U	Yes	S3VE
Benzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Trichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
Methylcyclohexane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dichloropropane	0.50	UG/L	1.0	U	U	Yes	S3VE
Bromodichloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
cis-1,3-Dichloropropene	0.50	UG/L	1.0	U	U	Yes	S3VE
4-Methyl-2-pentanone	5.0	UG/L	1.0	U	U	Yes	S3VE
Toluene	0.50	UG/L	1.0	U	U	Yes	S3VE
trans-1,3-Dichloropropene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,2-Trichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Tetrachloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
2-Hexanone	5.0	UG/L	1.0	U	U	Yes	S3VE
Dibromochloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dibromoethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
Ethylbenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
o-Xylene	0.50	UG/L	1.0	U	U	Yes	S3VE
m,p-Xylene	0.50	UG/L	1.0	U	U	Yes	S3VE
Styrene	0.50	UG/L	1.0	U	U	Yes	S3VE
Bromoform	0.50	UG/L	1.0	U	U	Yes	S3VE
Isopropylbenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,2,2-Tetrachloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,3-Dichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,4-Dichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dibromo-3-chloropropane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2,4-Trichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2,3-Trichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE

Case No:	43524	Contract:	EPW11031	SDG No:	C0AB7	Lab Code:	KAP
Sample Number:	C0AC2	Method:	BNA	Matrix:	Water	MA Number:	1564.8
Sample Location:	MW39	pH:	3.2	Sample Date:	05/21/2013	Sample Time:	16:30:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Benzaldehyde	5.0	UG/L	1.0	U	U	Yes	S3VE
Phenol	5.0	UG/L	1.0	U	U	Yes	S3VE
Bis(2-chloroethyl)ether	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Chlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Methylphenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2,2'-Oxybis(1-chloropropane)	5.0	UG/L	1.0	U	U	Yes	S3VE
Acetophenone	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Methylphenol	5.0	UG/L	1.0	U	U	Yes	S3VE
N-Nitroso-di-n-propylamine	5.0	UG/L	1.0	U	U	Yes	S3VE
Hexachloroethane	5.0	UG/L	1.0	U	U	Yes	S3VE
Nitrobenzene	5.0	UG/L	1.0	U	U	Yes	S3VE
Isophorone	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Nitrophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4-Dimethylphenol	5.0	UG/L	1.0	U	U	Yes	S3VE
Bis(2-chloroethoxy)methane	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4-Dichlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
Naphthalene	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Chloroaniline	5.0	UG/L	1.0	U	U	Yes	S3VE
Hexachlorobutadiene	5.0	UG/L	1.0	U	U	Yes	S3VE
Caprolactam	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Chloro-3-methylphenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Methylnaphthalene	5.0	UG/L	1.0	U	U	Yes	S3VE
Hexachlorocyclopentadiene	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4,6-Trichlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4,5-Trichlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
1,1'-Biphenyl	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Chloronaphthalene	5.0	UG/L	1.0	U	U	Yes	S3VE

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
2-Nitroaniline	10	UG/L	1.0	U	U	Yes	S3VE
Dimethylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
2,6-Dinitrotoluene	5.0	UG/L	1.0	U	U	Yes	S3VE
Acenaphthylene	5.0	UG/L	1.0	U	U	Yes	S3VE
3-Nitroaniline	10	UG/L	1.0	U	U	Yes	S3VE
Acenaphthene	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4-Dinitrophenol	10	UG/L	1.0	U	U	Yes	S3VE
4-Nitrophenol	10	UG/L	1.0	U	U	Yes	S3VE
Dibenzofuran	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4-Dinitrotoluene	5.0	UG/L	1.0	U	U	Yes	S3VE
Diethylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
Fluorene	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Chlorophenyl-phenylether	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Nitroaniline	10	UG/L	1.0	U	U	Yes	S3VE
4,6-Dinitro-2-methylphenol	10	UG/L	1.0	U	U	Yes	S3VE
N-Nitrosodiphenylamine	5.0	UG/L	1.0	U	U	Yes	S3VE
1,2,4,5-Tetrachlorobenzene	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Bromophenyl-phenylether	5.0	UG/L	1.0	U	U	Yes	S3VE
Hexachlorobenzene	5.0	UG/L	1.0	U	U	Yes	S3VE
Atrazine	5.0	UG/L	1.0	U	U	Yes	S3VE
Pentachlorophenol	10	UG/L	1.0	U	U	Yes	S3VE
Phenanthrene	5.0	UG/L	1.0	U	U	Yes	S3VE
Anthracene	5.0	UG/L	1.0	U	U	Yes	S3VE
Carbazole	5.0	UG/L	1.0	U	U	Yes	S3VE
Di-n-butylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
Fluoranthene	5.0	UG/L	1.0	U	U	Yes	S3VE
Pyrene	5.0	UG/L	1.0	U	U	Yes	S3VE
Butylbenzylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
3,3'-Dichlorobenzidine	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(a)anthracene	5.0	UG/L	1.0	U	U	Yes	S3VE
Chrysene	5.0	UG/L	1.0	U	U	Yes	S3VE
Bis(2-ethylhexyl)	5.0	UG/L	1.0	U	U	Yes	S3VE

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
phthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
Di-n-octylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(b)fluoranthene	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(k)fluoranthene	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(a)pyrene	5.0	UG/L	1.0	U	U	Yes	S3VE
Indeno(1,2,3-cd)pyrene	5.0	UG/L	1.0	U	U	Yes	S3VE
Dibenzo(a,h)anthracene	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(g,h,i)perylene	5.0	UG/L	1.0	U	U	Yes	S3VE
2,3,4,6-Tetrachlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
1,4-Dioxane	2.5	UG/L	1.0	U	U	Yes	S3VE
Total Alkanes	170	UG/L	1.0	J	J	Yes	S3VE

Case No:	43524	Contract:	EPW11031	SDG No:	C0AB7	Lab Code:	KAP
Sample Number:	C0AC2	Method:	VOA_Trace	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	MW39	pH:	2	Sample Date:	05/21/2013	Sample Time:	16:30:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Dichlorodifluoromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Vinyl chloride	0.50	UG/L	1.0	U	U	Yes	S3VE
Bromomethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Trichlorofluoromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1-Dichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Acetone	5.0	UG/L	1.0	U	U	Yes	S3VE
Carbon disulfide	0.50	UG/L	1.0	U	U	Yes	S3VE
Methyl acetate	0.50	UG/L	1.0	U	U	Yes	S3VE
Methylene chloride	0.50	UG/L	1.0	U	U	Yes	S3VE
trans-1,2-Dichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
Methyl tert-butyl ether	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1-Dichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
cis-1,2-Dichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
2-Butanone	5.0	UG/L	1.0	U	U	Yes	S3VE
Bromochloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chloroform	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,1-Trichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Cyclohexane	0.50	UG/L	1.0	U	U	Yes	S3VE
Carbon tetrachloride	0.50	UG/L	1.0	U	U	Yes	S3VE
Benzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Trichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
Methylcyclohexane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dichloropropane	0.50	UG/L	1.0	U	U	Yes	S3VE
Bromodichloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
cis-1,3-Dichloropropene	0.50	UG/L	1.0	U	U	Yes	S3VE
4-Methyl-2-pentanone	5.0	UG/L	1.0	U	U	Yes	S3VE
Toluene	0.50	UG/L	1.0	U	U	Yes	S3VE
trans-1,3-Dichloropropene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,2-Trichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Tetrachloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
2-Hexanone	5.0	UG/L	1.0	U	U	Yes	S3VE
Dibromochloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dibromoethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
Ethylbenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
o-Xylene	0.50	UG/L	1.0	U	U	Yes	S3VE
m,p-Xylene	0.50	UG/L	1.0	U	U	Yes	S3VE
Styrene	0.50	UG/L	1.0	U	U	Yes	S3VE
Bromoform	0.50	UG/L	1.0	U	U	Yes	S3VE
Isopropylbenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,2,2-Tetrachloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,3-Dichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,4-Dichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dibromo-3-chloropropane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2,4-Trichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2,3-Trichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE

Case No:	43524	Contract:	EPW11031	SDG No:	C0AB7	Lab Code:	KAP
Sample Number:	C0AC3	Method:	VOA_Trace	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	TB03	pH:	2	Sample Date:	05/21/2013	Sample Time:	08:20:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Dichlorodifluoromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Vinyl chloride	0.50	UG/L	1.0	U	U	Yes	S3VE
Bromomethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Trichlorofluoromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1-Dichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Acetone	5.0	UG/L	1.0	B	U	Yes	S3VE
Carbon disulfide	0.50	UG/L	1.0	U	U	Yes	S3VE
Methyl acetate	0.50	UG/L	1.0	U	U	Yes	S3VE
Methylene chloride	0.50	UG/L	1.0	U	U	Yes	S3VE
trans-1,2-Dichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
Methyl tert-butyl ether	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1-Dichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
cis-1,2-Dichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
2-Butanone	5.0	UG/L	1.0	U	U	Yes	S3VE
Bromochloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chloroform	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,1-Trichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Cyclohexane	0.50	UG/L	1.0	U	U	Yes	S3VE
Carbon tetrachloride	0.50	UG/L	1.0	U	U	Yes	S3VE
Benzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Trichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
Methylcyclohexane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dichloropropane	0.50	UG/L	1.0	U	U	Yes	S3VE
Bromodichloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
cis-1,3-Dichloropropene	0.50	UG/L	1.0	U	U	Yes	S3VE
4-Methyl-2-pentanone	5.0	UG/L	1.0	U	U	Yes	S3VE
Toluene	0.31	UG/L	1.0	J	J	Yes	S3VE
trans-1,3-Dichloropropene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,2-Trichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Tetrachloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
2-Hexanone	5.0	UG/L	1.0	U	U	Yes	S3VE
Dibromochloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dibromoethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
Ethylbenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
o-Xylene	0.50	UG/L	1.0	U	U	Yes	S3VE
m,p-Xylene	0.50	UG/L	1.0	U	U	Yes	S3VE
Styrene	0.50	UG/L	1.0	U	U	Yes	S3VE
Bromoform	0.50	UG/L	1.0	U	U	Yes	S3VE
Isopropylbenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,2,2-Tetrachloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,3-Dichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,4-Dichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dibromo-3-chloropropane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2,4-Trichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2,3-Trichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE

Case No:	43524	Contract:	EPW11031	SDG No:	C0AB7	Lab Code:	KAP
Sample Number:	SBLK11	Method:	BNA	Matrix:	Water	MA Number:	1564.8
Sample Location:	SBLK11	pH:		Sample Date:	06/05/2013	Sample Time:	11:35:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Benzaldehyde	5.0	UG/L	1.0	U	U	Yes	S3VE
Phenol	5.0	UG/L	1.0	U	U	Yes	S3VE
Bis(2-chloroethyl)ether	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Chlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Methylphenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2,2'-Oxybis(1-chloropropane)	5.0	UG/L	1.0	U	U	Yes	S3VE
Acetophenone	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Methylphenol	5.0	UG/L	1.0	U	U	Yes	S3VE
N-Nitroso-di-n-propylamine	5.0	UG/L	1.0	U	U	Yes	S3VE
Hexachloroethane	5.0	UG/L	1.0	U	U	Yes	S3VE
Nitrobenzene	5.0	UG/L	1.0	U	U	Yes	S3VE
Isophorone	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Nitrophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4-Dimethylphenol	5.0	UG/L	1.0	U	U	Yes	S3VE
Bis(2-chloroethoxy)methane	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4-Dichlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
Naphthalene	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Chloroaniline	5.0	UG/L	1.0	U	U	Yes	S3VE
Hexachlorobutadiene	5.0	UG/L	1.0	U	U	Yes	S3VE
Caprolactam	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Chloro-3-methylphenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Methylnaphthalene	5.0	UG/L	1.0	U	U	Yes	S3VE
Hexachlorocyclopentadiene	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4,6-Trichlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4,5-Trichlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
1,1'-Biphenyl	5.0	UG/L	1.0	U	U	Yes	S3VE
2-Chloronaphthalene	5.0	UG/L	1.0	U	U	Yes	S3VE

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
2-Nitroaniline	10	UG/L	1.0	U	U	Yes	S3VE
Dimethylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
2,6-Dinitrotoluene	5.0	UG/L	1.0	U	U	Yes	S3VE
Acenaphthylene	5.0	UG/L	1.0	U	U	Yes	S3VE
3-Nitroaniline	10	UG/L	1.0	U	U	Yes	S3VE
Acenaphthene	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4-Dinitrophenol	10	UG/L	1.0	U	U	Yes	S3VE
4-Nitrophenol	10	UG/L	1.0	U	U	Yes	S3VE
Dibenzofuran	5.0	UG/L	1.0	U	U	Yes	S3VE
2,4-Dinitrotoluene	5.0	UG/L	1.0	U	U	Yes	S3VE
Diethylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
Fluorene	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Chlorophenyl-phenylether	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Nitroaniline	10	UG/L	1.0	U	U	Yes	S3VE
4,6-Dinitro-2-methylphenol	10	UG/L	1.0	U	U	Yes	S3VE
N-Nitrosodiphenylamine	5.0	UG/L	1.0	U	U	Yes	S3VE
1,2,4,5-Tetrachlorobenzene	5.0	UG/L	1.0	U	U	Yes	S3VE
4-Bromophenyl-phenylether	5.0	UG/L	1.0	U	U	Yes	S3VE
Hexachlorobenzene	5.0	UG/L	1.0	U	U	Yes	S3VE
Atrazine	5.0	UG/L	1.0	U	U	Yes	S3VE
Pentachlorophenol	10	UG/L	1.0	U	U	Yes	S3VE
Phenanthrene	5.0	UG/L	1.0	U	U	Yes	S3VE
Anthracene	5.0	UG/L	1.0	U	U	Yes	S3VE
Carbazole	5.0	UG/L	1.0	U	U	Yes	S3VE
Di-n-butylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
Fluoranthene	5.0	UG/L	1.0	U	U	Yes	S3VE
Pyrene	5.0	UG/L	1.0	U	U	Yes	S3VE
Butylbenzylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
3,3'-Dichlorobenzidine	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(a)anthracene	5.0	UG/L	1.0	U	U	Yes	S3VE
Chrysene	5.0	UG/L	1.0	U	U	Yes	S3VE
Bis(2-ethylhexyl)	5.0	UG/L	1.0	U	U	Yes	S3VE

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
phthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
Di-n-octylphthalate	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(b)fluoranthene	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(k)fluoranthene	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(a)pyrene	5.0	UG/L	1.0	U	U	Yes	S3VE
Indeno(1,2,3-cd)pyrene	5.0	UG/L	1.0	U	U	Yes	S3VE
Dibenzo(a,h)anthracene	5.0	UG/L	1.0	U	U	Yes	S3VE
Benzo(g,h,i)perylene	5.0	UG/L	1.0	U	U	Yes	S3VE
2,3,4,6-Tetrachlorophenol	5.0	UG/L	1.0	U	U	Yes	S3VE
1,4-Dioxane	2.5	UG/L	1.0	U	U	Yes	S3VE

Case No:	43524	Contract:	EPW11031	SDG No:	C0AB7	Lab Code:	KAP
Sample Number:	VBLK3Y	Method:	VOA_Trace	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	VBLK3Y	pH:		Sample Date:	06/01/2013	Sample Time:	11:28:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Dichlorodifluoromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Vinyl chloride	0.50	UG/L	1.0	U	U	Yes	S3VE
Bromomethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Trichlorofluoromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1-Dichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Acetone	0.28	UG/L	1.0	J	J	Yes	S3VE
Carbon disulfide	0.50	UG/L	1.0	U	U	Yes	S3VE
Methyl acetate	0.50	UG/L	1.0	U	U	Yes	S3VE
Methylene chloride	0.50	UG/L	1.0	U	U	Yes	S3VE
trans-1,2-Dichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
Methyl tert-butyl ether	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1-Dichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
cis-1,2-Dichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
2-Butanone	5.0	UG/L	1.0	U	U	Yes	S3VE
Bromochloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chloroform	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,1-Trichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Cyclohexane	0.50	UG/L	1.0	U	U	Yes	S3VE
Carbon tetrachloride	0.50	UG/L	1.0	U	U	Yes	S3VE
Benzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Trichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
Methylcyclohexane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dichloropropane	0.50	UG/L	1.0	U	U	Yes	S3VE
Bromodichloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
cis-1,3-Dichloropropene	0.50	UG/L	1.0	U	U	Yes	S3VE
4-Methyl-2-pentanone	5.0	UG/L	1.0	U	U	Yes	S3VE
Toluene	0.50	UG/L	1.0	U	U	Yes	S3VE
trans-1,3-Dichloropropene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,2-Trichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Tetrachloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
2-Hexanone	5.0	UG/L	1.0	U	U	Yes	S3VE
Dibromochloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dibromoethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
Ethylbenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
o-Xylene	0.50	UG/L	1.0	U	U	Yes	S3VE
m,p-Xylene	0.50	UG/L	1.0	U	U	Yes	S3VE
Styrene	0.50	UG/L	1.0	U	U	Yes	S3VE
Bromoform	0.50	UG/L	1.0	U	U	Yes	S3VE
Isopropylbenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,2,2-Tetrachloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,3-Dichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,4-Dichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dibromo-3-chloropropane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2,4-Trichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2,3-Trichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE

Case No:	43524	Contract:	EPW11031	SDG No:	C0AB7	Lab Code:	KAP
Sample Number:	VBLK4L	Method:	VOA_Trace	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	VBLK4L	pH:		Sample Date:	06/07/2013	Sample Time:	11:19:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Dichlorodifluoromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Vinyl chloride	0.50	UG/L	1.0	U	U	Yes	S3VE
Bromomethane	0.10	UG/L	1.0	J	J	Yes	S3VE
Chloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Trichlorofluoromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1-Dichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Acetone	5.0	UG/L	1.0	U	U	Yes	S3VE
Carbon disulfide	0.50	UG/L	1.0	U	U	Yes	S3VE
Methyl acetate	0.50	UG/L	1.0	U	U	Yes	S3VE
Methylene chloride	0.20	UG/L	1.0	J	J	Yes	S3VE
trans-1,2-Dichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
Methyl tert-butyl ether	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1-Dichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
cis-1,2-Dichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
2-Butanone	5.0	UG/L	1.0	U	U	Yes	S3VE
Bromochloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chloroform	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,1-Trichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Cyclohexane	0.50	UG/L	1.0	U	U	Yes	S3VE
Carbon tetrachloride	0.50	UG/L	1.0	U	U	Yes	S3VE
Benzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Trichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
Methylcyclohexane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dichloropropane	0.50	UG/L	1.0	U	U	Yes	S3VE
Bromodichloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
cis-1,3-Dichloropropene	0.50	UG/L	1.0	U	U	Yes	S3VE
4-Methyl-2-pentanone	5.0	UG/L	1.0	U	U	Yes	S3VE
Toluene	0.50	UG/L	1.0	U	U	Yes	S3VE
trans-1,3-Dichloropropene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,2-Trichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Tetrachloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
2-Hexanone	5.0	UG/L	1.0	U	U	Yes	S3VE
Dibromochloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dibromoethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
Ethylbenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
o-Xylene	0.50	UG/L	1.0	U	U	Yes	S3VE
m,p-Xylene	0.50	UG/L	1.0	U	U	Yes	S3VE
Styrene	0.50	UG/L	1.0	U	U	Yes	S3VE
Bromoform	0.50	UG/L	1.0	U	U	Yes	S3VE
Isopropylbenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,2,2-Tetrachloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,3-Dichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,4-Dichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dibromo-3-chloropropane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2,4-Trichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2,3-Trichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE

Case No:	43524	Contract:	EPW11031	SDG No:	C0AB7	Lab Code:	KAP
Sample Number:	VHBLK01	Method:	VOA_Trace	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	S-5753.08	pH:		Sample Date:	06/07/2013	Sample Time:	16:04:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Dichlorodifluoromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Vinyl chloride	0.50	UG/L	1.0	U	U	Yes	S3VE
Bromomethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Trichlorofluoromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1-Dichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Acetone	1.9	UG/L	1.0	J	J	Yes	S3VE
Carbon disulfide	0.50	UG/L	1.0	U	U	Yes	S3VE
Methyl acetate	0.50	UG/L	1.0	U	U	Yes	S3VE
Methylene chloride	0.16	UG/L	1.0	JB	J	Yes	S3VE
trans-1,2-Dichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
Methyl tert-butyl ether	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1-Dichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
cis-1,2-Dichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
2-Butanone	5.0	UG/L	1.0	U	U	Yes	S3VE
Bromochloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chloroform	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,1-Trichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Cyclohexane	0.50	UG/L	1.0	U	U	Yes	S3VE
Carbon tetrachloride	0.50	UG/L	1.0	U	U	Yes	S3VE
Benzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Trichloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
Methylcyclohexane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dichloropropane	0.50	UG/L	1.0	U	U	Yes	S3VE
Bromodichloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
cis-1,3-Dichloropropene	0.50	UG/L	1.0	U	U	Yes	S3VE
4-Methyl-2-pentanone	5.0	UG/L	1.0	U	U	Yes	S3VE
Toluene	0.50	UG/L	1.0	U	U	Yes	S3VE
trans-1,3-Dichloropropene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,2-Trichloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Tetrachloroethene	0.50	UG/L	1.0	U	U	Yes	S3VE
2-Hexanone	5.0	UG/L	1.0	U	U	Yes	S3VE
Dibromochloromethane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dibromoethane	0.50	UG/L	1.0	U	U	Yes	S3VE
Chlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
Ethylbenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
o-Xylene	0.50	UG/L	1.0	U	U	Yes	S3VE
m,p-Xylene	0.50	UG/L	1.0	U	U	Yes	S3VE
Styrene	0.50	UG/L	1.0	U	U	Yes	S3VE
Bromoform	0.50	UG/L	1.0	U	U	Yes	S3VE
Isopropylbenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,1,2,2-Tetrachloroethane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,3-Dichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,4-Dichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2-Dibromo-3-chloropropane	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2,4-Trichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE
1,2,3-Trichlorobenzene	0.50	UG/L	1.0	U	U	Yes	S3VE

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
Environmental Sciences Center
701 Mapes Road
Fort Meade, Maryland 20755-5350

DATE : May 20, 2013

SUBJECT: Region III Data QA Review

FROM : Colleen K. Walling
Region III ESAT RPO (3EA22)

TO : Rich Rupert
On-Scene Coordinator (3HS31)

Attached is the inorganic data validation report for the Kiskimere Groundwater Well site for Case No. 43524, SDG# MC0AB7 and MC0AC2 completed by the Region III Environmental Services Assistance Team (ESAT) contractor under the direction of Region III EAID.

If you have any questions regarding this review, please call me at (410) 305-2763.

Attachments

cc: Joe Carter (TechLaw, Inc.)
Gene Nance (TechLaw, Inc.)

TO No.: 0042 TDF#: 06034E

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Lockheed Martin IS&GS – Civil
ESAT Region 3
US EPA Environmental Science Center
701 Mapes Road Ft. Meade, MD 20755-5350
Telephone 410-305-3037 Facsimile 410-305-3597

Date: June 19, 2013

Subject: Inorganic Data Validation (S4VEM)
Case: 43524
SDGs: MC0AB7, MC0AC2
Site: Kiskimere Groundwater Well

From: Lisa D. Penix
Inorganic Data Reviewer

Kenneth W. Curry
Oversight Chemist

To: Colleen Walling
ESAT Region 3 Project Officer

OVERVIEW

Case 43524, Sample Delivery Groups (SDGs) MC0AB7 and MC0AC2, consisted of six (6) aqueous samples including one (1) field duplicate pair analyzed for total metal including uranium (U) by ICP – MS and mercury (Hg) by cold vapor technique. All samples were analyzed by Bonner Analytical Testing Company (BONNER) according to Contract Laboratory Program (CLP) Statement of Work (SOW) ISM01.3 (modified) through the Routine Analytical Services (RAS) program. Modification Reference Number 2183.1 details the specifications and reporting requirements for the addition of uranium (U) to the analyte list.

SUMMARY

Data were validated according to National Functional Guidelines for Validation of Inorganic Data, utilizing Environmental Data Exchange and Evaluation System (EXES) and is assigned the Superfund Data Validation Label S4VEM (Stage_4_Validation_Electronic_Manual). Areas of concern with respect to data usability are listed below.

MINOR PROBLEMS

All samples reported concentrations of Hg less than the Contract Required Quantitation Limit (CRQL). The associated laboratory blanks reported negative concentrations of this analyte greater than the absolute value of the Method Detection Limits (MDL). Quantitation limits for this analyte are estimated and have been qualified "UJ".

Matrix spike recovery was extremely low (<30%) for silver (Ag). Post-digestion matrix spike recovery was within control limits. Low recoveries may be attributed to matrix interferences or analyte lost during the digestion process. Quantitation limits for this analyte are estimated and have been qualified "UJ".

The Percent difference (%D) in the ICP serial dilution analysis was outside the control limit (>10%) for potassium (K). Positive results for this analyte are estimated due to possible matrix interferences and have been qualified "J".

NOTES

Detected concentrations of aluminum (Al), arsenic (As), cadmium (Cd), chromium (Cr), cobalt (Co), iron (Fe), lead (Pb), nickel (Ni), thallium (Tl), vanadium (V) and zinc (Zn) less than CRQLs have been reported at CRQLs and qualified "U" in samples for which the associated laboratory blanks had these analytes present.

Reported results between MDLs and CRQLs were qualified "J", unless raised to CRQL and qualified "U" due to blank contamination.

The sample coolers containing all samples had an interior temperature of 9.0^{o}C, which exceeded the required cooler temperature of 4.0^{o}C$\pm$2.0^{o}C. Due to thermostability of metals, no data were qualified based on the sample cooler chest temperature.

Reported results for the field duplicate pair MC0AB9/MC0AC2 were within 20% RPD, ± CRQL, for all analytes except aluminum (Al) and manganese (Mn).

GLOSSARY OF DATA QUALIFIER CODES (INORGANIC)

U = Not detected. The associated number indicates approximate sample concentration necessary to be detected.

R = Unusable result. Analyte may or may not be present in the sample. Supporting data necessary to confirm result.

J = Analyte present. Reported value may not be accurate or precise.

J+ = Analyte present. Reported value may be biased high. Actual value is expected to be lower.

J- = Analyte present. Reported value may be biased low. Actual value is expected to be higher.

UJ = Not detected, quantitation limit may be inaccurate or imprecise.

DCN: 43524_MC0AB7_MC0AC2

Sample Summary Report

Case No:	43524	Contract:	EPW09037	SDG No:	MC0AB7	Lab Code:	BONNER
Sample Number:	LCS01	Method:	ICP_MS	Matrix:	Water	MA Number:	2183.1
Sample Location:	3052914-BS3	pH:		Sample Date:	06/10/2013	Sample Time:	11:18:13
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Aluminum			1			Yes	S4VEM
Antimony			1			Yes	S4VEM
Arsenic			1			Yes	S4VEM
Barium			1			Yes	S4VEM
Beryllium			1			Yes	S4VEM
Cadmium			1			Yes	S4VEM
Calcium			1			Yes	S4VEM
Chromium			1			Yes	S4VEM
Cobalt			1			Yes	S4VEM
Copper			1			Yes	S4VEM
Iron			1			Yes	S4VEM
Lead			1			Yes	S4VEM
Magnesium			1			Yes	S4VEM
Manganese			1			Yes	S4VEM
Nickel			1			Yes	S4VEM
Potassium			1			Yes	S4VEM
Selenium			1			Yes	S4VEM
Silver			1			Yes	S4VEM
Sodium			1			Yes	S4VEM
Thallium			1			Yes	S4VEM
Vanadium			1			Yes	S4VEM
Zinc			1			Yes	S4VEM

Case No:	43524	Contract:	EPW09037	SDG No:	MC0AB7	Lab Code:	BONNER
Sample Number:	LCS01	Method:	ICP_MS	Matrix:	Water	MA Number:	2183.1
Sample Location:	3052914-BS1	pH:		Sample Date:	06/07/2013	Sample Time:	16:12:57
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Aluminum			1			Yes	S4VEM
Antimony			1			Yes	S4VEM
Arsenic			1			Yes	S4VEM
Barium			1			Yes	S4VEM
Beryllium			1			Yes	S4VEM
Cadmium			1			Yes	S4VEM
Calcium			1			Yes	S4VEM
Chromium			1			Yes	S4VEM
Cobalt			1			Yes	S4VEM
Copper			1			Yes	S4VEM
Iron			1			Yes	S4VEM
Lead			1			Yes	S4VEM
Magnesium			1			Yes	S4VEM
Manganese			1			Yes	S4VEM
Nickel			1			Yes	S4VEM
Potassium			1			Yes	S4VEM
Selenium			1			Yes	S4VEM
Silver			1			Yes	S4VEM
Sodium			1			Yes	S4VEM
Thallium			1			Yes	S4VEM
Vanadium			1			Yes	S4VEM
Zinc			1			Yes	S4VEM

Case No:	43524	Contract:	EPW09037	SDG No:	MC0AB7	Lab Code:	BONNER
Sample Number:	LCS02	Method:	ICP_MS	Matrix:	Water	MA Number:	2183.1
Sample Location:	3052914-BS2	pH:		Sample Date:	06/11/2013	Sample Time:	15:56:59
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Uranium			1			Yes	S4VEM

Case No:	43524	Contract:	EPW09037	SDG No:	MC0AB7	Lab Code:	BONNER
Sample Number:	MC0AB7	Method:	ICP_MS	Matrix:	Water	MA Number:	2183.1
Sample Location:	MW08	pH:	2	Sample Date:	05/22/2013	Sample Time:	11:35:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Aluminum	20.0	ug/L	1	J	U	Yes	S4VEM
Antimony	2.0	ug/L	1	U	U	Yes	S4VEM
Arsenic	1.0	ug/L	1	J	U	Yes	S4VEM
Barium	325	ug/L	1			Yes	S4VEM
Beryllium	1.0	ug/L	1	U	U	Yes	S4VEM
Cadmium	1.0	ug/L	1	U	U	Yes	S4VEM
Calcium	38300	ug/L	1			Yes	S4VEM
Chromium	2.0	ug/L	1	J	U	Yes	S4VEM
Cobalt	1.0	ug/L	1	J	U	Yes	S4VEM
Copper	0.65	ug/L	1	J	J	Yes	S4VEM
Iron	257	ug/L	1			Yes	S4VEM
Lead	1.0	ug/L	1	J	U	Yes	S4VEM
Magnesium	7990	ug/L	1			Yes	S4VEM
Manganese	80.3	ug/L	1			Yes	S4VEM
Nickel	1.0	ug/L	1	J	U	Yes	S4VEM
Potassium	1350	ug/L	1	E	J	Yes	S4VEM
Selenium	5.0	ug/L	1	U	U	Yes	S4VEM
Silver	1.0	ug/L	1	UN	UJ	Yes	S4VEM
Sodium	2800	ug/L	1			Yes	S4VEM
Thallium	1.0	ug/L	1	J	U	Yes	S4VEM
Vanadium	5.0	ug/L	1	J	U	Yes	S4VEM
Zinc	2.0	ug/L	1	J	U	Yes	S4VEM
Uranium	0.021	ug/L	1	J	J	Yes	S4VEM

Case No:	43524	Contract:	EPW09037	SDG No:	MC0AB7	Lab Code:	BONNER
Sample Number:	MC0AB8	Method:	ICP_MS	Matrix:	Water	MA Number:	2183.1
Sample Location:	MW14	pH:	2	Sample Date:	05/21/2013	Sample Time:	14:45:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Aluminum	20.0	ug/L	1	J	U	Yes	S4VEM
Antimony	2.0	ug/L	1	U	U	Yes	S4VEM
Arsenic	1.3	ug/L	1			Yes	S4VEM
Barium	310	ug/L	1			Yes	S4VEM
Beryllium	1.0	ug/L	1	U	U	Yes	S4VEM
Cadmium	1.0	ug/L	1	U	U	Yes	S4VEM
Calcium	25200	ug/L	1			Yes	S4VEM
Chromium	2.0	ug/L	1	J	U	Yes	S4VEM
Cobalt	2.6	ug/L	1			Yes	S4VEM
Copper	2.0	ug/L	1	U	U	Yes	S4VEM
Iron	6220	ug/L	1			Yes	S4VEM
Lead	1.0	ug/L	1	J	U	Yes	S4VEM
Magnesium	4680	ug/L	1			Yes	S4VEM
Manganese	328	ug/L	1			Yes	S4VEM
Nickel	3.2	ug/L	1			Yes	S4VEM
Potassium	592	ug/L	1	E	J	Yes	S4VEM
Selenium	5.0	ug/L	1	U	U	Yes	S4VEM
Silver	1.0	ug/L	1	UN	UJ	Yes	S4VEM
Sodium	2780	ug/L	1			Yes	S4VEM
Thallium	1.0	ug/L	1	J	U	Yes	S4VEM
Vanadium	5.0	ug/L	1	J	U	Yes	S4VEM
Zinc	3.4	ug/L	1			Yes	S4VEM
Uranium	1.0	ug/L	1	U	U	Yes	S4VEM

Case No:	43524	Contract:	EPW09037	SDG No:	MC0AB7	Lab Code:	BONNER
Sample Number:	MC0AB8A	Method:	ICP_MS	Matrix:	Water	MA Number:	2183.1
Sample Location:	MC0AB8-PS	pH:	2	Sample Date:	06/07/2013	Sample Time:	16:48:54
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Silver	2.0	ug/L	1		J-	Yes	S4VEM

Case No:	43524	Contract:	EPW09037	SDG No:	MC0AB7	Lab Code:	BONNER
Sample Number:	MC0AB8D	Method:	ICP_MS	Matrix:	Water	MA Number:	2183.1
Sample Location:	MC0AB8-DUP	pH:	2	Sample Date:	06/07/2013	Sample Time:	16:39:56
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Aluminum	20.0	ug/L	1	J	U	Yes	S4VEM
Antimony	2.0	ug/L	1	U	R	Yes	S4VEM
Arsenic	1.4	ug/L	1		J-	Yes	S4VEM
Barium	312	ug/L	1		J-	Yes	S4VEM
Beryllium	1.0	ug/L	1	U	R	Yes	S4VEM
Cadmium	1.0	ug/L	1	U	R	Yes	S4VEM
Calcium	25700	ug/L	1		J-	Yes	S4VEM
Chromium	2.0	ug/L	1	J	U	Yes	S4VEM
Cobalt	2.7	ug/L	1		J-	Yes	S4VEM
Copper	2.0	ug/L	1	U	R	Yes	S4VEM
Iron	6300	ug/L	1		J-	Yes	S4VEM
Lead	1.0	ug/L	1	J	U	Yes	S4VEM
Magnesium	4730	ug/L	1		J-	Yes	S4VEM
Manganese	333	ug/L	1		J-	Yes	S4VEM
Nickel	3.2	ug/L	1		J-	Yes	S4VEM
Potassium	623	ug/L	1		J-	Yes	S4VEM
Selenium	5.0	ug/L	1	U	R	Yes	S4VEM
Silver	1.0	ug/L	1	U	R	Yes	S4VEM
Sodium	2830	ug/L	1		J-	Yes	S4VEM
Thallium	1.0	ug/L	1	J	U	Yes	S4VEM
Vanadium	5.0	ug/L	1	J	U	Yes	S4VEM
Zinc	3.1	ug/L	1		J-	Yes	S4VEM
Uranium	1.0	ug/L	1	U	R	Yes	S4VEM

Case No:	43524	Contract:	EPW09037	SDG No:	MC0AB7	Lab Code:	BONNER
Sample Number:	MC0AB8S	Method:	ICP_MS	Matrix:	Water	MA Number:	2183.1
Sample Location:	MC0AB8-MS	pH:	2	Sample Date:	06/07/2013	Sample Time:	16:30:53
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Aluminum	1750	ug/L	1		J-	Yes	S4VEM
Antimony	93.2	ug/L	1		J-	Yes	S4VEM
Arsenic	37.2	ug/L	1		J-	Yes	S4VEM
Barium	2270	ug/L	1		J-	Yes	S4VEM
Beryllium	45.1	ug/L	1		J-	Yes	S4VEM
Cadmium	45.8	ug/L	1		J-	Yes	S4VEM
Calcium	25900	ug/L	1		J-	Yes	S4VEM
Chromium	183	ug/L	1		J-	Yes	S4VEM
Cobalt	452	ug/L	1		J-	Yes	S4VEM
Copper	224	ug/L	1		J-	Yes	S4VEM
Iron	6380	ug/L	1		J-	Yes	S4VEM
Lead	18.5	ug/L	1		J-	Yes	S4VEM
Magnesium	4770	ug/L	1		J-	Yes	S4VEM
Manganese	806	ug/L	1		J-	Yes	S4VEM
Nickel	443	ug/L	1		J-	Yes	S4VEM
Selenium	95.5	ug/L	1		J-	Yes	S4VEM
Silver	3.7	ug/L	1	N	J-	Yes	S4VEM
Potassium	619	ug/L	1		J-	Yes	S4VEM
Thallium	41.6	ug/L	1		J-	Yes	S4VEM
Vanadium	460	ug/L	1		J-	Yes	S4VEM
Zinc	431	ug/L	1		J-	Yes	S4VEM
Sodium	2890	ug/L	1		J-	Yes	S4VEM
Uranium	103	ug/L	1		J-	Yes	S4VEM

Case No:	43524	Contract:	EPW09037	SDG No:	MC0AB7	Lab Code:	BONNER
Sample Number:	MC0AB9	Method:	ICP_MS	Matrix:	Water	MA Number:	2183.1
Sample Location:	10L31	pH:	2	Sample Date:	05/21/2013	Sample Time:	18:20:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Aluminum	20.0	ug/L	1	J	U	Yes	S4VEM
Antimony	2.0	ug/L	1	U	U	Yes	S4VEM
Arsenic	1.0	ug/L	1	J	U	Yes	S4VEM
Barium	31.5	ug/L	1			Yes	S4VEM
Beryllium	1.0	ug/L	1	U	U	Yes	S4VEM
Cadmium	1.0	ug/L	1	U	U	Yes	S4VEM
Calcium	66000	ug/L	1			Yes	S4VEM
Chromium	2.0	ug/L	1	J	U	Yes	S4VEM
Cobalt	1.0	ug/L	1	J	U	Yes	S4VEM
Copper	2.0	ug/L	1	U	U	Yes	S4VEM
Iron	200	ug/L	1	J	U	Yes	S4VEM
Lead	1.0	ug/L	1	J	U	Yes	S4VEM
Magnesium	34100	ug/L	1			Yes	S4VEM
Manganese	35.5	ug/L	1			Yes	S4VEM
Nickel	1.7	ug/L	1			Yes	S4VEM
Potassium	2410	ug/L	1	E	J	Yes	S4VEM
Selenium	0.95	ug/L	1	J	J	Yes	S4VEM
Silver	1.0	ug/L	1	UN	UJ	Yes	S4VEM
Sodium	7160	ug/L	1			Yes	S4VEM
Thallium	1.0	ug/L	1	J	U	Yes	S4VEM
Vanadium	5.0	ug/L	1	J	U	Yes	S4VEM
Zinc	2.5	ug/L	1			Yes	S4VEM
Uranium	0.27	ug/L	1	J	J	Yes	S4VEM

Case No:	43524	Contract:	EPW09037	SDG No:	MC0AB7	Lab Code:	BONNER
Sample Number:	MC0AC0	Method:	ICP_MS	Matrix:	Water	MA Number:	2183.1
Sample Location:	10L31-D	pH:	2	Sample Date:	05/21/2013	Sample Time:	18:34:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Aluminum	31.8	ug/L	1			Yes	S4VEM
Antimony	2.0	ug/L	1	U	U	Yes	S4VEM
Arsenic	1.0	ug/L	1	J	U	Yes	S4VEM
Barium	31.7	ug/L	1			Yes	S4VEM
Beryllium	1.0	ug/L	1	U	U	Yes	S4VEM
Cadmium	1.0	ug/L	1	U	U	Yes	S4VEM
Calcium	65700	ug/L	1			Yes	S4VEM
Chromium	2.0	ug/L	1	J	U	Yes	S4VEM
Cobalt	1.0	ug/L	1	J	U	Yes	S4VEM
Copper	2.0	ug/L	1	U	U	Yes	S4VEM
Iron	200	ug/L	1	J	U	Yes	S4VEM
Lead	1.0	ug/L	1	J	U	Yes	S4VEM
Magnesium	34000	ug/L	1			Yes	S4VEM
Manganese	43.4	ug/L	1			Yes	S4VEM
Nickel	1.9	ug/L	1			Yes	S4VEM
Potassium	2400	ug/L	1	E	J	Yes	S4VEM
Selenium	1.1	ug/L	1	J	J	Yes	S4VEM
Silver	1.0	ug/L	1	UN	UJ	Yes	S4VEM
Sodium	7070	ug/L	1			Yes	S4VEM
Thallium	1.0	ug/L	1	J	U	Yes	S4VEM
Vanadium	5.0	ug/L	1	J	U	Yes	S4VEM
Zinc	2.0	ug/L	1	J	U	Yes	S4VEM
Uranium	0.27	ug/L	1	J	J	Yes	S4VEM

Case No:	43524	Contract:	EPW09037	SDG No:	MC0AB7	Lab Code:	BONNER
Sample Number:	MC0AC1	Method:	ICP_MS	Matrix:	Water	MA Number:	2183.1
Sample Location:	MW13	pH:	2	Sample Date:	05/21/2013	Sample Time:	13:40:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Aluminum	20.0	ug/L	1	J	U	Yes	S4VEM
Antimony	2.0	ug/L	1	U	U	Yes	S4VEM
Arsenic	1.0	ug/L	1	J	U	Yes	S4VEM
Barium	453	ug/L	1			Yes	S4VEM
Beryllium	1.0	ug/L	1	U	U	Yes	S4VEM
Cadmium	1.0	ug/L	1	U	U	Yes	S4VEM
Calcium	33200	ug/L	1			Yes	S4VEM
Chromium	2.0	ug/L	1	J	U	Yes	S4VEM
Cobalt	1.0	ug/L	1	J	U	Yes	S4VEM
Copper	2.0	ug/L	1	U	U	Yes	S4VEM
Iron	587	ug/L	1			Yes	S4VEM
Lead	1.0	ug/L	1	J	U	Yes	S4VEM
Magnesium	6740	ug/L	1			Yes	S4VEM
Manganese	50.7	ug/L	1			Yes	S4VEM
Nickel	1.0	ug/L	1	J	U	Yes	S4VEM
Potassium	1060	ug/L	1	E	J	Yes	S4VEM
Selenium	5.0	ug/L	1	U	U	Yes	S4VEM
Silver	1.0	ug/L	1	UN	UJ	Yes	S4VEM
Sodium	2190	ug/L	1			Yes	S4VEM
Thallium	1.0	ug/L	1	J	U	Yes	S4VEM
Vanadium	5.0	ug/L	1	J	U	Yes	S4VEM
Zinc	2.0	ug/L	1	J	U	Yes	S4VEM
Uranium	1.0	ug/L	1	U	U	Yes	S4VEM

Case No:	43524	Contract:	EPW09037	SDG No:	MC0AB7	Lab Code:	BONNER
Sample Number:	MC0AC2	Method:	ICP_MS	Matrix:	Water	MA Number:	2183.1
Sample Location:	MW39	pH:	2	Sample Date:	05/21/2013	Sample Time:	16:30:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Aluminum	5230	ug/L	1			Yes	S4VEM
Antimony	2.0	ug/L	1	U	U	Yes	S4VEM
Arsenic	1.0	ug/L	1	J	U	Yes	S4VEM
Barium	18.8	ug/L	1			Yes	S4VEM
Beryllium	4.0	ug/L	1			Yes	S4VEM
Cadmium	1.0	ug/L	1	J	U	Yes	S4VEM
Calcium	37800	ug/L	1			Yes	S4VEM
Chromium	2.0	ug/L	1	J	U	Yes	S4VEM
Cobalt	20.9	ug/L	1			Yes	S4VEM
Copper	8.3	ug/L	1			Yes	S4VEM
Iron	8660	ug/L	1			Yes	S4VEM
Lead	1.0	ug/L	1	J	U	Yes	S4VEM
Magnesium	16500	ug/L	1			Yes	S4VEM
Manganese	175	ug/L	1			Yes	S4VEM
Nickel	55.3	ug/L	1			Yes	S4VEM
Potassium	2720	ug/L	1	E	J	Yes	S4VEM
Selenium	1.2	ug/L	1	J	J	Yes	S4VEM
Silver	1.0	ug/L	1	UN	UJ	Yes	S4VEM
Sodium	10900	ug/L	1			Yes	S4VEM
Thallium	1.0	ug/L	1	J	U	Yes	S4VEM
Vanadium	5.0	ug/L	1	J	U	Yes	S4VEM
Zinc	102	ug/L	1			Yes	S4VEM
Uranium	0.36	ug/L	1	J	J	Yes	S4VEM

Case No:	43524	Contract:	EPW09037	SDG No:	MC0AB7	Lab Code:	BONNER
Sample Number:	PBW01	Method:	ICP_MS	Matrix:	Water	MA Number:	2183.1
Sample Location:	3052914-BLK	pH:		Sample Date:	06/07/2013	Sample Time:	16:08:28
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Aluminum	20.0	ug/L	1	J	U	Yes	S4VEM
Antimony	1.1	ug/L	1	J	J	Yes	S4VEM
Arsenic	1.0	ug/L	1	J	U	Yes	S4VEM
Barium	10.0	ug/L	1	J	U	Yes	S4VEM
Beryllium	1.0	ug/L	1	U	U	Yes	S4VEM
Cadmium	1.0	ug/L	1	U	U	Yes	S4VEM
Calcium	500	ug/L	1	J	U	Yes	S4VEM
Chromium	2.0	ug/L	1	J	U	Yes	S4VEM
Cobalt	1.0	ug/L	1	U	U	Yes	S4VEM
Copper	2.0	ug/L	1	U	U	Yes	S4VEM
Iron	200	ug/L	1	J	U	Yes	S4VEM
Lead	1.0	ug/L	1	J	U	Yes	S4VEM
Magnesium	500	ug/L	1	J	U	Yes	S4VEM
Manganese	0.69	ug/L	1	J	J	Yes	S4VEM
Nickel	1.0	ug/L	1	J	U	Yes	S4VEM
Potassium	500	ug/L	1	J	U	Yes	S4VEM
Selenium	5.0	ug/L	1	U	U	Yes	S4VEM
Silver	1.0	ug/L	1	U	U	Yes	S4VEM
Sodium	500	ug/L	1	J	U	Yes	S4VEM
Thallium	1.0	ug/L	1	J	U	Yes	S4VEM
Vanadium	5.0	ug/L	1	J	U	Yes	S4VEM
Zinc	0.75	ug/L	1	J	J	Yes	S4VEM
Uranium	1.0	ug/L	1	U	U	Yes	S4VEM

Sample Summary Report

Case No:	43524	Contract:	EPW09037	SDG No:	MC0AC2	Lab Code:	BONNER
Sample Number:	MC0AB7	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	MW08	pH:	2	Sample Date:	05/22/2013	Sample Time:	11:35:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Mercury	0.20	ug/L	1	U	UJ	Yes	S4VEM

Case No:	43524	Contract:	EPW09037	SDG No:	MC0AC2	Lab Code:	BONNER
Sample Number:	MC0AB8	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	MW14	pH:	2	Sample Date:	05/21/2013	Sample Time:	14:45:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Mercury	0.20	ug/L	1	U	UJ	Yes	S4VEM

Case No:	43524	Contract:	EPW09037	SDG No:	MC0AC2	Lab Code:	BONNER
Sample Number:	MC0AB9	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	10L31	pH:	2	Sample Date:	05/21/2013	Sample Time:	18:20:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Mercury	0.20	ug/L	1	U	UJ	Yes	S4VEM

Case No:	43524	Contract:	EPW09037	SDG No:	MC0AC2	Lab Code:	BONNER
Sample Number:	MC0AC0	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	10L31-D	pH:	2	Sample Date:	05/21/2013	Sample Time:	18:34:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Mercury	0.20	ug/L	1	U	UJ	Yes	S4VEM

Case No:	43524	Contract:	EPW09037	SDG No:	MC0AC2	Lab Code:	BONNER
Sample Number:	MC0AC1	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	MW13	pH:	2	Sample Date:	05/21/2013	Sample Time:	13:40:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Mercury	0.20	ug/L	1	U	UJ	Yes	S4VEM

Case No:	43524	Contract:	EPW09037	SDG No:	MC0AC2	Lab Code:	BONNER
Sample Number:	MC0AC2	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	MW39	pH:	2	Sample Date:	05/21/2013	Sample Time:	16:30:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Mercury	0.20	ug/L	1	U	UJ	Yes	S4VEM

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF RADIATION AND INDOOR AIR
National Air and Radiation Environmental Laboratory
540 South Morris Avenue, Montgomery, AL 36115-2601
(334) 270-3400

July 23, 2013

MEMORANDUM

SUBJECT: Radiochemical Results for
Kiskimere Ground Water Samples

FROM: for Cindy White, Director
Center for Environmental Radioanalytical Laboratory Science

TO: John Kwedar, RPM
Region 3

Attached is a data package for gamma analysis of samples collected from the Parks Township, PA. The samples constitute NAREL batch number 1300046. The original sample container tags and chain-of-custody sheets for all samples associated with this project were included with the initial data delivery and therefore cannot be sent with subsequent shipments of data. NAREL does not attach custody seals to and does not include DC-1, DC-2, or air bills in the data delivery package.

Specific information concerning all aspects of the radiological analysis of the samples is contained in the batch case narratives of the data packages. If you have any questions concerning the analytical results, please contact me at (334)270-7052.

Due to a reorganization within the Office of Radiation and Indoor Air, the National Air and Radiation Environmental Laboratory is now called the National Analytical Radiation Environmental Laboratory (acronym remains the same, NAREL).

Attachments

U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY
540 S. MORRIS AVE., MONTGOMERY, AL 36115
GAMMA ANALYSES

REPORT OF SAMPLE DELIVERY GROUP #1300046

Project:	Kiskimere GW Well Investigation, Kiskimer, PA - 2013
Analysis method:	Gamma Spectrometry
Report ID:	1300046-GAMMA
Report type:	Original
Date reported:	06/27/2013
Total pages in report:	13

SAMPLES

NAREL Sample #	Client Sample ID	Location	Matrix	Date Collected	Date Received
B3.05702A	MW08, R34188-01	PA:KISKIMERE	WATER-GROUND	05/22/2013	05/28/2013
B3.05703B	MW14, R34188-02	PA:KISKIMERE	WATER-GROUND	05/21/2013	05/28/2013
B3.05704C	10L31, R34188-03	PA:KISKIMERE	WATER-GROUND	05/21/2013	05/28/2013
B3.05705D	10L31-D, R34188-04	PA:KISKIMERE	WATER-GROUND	05/21/2013	05/28/2013

EXCEPTIONS

1. **Packaging and shipping** – No problems were observed.
2. **Documentation** – No problems were observed.
3. **Sample preparation** – No problems were encountered.
4. **Analysis** – No problems were encountered.
5. **Holding times** – No holding times were specified.

QUALITY CONTROL

1. **QC samples** – All QC analysis results met NAREL acceptance criteria.
2. **Instruments** – Response and background checks for all instruments used in these analyses met NAREL acceptance criteria.

ACCREDITATION

All analyses included in this data package are accredited by the Oregon Environmental Laboratory Accreditation Program (ORELAP) to the TNI standard.

CERTIFICATION

I certify that this data report complies with the terms and conditions of the Quality Assurance Project Plan, except as noted above. Release of the data contained in this report has been authorized by the Director of the Center for Environmental Radioanalytical Laboratory Science and the NAREL Quality Assurance Manager, or their designees, as verified by the following signatures.

Mary Wisdom 7-8-13

Mary F. Wisdom — Date
Quality Assurance Manager, NAREL

Cynthia White 7-15-13

Cynthia White — Date
Director, Center for Environmental Radioanalytical Laboratory Science

GENERAL INFORMATION

SAMPLE TYPES

BLD	Blind sample
FBK	Field blank
SAM	Normal sample

ANALYSIS QC TYPES

ANA	Normal analysis
DUP	Laboratory duplicate
LCS	Laboratory control sample (blank spike)
MS	Matrix spike
MSD	Matrix spike duplicate
RBK	Method blank
STD	External standard (used for ^{228}Ra yield determination)

QUALITY INDICATORS

RPD	Relative Percent Difference
%R	Percent Recovery
Z	Number of standard deviations by which a QC measurement differs from the expected value

RADIOCHEMICAL DATA

Radiochemical analyses usually require the subtraction of an instrument background measurement result from a gross sample measurement result. Both values are positive, but when the sample activity is low, random variations in the two measurements can cause the gross value to be less than the background, resulting in a measured activity less than zero. Although negative activities have no physical significance, they do have statistical importance, as for example in the evaluation of trends or the comparison of two groups of samples.

To the extent practical, it is the policy of NAREL to report results as generated, whether positive, negative, or zero, together with the "2-sigma" measurement uncertainty and a sample-specific estimate of the minimum detectable concentration (MDC). The measurement result, uncertainty, and MDC are always expressed in the same unit of measurement.

EVALUATION OF QC ANALYSES

A method blank result is considered unacceptable if it is more than 3 standard deviations below zero or more than 3 standard deviations above a predetermined upper control limit. For some analyses NAREL has set the upper control limit at zero. For others the control limit is a small positive number.

NAREL evaluates the results of duplicate and spike analyses using "*Z* scores." A *Z* score is the number of standard deviations by which the QC result differs from its ideal value. The score is considered acceptable if its absolute value is not greater than 3.

The *Z* score for a spiked sample is computed by dividing the difference between the measured value and the target value by the combined standard uncertainty of the difference.

The *Z* score for a duplicate analysis is computed by dividing the difference between the two measured values by the combined standard uncertainty of the difference. When the precision of paired MS/MSD analyses is evaluated, the native sample activity is subtracted from each measured value and the net concentrations are then converted to total activities before the *Z* score is computed.

Each standard uncertainty used to compute a *Z* score includes an additional fixed term to represent sources of measurement error other than counting error. This additional term is not used in the evaluation of method blanks.

NAREL reports the "relative percent difference," or RPD, between duplicate results and the "percent recovery," or %R, for spiked analyses, but does not use these values for evaluation.

GENERAL INFORMATION (CONTINUED)

GAMMA ANALYSIS

The reporting format lists the gamma emitters in alphabetical order. The activity, 2-sigma uncertainty, and a sample-specific estimate of the MDC for radionuclides measured by gamma spectroscopy are reported only if the nuclide is detected above background with the exception of client requested nuclides of interest. The activity for each of the requested nuclides is reported whether negative, positive, or zero along with the associated 2-sigma uncertainty and the sample-specific estimate of the MDC.

Due to potential spectral interferences and other possible problems associated with the determination of the activity of certain radionuclides, the activities for ^{214}Bi, ^{214}Pb, ^{234}Th, ^{234m}Pa, ^{226}Ra, ^{231}Th, and ^{235}U are subject to greater uncertainty than other commonly reported radionuclides. It should be noted that this potential uncertainty is not included in the two-sigma expanded uncertainty that is reported with each result. Although in this report we do provide the calculated activities for these radionuclides, we recommend that the results be used only as a qualitative means of indicating the presence of these radionuclides and not as a quantitative measure of their concentration. The results for these nuclides are not used in the evaluation of quality control samples. Furthermore, because of mutual interference between ^{226}Ra and ^{235}U, NAREL's gamma analysis software tends to overestimate the amounts of these nuclides whenever both are present in a sample. Lower estimates for ^{226}Ra activities can be obtained from the reported activities of its decay products, ^{214}Pb and ^{214}Bi, which are likely to be somewhat less than the ^{226}Ra activity because of the potential escape of radon gas.

NAREL's gamma-ray spectrometry software corrects activities and MDCs for decay between collection and analysis, but only up to a limit of twelve half-lives. If the decay time for a sample exceeds twelve half-lives of a radionuclide, that radionuclide is not reported. This software feature may affect results for short-lived radionuclides, such as ^{131}I and ^{140}Ba, when there is a long delay between collection and analysis.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

ANALYSIS SUMMARY

Analysis method: NAREL GAM-01
Title: Gamma Spectrometry

NAREL Sample #	Client Sample ID	QC Type	Date Completed	Preparation Batch #	Assay Batch #
B3.05702A	MW08, R34188-01		06/14/2013	0010009F	0017104U
B3.05703B	MW14, R34188-02		06/15/2013	0010009F	0017104U
B3.05703B	MW14, R34188-02	DUP	06/15/2013	0010009F	0017104U
B3.05704C	10L31, R34188-03		06/15/2013	0010009F	0017104U
B3.05705D	10L31-D, R34188-04		06/16/2013	0010009F	0017104U
LCS-00667597W *		LCS	06/19/2013	0010009F	0017104U
RBK-00667598X *		RBK	06/18/2013	0010009F	0017104U

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	B3.05702A	Amount analyzed:	1.000e+00 L
Client sample ID:	MW08, R34188-01	Preparation batch #:	0010009F
Matrix:	WATER-GROUND	Assay batch #:	0017104U
Collected:	2013-05-22 11:35 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01
Dry/wet weight:	N/A	Analyst:	MO
Ash/dry weight:	N/A	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/14/2013 12:24	500.0	GE13	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Ba140		6.53e+00	2.6e+01	4.4e+01	PCI/L	05/22/2013 11:35 EDT
Bi214	J	6.87e+00	6.2e+00	1.0e+01	PCI/L	05/22/2013 11:35 EDT
Co60		2.99e-01	1.3e+00	2.4e+00	PCI/L	05/22/2013 11:35 EDT
Cs137		1.52e-01	2.3e+00	4.0e+00	PCI/L	05/22/2013 11:35 EDT
I131		-6.67e+00	1.7e+01	2.9e+01	PCI/L	05/22/2013 11:35 EDT
K40		1.06e+01	2.9e+01	5.6e+01	PCI/L	05/22/2013 11:35 EDT
Ra226	J	1.23e+01	5.9e+01	9.8e+01	PCI/L	05/22/2013 11:35 EDT
Ra228		-6.70e+00	1.7e+01	1.9e+01	PCI/L	05/22/2013 11:35 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	B3.05703B	Amount analyzed:	1.000e+00 L
Client sample ID:	MW14, R34188-02	Preparation batch #:	0010009F
Matrix:	WATER-GROUND	Assay batch #:	0017104U
Collected:	2013-05-21 14:45 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01
Dry/wet weight:	N/A	Analyst:	MO
Ash/dry weight:	N/A	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/14/2013 20:47	500.0	GE13	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Ba140		2.30e+00	2.8e+01	4.7e+01	PCI/L	05/21/2013 14:45 EDT
Bi214	J	6.17e+00	7.2e+00	1.1e+01	PCI/L	05/21/2013 14:45 EDT
Co60		-3.63e-01	5.7e+01	3.1e+00	PCI/L	05/21/2013 14:45 EDT
Cs137		-1.52e+00	4.8e+02	4.1e+00	PCI/L	05/21/2013 14:45 EDT
I131		7.45e-01	1.7e+01	2.9e+01	PCI/L	05/21/2013 14:45 EDT
K40		-8.36e+00	3.2e+01	5.6e+01	PCI/L	05/21/2013 14:45 EDT
Pb214	J	7.55e+00	6.8e+00	1.1e+01	PCI/L	05/21/2013 14:45 EDT
Ra226	J	1.22e+01	6.1e+01	9.8e+01	PCI/L	05/21/2013 14:45 EDT
Ra228		5.85e+00	1.2e+01	1.8e+01	PCI/L	05/21/2013 14:45 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	B3.05703B	Amount analyzed:	1.000e+00 L
Client sample ID:	MW14, R34188-02	Preparation batch #:	0010009F
Matrix:	WATER-GROUND	Assay batch #:	0017104U
Collected:	2013-05-21 14:45 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01
Dry/wet weight:	N/A	Analyst:	MO
Ash/dry weight:	N/A	QC type:	DUP
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/15/2013 05:10	500.0	GE13	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Ba140		4.36e+00	2.7e+01	4.7e+01	PCI/L	05/21/2013 14:45 EDT
Bi214	J	1.02e+01	6.2e+00	9.8e+00	PCI/L	05/21/2013 14:45 EDT
Cs137		-6.56e-01	5.7e+00	4.0e+00	PCI/L	05/21/2013 14:45 EDT
I131		3.77e+00	1.7e+01	2.9e+01	PCI/L	05/21/2013 14:45 EDT
K40		3.70e+00	3.4e+01	5.9e+01	PCI/L	05/21/2013 14:45 EDT
Ra226	J	2.70e+01	6.5e+01	1.0e+02	PCI/L	05/21/2013 14:45 EDT
Ra228		-2.70e+00	9.4e+00	1.7e+01	PCI/L	05/21/2013 14:45 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	B3.05704C	Amount analyzed:	1.000e+00 L
Client sample ID:	10L31.R34188-03	Preparation batch #:	0010009F
Matrix:	WATER-GROUND	Assay batch #:	0017104U
Collected:	2013-05-21 18:20 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01
Dry/wet weight:	N/A	Analyst:	MO
Ash/dry weight:	N/A	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/15/2013 13:32	500.0	GE13	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Ba140		-1.77e+00	1.5e+02	4.9e+01	PCI/L	05/21/2013 18:20 EDT
Co60		-3.85e-01	1.5e+01	3.8e+00	PCI/L	05/21/2013 18:20 EDT
Cs137		-2.81e-01	3.2e+00	3.9e+00	PCI/L	05/21/2013 18:20 EDT
I131		3.00e+00	1.9e+01	3.1e+01	PCI/L	05/21/2013 18:20 EDT
K40		-3.05e+01	4.0e+01	5.9e+01	PCI/L	05/21/2013 18:20 EDT
Ra226	J	3.90e+00	6.0e+01	9.8e+01	PCI/L	05/21/2013 18:20 EDT
Ra228		5.42e+00	1.1e+01	1.8e+01	PCI/L	05/21/2013 18:20 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	B3.05705D	Amount analyzed:	1.000e+00 L
Client sample ID:	10L31-D, R34188-04	Preparation batch #:	0010009F
Matrix:	WATER-GROUND	Assay batch #:	0017104U
Collected:	2013-05-21 18:34 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01
Dry/wet weight:	N/A	Analyst:	MO
Ash/dry weight:	N/A	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/15/2013 21:55	500.0	GE13	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Ba140		1.31e+01	2.8e+01	4.8e+01	PCI/L	05/21/2013 18:34 EDT
Co60		1.94e-01	1.7e+00	3.0e+00	PCI/L	05/21/2013 18:34 EDT
Cs137		-5.64e-01	5.0e+00	4.0e+00	PCI/L	05/21/2013 18:34 EDT
I131		-9.46e-01	1.6e+01	2.7e+01	PCI/L	05/21/2013 18:34 EDT
K40		-2.27e+01	3.7e+01	5.9e+01	PCI/L	05/21/2013 18:34 EDT
Ra226	J	-1.42e+01	6.5e+01	9.6e+01	PCI/L	05/21/2013 18:34 EDT
Ra228		9.05e+00	1.1e+01	1.8e+01	PCI/L	05/21/2013 18:34 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	LCS-00667597W	Amount analyzed:	1.000e+00 SAMP
Client sample ID:	N/A	Preparation batch #:	0010009F
Matrix:	N/A	Assay batch #:	0017104U
Collected:	N/A	Prep procedure:	N/A
Sample type:	N/A	Analysis method:	NAREL GAM-01
Dry/wet weight:	N/A	Analyst:	MO
Ash/dry weight:	N/A	QC type:	LCS
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/18/2013 23:05	500.0	GE13	MO

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi207	2.92e+03	3.7e+02	6.6e+01	PCI	12/15/2010 11:00 CDT
Eu155	6.98e+02	8.8e+01	5.2e+01	PCI	12/15/2010 11:00 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	RBK-00667598X	Amount analyzed:	1.000e+00 SAMP
Client sample ID:	N/A	Preparation batch #:	0010009F
Matrix:	N/A	Assay batch #:	0017104U
Collected:	N/A	Prep procedure:	N/A
Sample type:	N/A	Analysis method:	NAREL GAM-01
Dry/wet weight:	N/A	Analyst:	MO
Ash/dry weight:	N/A	QC type:	RBK
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/18/2013 14:42	500.0	GE13	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Ba140		-6.21e-01	5.9e+01	1.6e+01	PCI	06/14/2013 07:00 CDT
Bi212	J	-6.25e+00	3.8e+01	5.2e+01	PCI	06/14/2013 07:00 CDT
Bi214	J	-1.02e+00	7.3e+00	1.1e+01	PCI	06/14/2013 07:00 CDT
Co60		-2.70e-01	1.0e+01	3.2e+00	PCI	06/14/2013 07:00 CDT
Cs137		-1.08e+00	1.4e+01	4.3e+00	PCI	06/14/2013 07:00 CDT
I131		1.58e+00	3.1e+00	5.2e+00	PCI	06/14/2013 07:00 CDT
K40		-4.34e+00	2.9e+01	5.5e+01	PCI	06/14/2013 07:00 CDT
Pb212	J	2.93e+00	5.6e+00	9.0e+00	PCI	06/14/2013 07:00 CDT
Pb214	J	-2.46e+00	7.4e+00	1.0e+01	PCI	06/14/2013 07:00 CDT
Ra226	J	2.11e+01	6.1e+01	9.8e+01	PCI	06/14/2013 07:00 CDT
Ra228		-3.29e+00	1.1e+01	1.8e+01	PCI	06/14/2013 07:00 CDT
Tl208	J	6.30e-01	3.1e+00	4.9e+00	PCI	06/14/2013 07:00 CDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG 1300046

PREPARATION BATCH SUMMARY

Preparation batch #: 0010009F
Analysis method: NAREL GAM-01
Preparation procedure: N/A

NAREL Sample #	Client Sample ID	Analysis #	QC Type	Yield	± 2 σ Uncertainty	Analyst
B3.05702A	MW08, R34188-01	00666695T		N/A		MO
B3.05703B	MW14, R34188-02	00666699X		N/A		MO
B3.05703B	MW14, R34188-02	00667596V	DUP	N/A		MO
B3.05704C	10L31, R34188-03	00666703Z		N/A		MO
B3.05705D	10L31-D, R34188-04	00666707D		N/A		MO
LCS-00667597W *		00667597W	LCS	N/A		MO
RBK-00667598X *		00667598X	RBK	N/A		MO

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

QC RESULTS FOR BATCH 0010009F

NAREL Sample #	Analysis #	QC Type	Analyte	%R	RPD	Z	Evaluation
B3.05703B	00667596V	DUP	BA140		61.7	0.11	PASS
B3.05703B	00667596V	DUP	BI214		49.2	0.85	PASS-J
B3.05703B	00667596V	DUP	CO60				Unmatched
B3.05703B	00667596V	DUP	CS137		-79.2	0.00	PASS
B3.05703B	00667596V	DUP	I131		134.1	0.25	PASS
B3.05703B	00667596V	DUP	K40		-517.2	0.51	PASS
B3.05703B	00667596V	DUP	PB214				Unmatched
B3.05703B	00667596V	DUP	RA226		75.8	0.33	PASS-J
B3.05703B	00667596V	DUP	RA228		542.5	-1.13	PASS
LCS-00667597W	00667597W	LCS	BI207	95.0		-0.79	PASS
LCS-00667597W	00667597W	LCS	EU155	104.7		0.66	PASS
RBK-00667598X	00667598X	RBK	BA140				PASS
RBK-00667598X	00667598X	RBK	BI212				PASS-J
RBK-00667598X	00667598X	RBK	BI214				PASS-J
RBK-00667598X	00667598X	RBK	CO60				PASS
RBK-00667598X	00667598X	RBK	CS137				PASS
RBK-00667598X	00667598X	RBK	I131				PASS
RBK-00667598X	00667598X	RBK	K40				PASS
RBK-00667598X	00667598X	RBK	PB212				PASS-J
RBK-00667598X	00667598X	RBK	PB214				PASS-J
RBK-00667598X	00667598X	RBK	RA226				PASS-J
RBK-00667598X	00667598X	RBK	RA228				PASS
RBK-00667598X	00667598X	RBK	TL208				PASS-J

Note: Results qualified with -J may be significantly under or over-estimated and are not evaluated for QC purposes.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF RADIATION AND INDOOR AIR
National Air and Radiation Environmental Laboratory
540 South Morris Avenue, Montgomery, AL 36115-2601
(334) 270-3400

June 24, 2013

MEMORANDUM

SUBJECT: Radiochemical Results for
Kiskimere Ground Water Samples

FROM: Cindy White, Director
Center for Environmental Radioanalytical Laboratory Science

TO: John Kwedar, RPM
Region 3

Attached is a data package for gross alpha and beta analysis of samples collected from the Parks Township, PA. The samples constitute NAREL batch number 1300046. The original sample container tags and chain-of-custody sheets for all samples associated with this project are included and therefore cannot be sent with subsequent shipments of data. NAREL does not attach custody seals to and does not include DC-1, DC-2, or air bills in the data delivery package.

Specific information concerning all aspects of the radiological analysis of the samples is contained in the batch case narratives of the data packages. If you have any questions concerning the analytical results, please contact me at (334)270-7052.

Due to a reorganization within the Office of Radiation and Indoor Air, the National Air and Radiation Environmental Laboratory is now called the National Analytical Radiation Environmental Laboratory (acronym remains the same, NAREL).

Attachments

U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY
540 S. MORRIS AVE., MONTGOMERY, AL 36115
ALPBET ANALYSES

REPORT OF SAMPLE DELIVERY GROUP #1300046

Project: Kiskimere GW Well Investigation, Kiskimer, PA - 2013
Analysis method: Gross Alpha and Beta on Water Samples
Report ID: 1300046-ALPBET
Report type: Original
Date reported: 06/19/2013
Total pages in report: 14

SAMPLES

NAREL Sample #	Client Sample ID	Location	Matrix	Date Collected	Date Received
B3.05702A	MW08, R34188-01	PA:KISKIMERE	WATER-GROUND	05/22/2013	05/28/2013
B3.05703B	MW14, R34188-02	PA:KISKIMERE	WATER-GROUND	05/21/2013	05/28/2013
B3.05704C	10L31, R34188-03	PA:KISKIMERE	WATER-GROUND	05/21/2013	05/28/2013
B3.05705D	10L31-D, R34188-04	PA:KISKIMERE	WATER-GROUND	05/21/2013	05/28/2013

EXCEPTIONS

1. **Packaging and shipping** – No problems were observed.
2. **Documentation** – No problems were observed.
3. **Sample preparation** – No problems were encountered.
4. **Analysis** – No problems were encountered.
5. **Holding times** – No holding times were specified.

QUALITY CONTROL

1. **QC samples** – All QC analysis results met NAREL acceptance criteria.
2. **Instruments** – Response and background checks for all instruments used in these analyses met NAREL acceptance criteria.

ACCREDITATION

All analyses included in this data package are accredited by the Oregon Environmental Laboratory Accreditation Program (ORELAP) to the TNI standard.

CERTIFICATION

I certify that this data report complies with the terms and conditions of the Quality Assurance Project Plan, except as noted above. Release of the data contained in this report has been authorized by the Director of the Center for Environmental Radioanalytical Laboratory Science and the NAREL Quality Assurance Manager, or their designees, as verified by the following signatures.

Mary F. Wisdom — Date
Quality Assurance Manager, NAREL

Cynthia White — Date
Director, Center for Environmental Radioanalytical Laboratory Science

GENERAL INFORMATION

SAMPLE TYPES

BLD	Blind sample
FBK	Field blank
SAM	Normal sample

ANALYSIS QC TYPES

ANA	Normal analysis
DUP	Laboratory duplicate
LCS	Laboratory control sample (blank spike)
MS	Matrix spike
MSD	Matrix spike duplicate
RBK	Method blank
STD	External standard (used for ^{228}Ra yield determination)

QUALITY INDICATORS

RPD	Relative Percent Difference
%R	Percent Recovery
Z	Number of standard deviations by which a QC measurement differs from the expected value

RADIOCHEMICAL DATA

Radiochemical analyses usually require the subtraction of an instrument background measurement result from a gross sample measurement result. Both values are positive, but when the sample activity is low, random variations in the two measurements can cause the gross value to be less than the background, resulting in a measured activity less than zero. Although negative activities have no physical significance, they do have statistical importance, as for example in the evaluation of trends or the comparison of two groups of samples.

To the extent practical, it is the policy of NAREL to report results as generated, whether positive, negative, or zero, together with the "2-sigma" measurement uncertainty and a sample-specific estimate of the minimum detectable concentration (MDC). The measurement result, uncertainty, and MDC are always expressed in the same unit of measurement.

EVALUATION OF QC ANALYSES

A method blank result is considered unacceptable if it is more than 3 standard deviations below zero or more than 3 standard deviations above a predetermined upper control limit. For some analyses NAREL has set the upper control limit at zero. For others the control limit is a small positive number.

NAREL evaluates the results of duplicate and spike analyses using "*Z* scores." A *Z* score is the number of standard deviations by which the QC result differs from its ideal value. The score is considered acceptable if its absolute value is not greater than 3.

The *Z* score for a spiked sample is computed by dividing the difference between the measured value and the target value by the combined standard uncertainty of the difference.

The *Z* score for a duplicate analysis is computed by dividing the difference between the two measured values by the combined standard uncertainty of the difference. When the precision of paired MS/MSD analyses is evaluated, the native sample activity is subtracted from each measured value and the net concentrations are then converted to total activities before the *Z* score is computed.

Each standard uncertainty used to compute a *Z* score includes an additional fixed term to represent sources of measurement error other than counting error. This additional term is not used in the evaluation of method blanks.

NAREL reports the "relative percent difference," or RPD, between duplicate results and the "percent recovery," or %R, for spiked analyses, but does not use these values for evaluation.

GENERAL INFORMATION (CONTINUED)

GROSS ALPHA AND BETA ANALYSIS

In comparison to the methods employed to determine radionuclide-specific activities, the method used by NAREL to determine gross alpha and beta activities has the potential for greater analytical uncertainty. Although NAREL attempts to estimate the total uncertainty of each result, the analytical method does not admit a rigorous uncertainty analysis. Significant components of the uncertainty must be based on professional judgment and historical data. For this reason results from gross alpha and beta analyses should be used only as gross approximations of the alpha and beta activity present.

Note that NAREL does not automatically qualify individual results from gross alpha/beta measurements, although the values may be significantly overestimated or underestimated in relation to the reported uncertainty.

The 2009 TNI accreditation standard for environmental laboratories (Volume 1, Module 6, 1.7.2.1(b)) does not require method blanks for gross alpha/beta analysis of solid samples. In 2013 NAREL, while considering the TNI requirements, examined historical method blank data from NAREL method GR-03 "Gross Alpha and Beta Analysis of Solid Samples" to assess their usefulness. We decided, effective April 25, 2013, to discontinue method blanks for method GR-03. Method blanks are still required for gross alpha/beta analysis of samples analyzed using other methods (e.g., NAREL GR-01) and for other matrices, such as water.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

ANALYSIS SUMMARY

Analysis method: NAREL GR-01
Title: Gross Alpha and Beta on Water Samples

NAREL Sample #	Client Sample ID	QC Type	Date Completed	Preparation Batch #	Assay Batch #
B3.05702A	MW08, R34188-01		06/12/2013	0009995J	0017086K
B3.05703B	MW14, R34188-02		06/12/2013	0009995J	0017086K
B3.05703B	MW14, R34188-02	DUP	06/12/2013	0009995J	0017086K
B3.05703B	MW14, R34188-02	MS	06/12/2013	0009995J	0017086K
B3.05704C	10L31, R34188-03		06/12/2013	0009995J	0017086K
B3.05705D	10L31-D, R34188-04		06/12/2013	0009995J	0017086K
LCS-00667402T *		LCS	06/12/2013	0009995J	0017086K
RBK-00667403U *		RBK	06/12/2013	0009995J	0017086K

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	B3.05702A	Amount analyzed:	1.000e-01 L
Client sample ID:	MW08, R34188-01	Preparation batch #:	0009995J
Matrix:	WATER-GROUND	Assay batch #:	0017086K
Collected:	2013-05-22 11:35 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GR-01
Dry/wet weight:	N/A	Analyst:	ARM
Ash/dry weight:	N/A	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/12/2013 18:55	100.0	GQ2C	GVJ

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Alpha	7.50e-01	3.3e+00	2.9e+00	PCI/L	06/12/2013 18:55 CDT
Beta	1.84e+00	2.8e+00	4.3e+00	PCI/L	06/12/2013 18:55 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	B3.05703B	Amount analyzed:	5.000e-02 L
Client sample ID:	MW14, R34188-02	Preparation batch #:	0009995J
Matrix:	WATER-GROUND	Assay batch #:	0017086K
Collected:	2013-05-21 14:45 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GR-01
Dry/wet weight:	N/A	Analyst:	ARM
Ash/dry weight:	N/A	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/12/2013 13:54	100.0	GQ2C	GVJ

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Alpha	-1.46e-01	5.4e+00	5.0e+00	PCI/L	06/12/2013 13:54 CDT
Beta	2.28e+00	5.4e+00	8.3e+00	PCI/L	06/12/2013 13:54 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	B3.05703B	Amount analyzed:	5.000e-02 L
Client sample ID:	MW14, R34188-02	Preparation batch #:	0009995J
Matrix:	WATER-GROUND	Assay batch #:	0017086K
Collected:	2013-05-21 14:45 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GR-01
Dry/wet weight:	N/A	Analyst:	ARM
Ash/dry weight:	N/A	QC type:	DUP
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/12/2013 13:54	100.0	GQ2D	GVJ

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Alpha	1.49e+00	5.5e+00	4.7e+00	PCI/L	06/12/2013 13:54 CDT
Beta	-2.47e-01	5.5e+00	8.7e+00	PCI/L	06/12/2013 13:54 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	B3.05703B	Amount analyzed:	5.000e-02 L
Client sample ID:	MW14, R34188-02	Preparation batch #:	0009995J
Matrix:	WATER-GROUND	Assay batch #:	0017086K
Collected:	2013-05-21 14:45 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GR-01
Dry/wet weight:	N/A	Analyst:	ARM
Ash/dry weight:	N/A	QC type:	MS
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/12/2013 15:34	100.0	GQ2C	GVJ

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Alpha	3.41e+02	7.3e+01	5.1e+00	PCI/L	06/12/2013 15:34 CDT
Beta	2.94e+02	3.8e+01	2.2e+01	PCI/L	06/12/2013 15:34 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	B3.05704C	Amount analyzed:	5.000e-02 L
Client sample ID:	10L31, R34188-03	Preparation batch #:	0009995J
Matrix:	WATER-GROUND	Assay batch #:	0017086K
Collected:	2013-05-21 18:20 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GR-01
Dry/wet weight:	N/A	Analyst:	ARM
Ash/dry weight:	N/A	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/12/2013 15:34	100.0	GQ2D	GVJ

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Alpha	-1.59e+00	6.0e+00	5.6e+00	PCI/L	06/12/2013 15:34 CDT
Beta	6.96e+00	6.1e+00	9.2e+00	PCI/L	06/12/2013 15:34 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	B3.05705D	Amount analyzed:	5.000e-02 L
Client sample ID:	10L31-D, R34188-04	Preparation batch #:	0009995J
Matrix:	WATER-GROUND	Assay batch #:	0017086K
Collected:	2013-05-21 18:34 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GR-01
Dry/wet weight:	N/A	Analyst:	ARM
Ash/dry weight:	N/A	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/12/2013 17:15	100.0	GQ2C	GVJ

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Alpha	-1.74e-01	6.5e+00	6.0e+00	PCI/L	06/12/2013 17:15 CDT
Beta	4.83e+00	5.7e+00	8.7e+00	PCI/L	06/12/2013 17:15 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	LCS-00667402T	Amount analyzed:	1.000e+00 SAMP
Client sample ID:	N/A	Preparation batch #:	0009995J
Matrix:	N/A	Assay batch #:	0017086K
Collected:	N/A	Prep procedure:	N/A
Sample type:	N/A	Analysis method:	NAREL GR-01
Dry/wet weight:	N/A	Analyst:	ARM
Ash/dry weight:	N/A	QC type:	LCS
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/12/2013 17:15	100.0	GQ2D	GVJ

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Alpha	1.91e+01	4.1e+00	2.7e-01	PCI	06/12/2013 17:15 CDT
Beta	1.51e+01	1.9e+00	1.1e+00	PCI	06/12/2013 17:15 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	RBK-00667403U	Amount analyzed:	1.000e+00 SAMP
Client sample ID:	N/A	Preparation batch #:	0009995J
Matrix:	N/A	Assay batch #:	0017086K
Collected:	N/A	Prep procedure:	N/A
Sample type:	N/A	Analysis method:	NAREL GR-01
Dry/wet weight:	N/A	Analyst:	ARM
Ash/dry weight:	N/A	QC type:	RBK
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/12/2013 18:55	100.0	GQ2D	GVJ

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Alpha	8.44e-02	3.1e-01	2.7e-01	PCI	06/12/2013 18:55 CDT
Beta	-1.02e-01	2.7e-01	4.4e-01	PCI	06/12/2013 18:55 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG 1300046

PREPARATION BATCH SUMMARY

Preparation batch #: 0009995J
Analysis method: NAREL GR-01
Preparation procedure: N/A

NAREL Sample #	Client Sample ID	Analysis #	QC Type	Yield	± 2 σ Uncertainty	Analyst
B3.05702A	MW08, R34188-01	00666696U		N/A		ARM
B3.05703B	MW14, R34188-02	00666700W		N/A		ARM
B3.05703B	MW14, R34188-02	00667400Q	DUP	N/A		ARM
B3.05703B	MW14, R34188-02	00667401R	MS	N/A		ARM
B3.05704C	10L31, R34188-03	00666704A		N/A		ARM
B3.05705D	10L31-D, R34188-04	00666708E		N/A		ARM
LCS-00667402T *		00667402T	LCS	N/A		ARM
RBK-00667403U *		00667403U	RBK	N/A		ARM

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

QC RESULTS FOR BATCH 0009995J

NAREL Sample #	Analysis #	QC Type	Analyte	%R	RPD	Z	Evaluation
B3.05703B	00667400Q	DUP	ALPHA		243.3	0.42	PASS
B3.05703B	00667400Q	DUP	BETA		248.6	-0.66	PASS
LCS-00667402T	00667402T	LCS	ALPHA	103.2		0.29	PASS
LCS-00667402T	00667402T	LCS	BETA	101.8		0.27	PASS
B3.05703B	00667401R	MS	ALPHA	92.1		-0.79	PASS
B3.05703B	00667401R	MS	BETA	98.2		-0.28	PASS
RBK-00667403U	00667403U	RBK	ALPHA				PASS
RBK-00667403U	00667403U	RBK	BETA				PASS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF RADIATION AND INDOOR AIR
National Air and Radiation Environmental Laboratory
540 South Morris Avenue, Montgomery, AL 36115-2601
(334) 270-3400

July 15, 2013

MEMORANDUM

SUBJECT: Radiochemical Results for
Kiskimere Ground Water Samples

FROM: Cindy White, Director
Center for Environmental Radioanalytical Laboratory Science

TO: John Kwedar, RPM
Region 3

Attached are data packages for radium-226 and radium-228 analysis of samples collected from the Parks Township, PA. The samples constitute NAREL batch number 1300046. The original sample container tags and chain-of-custody sheets for all samples associated with this project were included with the initial data delivery and therefore cannot be sent with subsequent shipments of data. NAREL does not attach custody seals to and does not include DC-1, DC-2, or air bills in the data delivery package.

Specific information concerning all aspects of the radiological analysis of the samples is contained in the batch case narratives of the data packages. If you have any questions concerning the analytical results, please contact me at (334)270-7052.

Due to a reorganization within the Office of Radiation and Indoor Air, the National Air and Radiation Environmental Laboratory is now called the National Analytical Radiation Environmental Laboratory (acronym remains the same, NAREL).

Attachments

U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY
540 S. MORRIS AVE., MONTGOMERY, AL 36115
RA226 ANALYSES

REPORT OF SAMPLE DELIVERY GROUP #1300046

Project:	Kiskimere GW Well Investigation, Kiskimer, PA - 2013
Analysis method:	Radium-226 in Water: Rapid Method for High-Activity Samples
Report ID:	1300046-RA226
Report type:	Original
Date reported:	07/08/2013
Total pages in report:	12

SAMPLES

NAREL Sample #	Client Sample ID	Location	Matrix	Date Collected	Date Received
B3.05702A	MW08, R34188-01	PA:KISKIMERE	WATER-GROUND	05/22/2013	05/28/2013
B3.05703B	MW14, R34188-02	PA:KISKIMERE	WATER-GROUND	05/21/2013	05/28/2013
B3.05704C	10L31, R34188-03	PA:KISKIMERE	WATER-GROUND	05/21/2013	05/28/2013
B3.05705D	10L31-D, R34188-04	PA:KISKIMERE	WATER-GROUND	05/21/2013	05/28/2013

EXCEPTIONS

1. **Packaging and shipping** – No problems were observed.
2. **Documentation** – No problems were observed.
3. **Sample preparation** – No problems were encountered.
4. **Analysis** – No problems were encountered.
5. **Holding times** – No holding times were specified.

QUALITY CONTROL

1. **QC samples** – All QC analysis results met NAREL acceptance criteria.
2. **Yields** – All chemical yields were within acceptance limits.
3. **Instruments** – Response and background checks for all instruments used in these analyses met NAREL acceptance criteria.

ACCREDITATION

All analyses included in this data package are accredited by the Oregon Environmental Laboratory Accreditation Program (ORELAP) to the TNI standard.

CERTIFICATION

I certify that this data report complies with the terms and conditions of the Quality Assurance Project Plan, except as noted above. Release of the data contained in this report has been authorized by the Director of the Center for Environmental Radioanalytical Laboratory Science and the NAREL Quality Assurance Manager, or their designees, as verified by the following signatures.

Mary Wisdom 7-8-13

Mary F. Wisdom — Date
Quality Assurance Manager, NAREL

Cynthia White 7-11-13

Cynthia White — Date
Director, Center for Environmental Radioanalytical Laboratory Science

GENERAL INFORMATION

SAMPLE TYPES

BLD	Blind sample
FBK	Field blank
SAM	Normal sample

ANALYSIS QC TYPES

ANA	Normal analysis
DUP	Laboratory duplicate
LCS	Laboratory control sample (blank spike)
MS	Matrix spike
MSD	Matrix spike duplicate
RBK	Method blank
STD	External standard (used for ^{228}Ra yield determination)

QUALITY INDICATORS

RPD	Relative Percent Difference
%R	Percent Recovery
Z	Number of standard deviations by which a QC measurement differs from the expected value

RADIOCHEMICAL DATA

Radiochemical analyses usually require the subtraction of an instrument background measurement result from a gross sample measurement result. Both values are positive, but when the sample activity is low, random variations in the two measurements can cause the gross value to be less than the background, resulting in a measured activity less than zero. Although negative activities have no physical significance, they do have statistical importance, as for example in the evaluation of trends or the comparison of two groups of samples.

To the extent practical, it is the policy of NAREL to report results as generated, whether positive, negative, or zero, together with the "2-sigma" measurement uncertainty and a sample-specific estimate of the minimum detectable concentration (MDC). The measurement result, uncertainty, and MDC are always expressed in the same unit of measurement.

EVALUATION OF QC ANALYSES

A method blank result is considered unacceptable if it is more than 3 standard deviations below zero or more than 3 standard deviations above a predetermined upper control limit. For some analyses NAREL has set the upper control limit at zero. For others the control limit is a small positive number.

NAREL evaluates the results of duplicate and spike analyses using "*Z* scores." A *Z* score is the number of standard deviations by which the QC result differs from its ideal value. The score is considered acceptable if its absolute value is not greater than 3.

The *Z* score for a spiked sample is computed by dividing the difference between the measured value and the target value by the combined standard uncertainty of the difference.

The *Z* score for a duplicate analysis is computed by dividing the difference between the two measured values by the combined standard uncertainty of the difference. When the precision of paired MS/MSD analyses is evaluated, the native sample activity is subtracted from each measured value and the net concentrations are then converted to total activities before the *Z* score is computed.

Each standard uncertainty used to compute a *Z* score includes an additional fixed term to represent sources of measurement error other than counting error. This additional term is not used in the evaluation of method blanks.

NAREL reports the "relative percent difference," or RPD, between duplicate results and the "percent recovery," or %R, for spiked analyses, but does not use these values for evaluation.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

ANALYSIS SUMMARY

Analysis method: NAREL RA226-EICHROM
Title: Radium-226 in Water: Rapid Method for High-Activity Samples

NAREL Sample #	Client Sample ID	QC Type	Date Completed	Preparation Batch #	Assay Batch #
B3.05702A	MW08, R34188-01		06/27/2013	0010046L	0017141Z
B3.05703B	MW14, R34188-02		06/27/2013	0010046L	0017141Z
B3.05703B	MW14, R34188-02	DUP	06/27/2013	0010046L	0017141Z
B3.05704C	10L31, R34188-03		06/27/2013	0010046L	0017141Z
B3.05705D	10L31-D, R34188-04		06/27/2013	0010046L	0017141Z
LCS-00668317B *		LCS	06/27/2013	0010046L	0017141Z
RBK-00668316A *		RBK	06/27/2013	0010046L	0017141Z

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	B3.05702A	Amount analyzed:	2.000e-01 L
Client sample ID:	MW08, R34188-01	Preparation batch #:	0010046L
Matrix:	WATER-GROUND	Assay batch #:	0017141Z
Collected:	2013-05-22 11:35 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL RA226-EICHROM
Dry/wet weight:	N/A	Analyst:	PH
Ash/dry weight:	N/A	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/26/2013 15:19	1000.0	AS33	GVJ

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Ra226	2.45e-01	1.3e-01	9.0e-02	PCI/L	06/25/2013 10:02 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	B3.05703B	Amount analyzed:	2.000e-01 L
Client sample ID:	MW14, R34188-02	Preparation batch #:	0010046L
Matrix:	WATER-GROUND	Assay batch #:	0017141Z
Collected:	2013-05-21 14:45 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL RA226-EICHROM
Dry/wet weight:	N/A	Analyst:	PH
Ash/dry weight:	N/A	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/26/2013 15:19	1000.0	AS35	GVJ

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Ra226	3.03e-01	1.5e-01	1.1e-01	PCI/L	06/25/2013 09:58 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	B3.05703B	Amount analyzed:	2.000e-01 L
Client sample ID:	MW14, R34188-02	Preparation batch #:	0010046L
Matrix:	WATER-GROUND	Assay batch #:	0017141Z
Collected:	2013-05-21 14:45 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL RA226-EICHROM
Dry/wet weight:	N/A	Analyst:	PH
Ash/dry weight:	N/A	QC type:	DUP
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/26/2013 15:19	1000.0	AS37	GVJ

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Ra226	3.42e-01	1.5e-01	9.0e-02	PCI/L	06/25/2013 09:59 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	B3.05704C	Amount analyzed:	2.000e-01 L
Client sample ID:	10L31, R34188-03	Preparation batch #:	0010046L
Matrix:	WATER-GROUND	Assay batch #:	0017141Z
Collected:	2013-05-21 18:20 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL RA226-EICHROM
Dry/wet weight:	N/A	Analyst:	PH
Ash/dry weight:	N/A	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/26/2013 15:19	1000.0	AS38	GVJ

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Ra226	7.64e-02	7.6e-02	6.6e-02	PCI/L	06/25/2013 10:04 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	B3.05705D	Amount analyzed:	2.000e-01 L
Client sample ID:	10L31-D, R34188-04	Preparation batch #:	0010046L
Matrix:	WATER-GROUND	Assay batch #:	0017141Z
Collected:	2013-05-21 18:34 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL RA226-EICHROM
Dry/wet weight:	N/A	Analyst:	PH
Ash/dry weight:	N/A	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/26/2013 15:20	1000.0	AS65	GVJ

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Ra226	1.93e-01	1.4e-01	1.8e-01	PCI/L	06/25/2013 10:07 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	LCS-00668317B	Amount analyzed:	1.000e+00 SAMP
Client sample ID:	N/A	Preparation batch #:	0010046L
Matrix:	N/A	Assay batch #:	0017141Z
Collected:	N/A	Prep procedure:	N/A
Sample type:	N/A	Analysis method:	NAREL RA226-EICHROM
Dry/wet weight:	N/A	Analyst:	PH
Ash/dry weight:	N/A	QC type:	LCS
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/26/2013 15:20	1000.0	AS67	GVJ

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Ra226	3.01e+00	2.8e-01	1.9e-02	PCI	06/25/2013 09:57 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	RBK-00668316A	Amount analyzed:	1.000e+00 SAMP
Client sample ID:	N/A	Preparation batch #:	0010046L
Matrix:	N/A	Assay batch #:	0017141Z
Collected:	N/A	Prep procedure:	N/A
Sample type:	N/A	Analysis method:	NAREL RA226-EICHROM
Dry/wet weight:	N/A	Analyst:	PH
Ash/dry weight:	N/A	QC type:	RBK
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/26/2013 15:20	1000.0	AS71	GVJ

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Ra226	-2.15e-03	1.1e-02	2.7e-02	PCI	06/25/2013 09:52 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG 1300046

PREPARATION BATCH SUMMARY

Preparation batch #: 0010046L
Analysis method: NAREL RA226-EICHROM
Preparation procedure: N/A

NAREL Sample #	Client Sample ID	Analysis #	QC Type	Yield	± 2 σ Uncertainty	Analyst
B3.05702A	MW08, R34188-01	00666698W		91.50 %	7.02 %	PH
B3.05703B	MW14, R34188-02	00666702Y		93.19 %	7.07 %	PH
B3.05703B	MW14, R34188-02	00668315Z	DUP	90.07 %	6.91 %	PH
B3.05704C	10L31, R34188-03	00666706C		93.75 %	7.14 %	PH
B3.05705D	10L31-D, R34188-04	00666710Y		84.43 %	6.22 %	PH
LCS-00668317B *		00668317B	LCS	86.51 %	6.32 %	PH
RBK-00668316A *		00668316A	RBK	80.02 %	6.00 %	PH

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

QC RESULTS FOR BATCH 0010046L

NAREL Sample #	Analysis #	QC Type	Analyte	%R	RPD	Z	Evaluation
B3.05703B	00668315Z	DUP	RA226		12.2	0.37	PASS
LCS-00668317B	00668317B	LCS	RA226	89.2		-2.40	WARN
RBK-00668316A	00668316A	RBK	RA226				PASS

U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY
540 S. MORRIS AVE., MONTGOMERY, AL 36115
RA228 ANALYSES

REPORT OF SAMPLE DELIVERY GROUP #1300046

Project:	Kiskimere GW Well Investigation, Kiskimer, PA - 2013
Analysis method:	Radium-228 in Environmental Matrices
Report ID:	1300046-RA228
Report type:	Original
Date reported:	07/08/2013
Total pages in report:	16

SAMPLES

NAREL Sample #	Client Sample ID	Location	Matrix	Date Collected	Date Received
B3.05702A	MW08, R34188-01	PA:KISKIMERE	WATER-GROUND	05/22/2013	05/28/2013
B3.05703B	MW14, R34188-02	PA:KISKIMERE	WATER-GROUND	05/21/2013	05/28/2013
B3.05704C	10L31, R34188-03	PA:KISKIMERE	WATER-GROUND	05/21/2013	05/28/2013
B3.05705D	10L31-D, R34188-04	PA:KISKIMERE	WATER-GROUND	05/21/2013	05/28/2013

EXCEPTIONS

1. **Packaging and shipping** – No problems were observed.
2. **Documentation** – No problems were observed.
3. **Sample preparation** – No problems were encountered.
4. **Analysis** – No problems were encountered.
5. **Holding times** – No holding times were specified.

QUALITY CONTROL

1. **QC samples** – All QC analysis results met NAREL acceptance criteria.
2. **Yields** – All chemical yields were within acceptance limits.
3. **Instruments** – Response and background checks for all instruments used in these analyses met NAREL acceptance criteria.

ACCREDITATION

All analyses included in this data package are accredited by the Oregon Environmental Laboratory Accreditation Program (ORELAP) to the TNI standard.

CERTIFICATION

I certify that this data report complies with the terms and conditions of the Quality Assurance Project Plan, except as noted above. Release of the data contained in this report has been authorized by the Director of the Center for Environmental Radioanalytical Laboratory Science and the NAREL Quality Assurance Manager, or their designees, as verified by the following signatures.

Mary Wisdom 7-8-13

Mary F. Wisdom — Date
Quality Assurance Manager, NAREL

Cynthia White 7-11-13

Cynthia White — Date
Director, Center for Environmental Radioanalytical Laboratory Science

GENERAL INFORMATION

SAMPLE TYPES

BLD	Blind sample
FBK	Field blank
SAM	Normal sample

ANALYSIS QC TYPES

ANA	Normal analysis
DUP	Laboratory duplicate
LCS	Laboratory control sample (blank spike)
MS	Matrix spike
MSD	Matrix spike duplicate
RBK	Method blank
STD	External standard (used for ^{228}Ra yield determination)

QUALITY INDICATORS

RPD	Relative Percent Difference
%R	Percent Recovery
Z	Number of standard deviations by which a QC measurement differs from the expected value

RADIOCHEMICAL DATA

Radiochemical analyses usually require the subtraction of an instrument background measurement result from a gross sample measurement result. Both values are positive, but when the sample activity is low, random variations in the two measurements can cause the gross value to be less than the background, resulting in a measured activity less than zero. Although negative activities have no physical significance, they do have statistical importance, as for example in the evaluation of trends or the comparison of two groups of samples.

To the extent practical, it is the policy of NAREL to report results as generated, whether positive, negative, or zero, together with the "2-sigma" measurement uncertainty and a sample-specific estimate of the minimum detectable concentration (MDC). The measurement result, uncertainty, and MDC are always expressed in the same unit of measurement.

EVALUATION OF QC ANALYSES

A method blank result is considered unacceptable if it is more than 3 standard deviations below zero or more than 3 standard deviations above a predetermined upper control limit. For some analyses NAREL has set the upper control limit at zero. For others the control limit is a small positive number.

NAREL evaluates the results of duplicate and spike analyses using "*Z* scores." A *Z* score is the number of standard deviations by which the QC result differs from its ideal value. The score is considered acceptable if its absolute value is not greater than 3.

The *Z* score for a spiked sample is computed by dividing the difference between the measured value and the target value by the combined standard uncertainty of the difference.

The *Z* score for a duplicate analysis is computed by dividing the difference between the two measured values by the combined standard uncertainty of the difference. When the precision of paired MS/MSD analyses is evaluated, the native sample activity is subtracted from each measured value and the net concentrations are then converted to total activities before the *Z* score is computed.

Each standard uncertainty used to compute a *Z* score includes an additional fixed term to represent sources of measurement error other than counting error. This additional term is not used in the evaluation of method blanks.

NAREL reports the "relative percent difference," or RPD, between duplicate results and the "percent recovery," or %R, for spiked analyses, but does not use these values for evaluation.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

ANALYSIS SUMMARY

Analysis method: NAREL RA-05
Title: Radium-228 in Environmental Matrices

NAREL Sample #	Client Sample ID	QC Type	Date Completed	Preparation Batch #	Assay Batch #
B3.05702A	MW08, R34188-01		07/01/2013	0010064N	0017152C
B3.05703B	MW14, R34188-02		07/01/2013	0010064N	0017152C
B3.05703B	MW14, R34188-02	DUP	07/01/2013	0010064N	0017152C
B3.05703B	MW14, R34188-02	MS	07/01/2013	0010064N	0017152C
B3.05704C	10L31, R34188-03		07/01/2013	0010064N	0017152C
B3.05705D	10L31-D, R34188-04		07/01/2013	0010064N	0017152C
LCS-00668774Z *		LCS	07/02/2013	0010064N	0017153D
RBK-00668775A *		RBK	07/01/2013	0010064N	0017152C
STD-00668778D *		STD	07/01/2013	0010064N	0017152C
STD-00668779E *		STD	07/02/2013	0010064N	0017153D

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	B3.05702A	Amount analyzed:	1.000e+00 L
Client sample ID:	MW08, R34188-01	Preparation batch #:	0010064N
Matrix:	WATER-GROUND	Assay batch #:	0017152C
Collected:	2013-05-22 11:35 EDT	Prep procedure:	NAREL RA-03
Sample type:	SAM	Analysis method:	NAREL RA-05
Dry/wet weight:	N/A	Analyst:	VH
Ash/dry weight:	N/A	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
07/01/2013 11:10	100.0	QA1A	GVJ

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Ra228	8.83e-01	5.1e-01	7.6e-01	PCI/L	06/27/2013 14:28 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	B3.05703B	Amount analyzed:	1.000e+00 L
Client sample ID:	MW14, R34188-02	Preparation batch #:	0010064N
Matrix:	WATER-GROUND	Assay batch #:	0017152C
Collected:	2013-05-21 14:45 EDT	Prep procedure:	NAREL RA-03
Sample type:	SAM	Analysis method:	NAREL RA-05
Dry/wet weight:	N/A	Analyst:	VH
Ash/dry weight:	N/A	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
07/01/2013 11:10	100.0	QA1B	GVJ

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Ra228	4.99e-01	4.6e-01	7.4e-01	PCI/L	06/27/2013 14:28 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	B3.05703B	Amount analyzed:	1.000e+00 L
Client sample ID:	MW14, R34188-02	Preparation batch #:	0010064N
Matrix:	WATER-GROUND	Assay batch #:	0017152C
Collected:	2013-05-21 14:45 EDT	Prep procedure:	NAREL RA-03
Sample type:	SAM	Analysis method:	NAREL RA-05
Dry/wet weight:	N/A	Analyst:	VH
Ash/dry weight:	N/A	QC type:	DUP
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
07/01/2013 11:10	100.0	QA1C	GVJ

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Ra228	4.31e-01	4.7e-01	7.7e-01	PCI/L	06/27/2013 14:28 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	B3.05703B	Amount analyzed:	1.000e+00 L
Client sample ID:	MW14, R34188-02	Preparation batch #:	0010064N
Matrix:	WATER-GROUND	Assay batch #:	0017152C
Collected:	2013-05-21 14:45 EDT	Prep procedure:	NAREL RA-03
Sample type:	SAM	Analysis method:	NAREL RA-05
Dry/wet weight:	N/A	Analyst:	VH
Ash/dry weight:	N/A	QC type:	MS
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
07/01/2013 11:10	100.0	QA1D	GVJ

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Ra228	1.51e+01	1.5e+00	7.1e-01	PCI/L	06/27/2013 14:28 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	B3.05704C	Amount analyzed:	1.000e+00 L
Client sample ID:	10L31, R34188-03	Preparation batch #:	0010064N
Matrix:	WATER-GROUND	Assay batch #:	0017152C
Collected:	2013-05-21 18:20 EDT	Prep procedure:	NAREL RA-03
Sample type:	SAM	Analysis method:	NAREL RA-05
Dry/wet weight:	N/A	Analyst:	VH
Ash/dry weight:	N/A	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
07/01/2013 11:10	100.0	QA2A	GVJ

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Ra228	3.78e-01	4.2e-01	6.9e-01	PCI/L	06/27/2013 14:28 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	B3.05705D	Amount analyzed:	1.000e+00 L
Client sample ID:	10L31-D, R34188-04	Preparation batch #:	0010064N
Matrix:	WATER-GROUND	Assay batch #:	0017152C
Collected:	2013-05-21 18:34 EDT	Prep procedure:	NAREL RA-03
Sample type:	SAM	Analysis method:	NAREL RA-05
Dry/wet weight:	N/A	Analyst:	VH
Ash/dry weight:	N/A	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
07/01/2013 11:10	100.0	QA2B	GVJ

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Ra228	9.88e-02	4.1e-01	7.0e-01	PCI/L	06/27/2013 14:28 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	LCS-00668774Z	Amount analyzed:	1.000e+00 SAMP
Client sample ID:	N/A	Preparation batch #:	0010064N
Matrix:	N/A	Assay batch #:	0017153D
Collected:	N/A	Prep procedure:	NAREL RA-03
Sample type:	N/A	Analysis method:	NAREL RA-05
Dry/wet weight:	N/A	Analyst:	VH
Ash/dry weight:	N/A	QC type:	LCS
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
07/02/2013 10:36	100.0	QA2B	GVJ

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Ra228	1.43e+01	1.4e+00	6.6e-01	PCI	06/27/2013 14:28 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	RBK-00668775A	Amount analyzed:	1.000e+00 SAMP
Client sample ID:	N/A	Preparation batch #:	0010064N
Matrix:	N/A	Assay batch #:	0017152C
Collected:	N/A	Prep procedure:	NAREL RA-03
Sample type:	N/A	Analysis method:	NAREL RA-05
Dry/wet weight:	N/A	Analyst:	VH
Ash/dry weight:	N/A	QC type:	RBK
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
07/01/2013 11:10	100.0	QA2C	GVJ

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Ra228	5.75e-01	4.3e-01	6.7e-01	PCI	06/27/2013 14:28 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	STD-00668778D	Amount analyzed:	1.000e+00 ML
Client sample ID:	N/A	Preparation batch #:	0010064N
Matrix:	N/A	Assay batch #:	0017152C
Collected:	N/A	Prep procedure:	NAREL RA-03
Sample type:	N/A	Analysis method:	NAREL RA-05
Dry/wet weight:	N/A	Analyst:	VH
Ash/dry weight:	N/A	QC type:	STD
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
07/01/2013 11:10	100.0	QA2D	GVJ

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Ra228	8.56e+01	5.3e+00		%	06/27/2013 14:28 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1300046

SAMPLE ANALYSIS REPORT

Lab sample #:	STD-00668779E	Amount analyzed:	1.000e+00 ML
Client sample ID:	N/A	Preparation batch #:	0010064N
Matrix:	N/A	Assay batch #:	0017153D
Collected:	N/A	Prep procedure:	NAREL RA-03
Sample type:	N/A	Analysis method:	NAREL RA-05
Dry/wet weight:	N/A	Analyst:	VH
Ash/dry weight:	N/A	QC type:	STD
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
07/02/2013 10:36	100.0	QA2C	GVJ

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Ra228	8.53e+01	5.2e+00		%	06/27/2013 14:28 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG 1300046

PREPARATION BATCH SUMMARY

Preparation batch #: 0010064N
Analysis method: NAREL RA-05
Preparation procedure: NAREL RA-03

NAREL Sample #	Client Sample ID	Analysis #	QC Type	Yield	± 2 σ Uncertainty	Analyst
B3.05702A	MW08, R34188-01	00666697V		N/A		VH
B3.05703B	MW14, R34188-02	00666701X		N/A		VH
B3.05703B	MW14, R34188-02	00668776B	DUP	N/A		VH
B3.05703B	MW14, R34188-02	00668777C	MS	N/A		VH
B3.05704C	10L31, R34188-03	00666705B		N/A		VH
B3.05705D	10L31-D, R34188-04	00666709F		N/A		VH
LCS-00668774Z *		00668774Z	LCS	N/A		VH
RBK-00668775A *		00668775A	RBK	N/A		VH
STD-00668778D *		00668778D	STD	N/A		VH
STD-00668779E *		00668779E	STD	N/A		VH

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

QC RESULTS FOR BATCH 0010064N

NAREL Sample #	Analysis #	QC Type	Analyte	%R	RPD	Z	Evaluation
B3.05703B	00668776B	DUP	RA228		14.7	-0.20	PASS
LCS-00668774Z	00668774Z	LCS	RA228	99.4		-0.08	PASS
B3.05703B	00668777C	MS	RA228	101.4		0.16	PASS
RBK-00668775A	00668775A	RBK	RA228				PASS

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG 1300046

ASSAY BATCH SUMMARY

EXTERNAL STANDARD

Assay Batch	Analysis #	Analyte	Standard Concentration	Reference Date	Yield	± 2 σ Uncertainty
0017152C	00668778D	RA228	9.07e+01 PCI/ML	04/19/2010	85.63 %	5.31 %
0017153D	00668779E	RA228	9.07e+01 PCI/ML	04/19/2010	85.28 %	5.23 %

SAMPLES ANALYZED

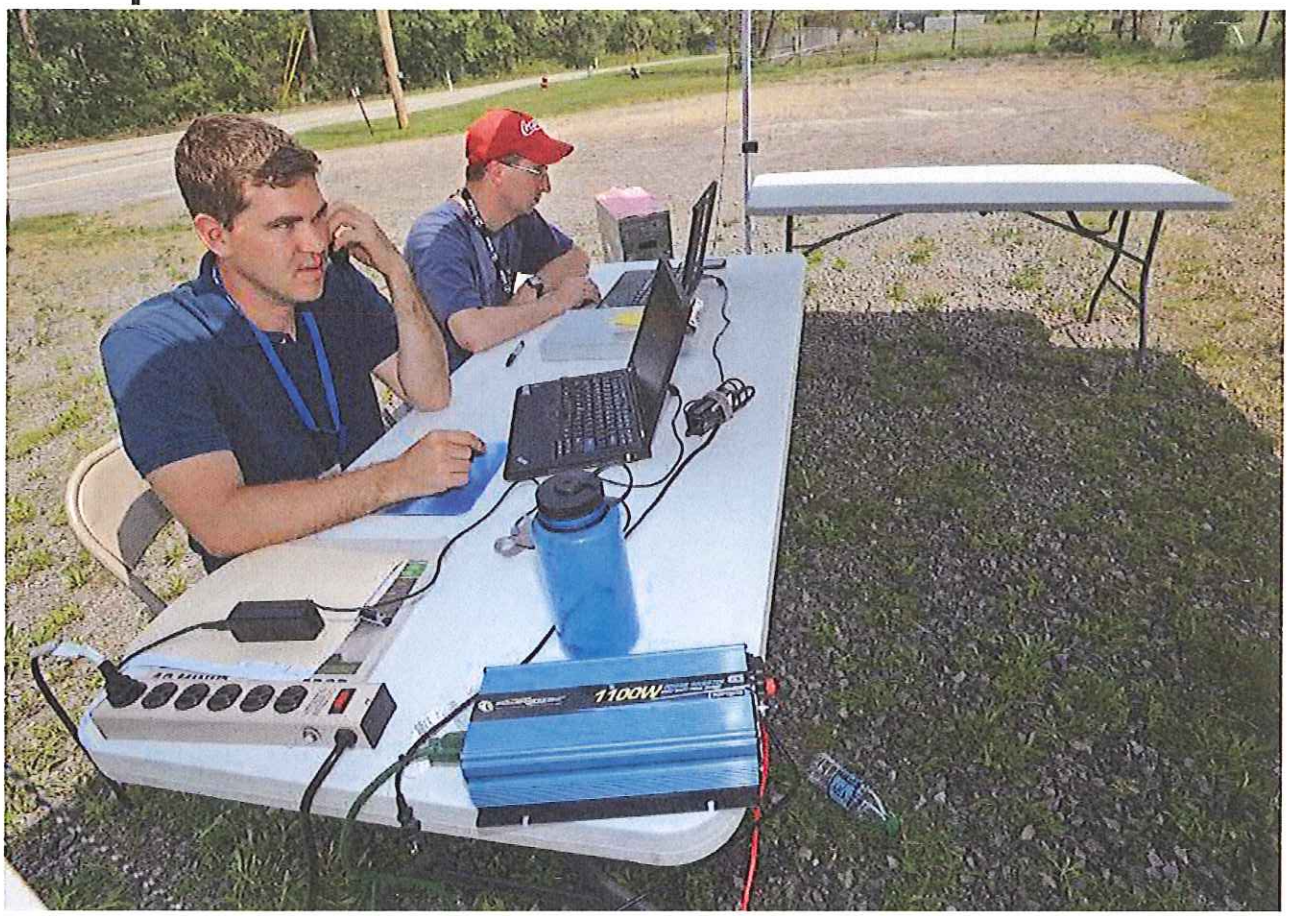
NAREL Sample #	QC Type	Aliquot Size	Completion Date	Assay Batch
B3.05702A		1.00e+00 L	07/01/2013	0017152C
B3.05703B		1.00e+00 L	07/01/2013	0017152C
B3.05703B	DUP	1.00e+00 L	07/01/2013	0017152C
B3.05703B	MS	1.00e+00 L	07/01/2013	0017152C
B3.05704C		1.00e+00 L	07/01/2013	0017152C
B3.05705D		1.00e+00 L	07/01/2013	0017152C
LCS-00668774Z *	LCS	1.00e+00 SAMP	07/02/2013	0017153D
RBK-00668775A *	RBK	1.00e+00 SAMP	07/01/2013	0017152C
STD-00668778D *	STD	1.00e+00 ML	07/01/2013	0017152C
STD-00668779E *	STD	1.00e+00 ML	07/02/2013	0017153D

Samples marked with an asterisk (*) are not in SDG #1300046 but were analyzed with it for QC purposes

ATTACHMENT 3

PRESS CLIPPINGS

More water tests scheduled at nuke waste dump



Eric Felack | Valley News Dispatch

Suddha Graves, left, and Matthew Gadd, employees for TechLaw, an environmental contractor for the EPA, import data on laptops in preparation for water testing at the SLDA site in Parks Township on Tuesday, May 21, 2013.

About Mary Ann Thomas

By Mary Ann Thomas

Published: Wednesday, May 22, 2013, 12:51 a.m.
Updated: Thursday, May 23, 2013

The Army Corps of Engineers is testing the groundwater at the nuclear waste dump in Parks to be "prudent" and to respond to a sister agency's call for more testing.

"We don't have to, but we think it's a good idea," said Mike Helbling, project manager for the Army Corps of Engineers, Pittsburgh District.

"Both the Corps and the EPA think it is a prudent approach."

So far, the Corps and the federal Environmental Protection Agency have not found any nuclear or chemical contamination migrating from the 44-acre dump, known as the Shallow Land Disposal Area, along Route 66.

However, residents have been concerned about the possibility.

The Corps has documented the presence of chemical contaminants in the groundwater, including TCE, but not outside of its boundaries.

The EPA, backed by Sen. Bob Casey, called for more testing of groundwater outside of the dump to allay residents' concerns.

The Army Corps is more than a decade into the planning of the removal of nuclear waste at a dump with a series of waste pits that was owned by the former Nuclear Materials and Equipment Corp. and later Babcock & Wilcox (BWX Technologies).

The Corps halted the cleanup, estimated to cost between $250 million and $500 million, shortly after it began in 2011 because a contractor allegedly mishandled some nuclear waste and was unearthing unexpectedly large amounts of nuclear material.

A new contractor is expected in 2015 to re-start the cleanup that could last for a decade, according to Helbling.

Some nearby residents in Kiskimere, a small village that abuts the site, and Leechburg environmental activist Patty Ameno have been concerned about radioactive and chemical contaminants migrating from the dump to nearby homes and the Kiski River.

"This new round of testing is important given the fact that new contractors and work will be on this site and there should be rigorous, continual testing," Ameno said. "The agencies doing the testing need access to all areas of the site and off-site," she said.

"With the test of the groundwater so far, we have not found anything going off site to raise concern," said Lisa Denmark-Johnson, site assessment manager for EPA Region III. "We are gathering more test results to make sure that remains true."

After testing wells on private property and other water sources close to the nuclear dump, the EPA did not find any contamination issues last year but called for more testing to protect residents.

The site owner, Babcock & Wilcox, and the Army Corps of Engineers have been testing the groundwater for years.

Mary Ann Thomas 724-226-4691
Staff Reporter
Valley News Dispatch

Details

About the site

Owned by BWX Technologies (also known as Babcock & Wilcox), the waste dump, known formally as the Shallow Land Disposal Area, received chemical and radioactive waste from a former nuclear fuels plant in Apollo owned by the Nuclear Materials and Equipment Corp. (NUMEC) and its successors, the Atlantic Richfield Co. and BWX Technologies.

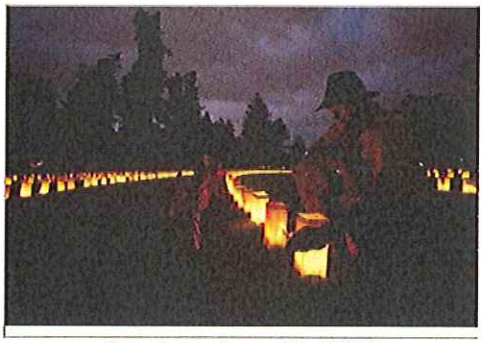
The Parks site received nuclear waste from 1960 into the early 1970s.

For more information, visit the EPA website about the nuclear waste dump in Parks Township at: http://www.epaosc.org/site/doc_list.aspx?site_id=8233.

The Army Corps of Engineers also maintains a website about the Parks dump site: http://www.lrp.usace.army.mil/Missions/Plannin

VIDEO

Daily Photo Galleries



Sunday - June 30, 2013

AlleKiski Valley Photo Galleries

The Corps last tested the ground water in 2012, according to Helbling. But because cleanup operations ceased and won't resume for a few years, the Corps wanted to keep testing the groundwater, he said.

"The EPA and Corps are in agreement on the sufficiency of the groundwater well network on-site," Helbling said. "However, the EPA would like to see additional groundwater wells located outside of the fence line."

Rich Rupert, EPA's on-scene coordinator, is working with the Corps this week. The EPA will split samples with the Corps, with each agency using different independent laboratories.

EPA is planning in June to install monitoring wells at four off-site locations, according to Rupert.

Mary Ann Thomas is a staff writer for Trib Total Media. She can be reached at 724-226-4691 or mthomas@tribweb.com.

Penn State New Ken celebrates 25 years of offering classes to youth

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Most-Read AlleKiski Valley

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11. 2 miners freed from Kiski Township mine after rock falls

ATTACHMENT 4

WELL CONSTRUCTION TABLE

USACE Northing Eastings
From: SLDA_GW_Locations_2010.dbf

LOC_KEY	LOCID	NCOORD	ECOORD	CASING	MPELEV	SURFELEV	ELEVUNITS	SCREEN_TOP	SCREEN_BOT	DEPTH	CRDUNITS	LTCCODE	WTCCODE	GZCCODE	HYDRO_UNIT	REMARK	LOCDESC	Dispositio	AnnualSam
8	01U13	475012.00	1460059.00	NA	NA	NA	NA				FT	BH	PZ	SS	SS	Abandoned	Borings Advanced During the Site Characterization (1990-1993)	To Be Decommissioned	
11	01U17	474920.75	1460132.90	NA	917.06	912.30	FT				FT	BH	PZ	SS	SS		Borings Advanced During the Site Characterization (1990-1993)	To Be Decommissioned	
27	02U13	474875.66	1460324.19	NA	923.45	921.00	FT			14.83	FT	BH	PZ	SS	SS		Borings Advanced During the Site Characterization (1990-1993)	To Be Decommissioned	
59	07U05	474753.00	1460566.00	NA	NA	NA	NA			12.00	FT	BH	PZ	SS	SS	Abandoned	Borings Advanced During the Site Characterization (1990-1993)	To Be Decommissioned	
89	10L18	475393.00	1459295.00	NA	NA	NA	NA			24.25	FT	BH	PZ	UF	UF	Abandoned	Borings Advanced During the Site Characterization (1990-1993)	To Be Decommissioned	
90	10L19	475496.00	1459449.00	NA	NA	NA	NA			20.33	FT	BH	PZ	UF	UF	Abandoned	Borings Advanced During the Site Characterization (1990-1993)	To Be Decommissioned	
94	10L23	475571.00	1459573.00	NA	NA	NA	NA			16.00	FT	BH	PZ	UF	UF	Abandoned	Borings Advanced During the Site Characterization (1990-1993)	To Be Decommissioned	
194	MW-01	475701.63	1459639.30	845.79	845.32	843.50	FT	6.00	18.00	21.00	FT	WL	MNW	UF	UF		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Unaffected	no
195	MW-10	474636.00	1460604.00	NA	NA	NA	NA	25.00	38.00	41.00	FT	WL	MNW	1S	WB	Abandoned	Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Decommissioned	
197	MW-11D	474996.87	1460158.33	909.8	909.5	907.20	FT		41.50	42.00	FT	WL	MNW	2S	2S		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Unaffected	no
198	MW-11S	475006.61	1460164.38	909.27	908.81	907.10	FT	3.00	10.00	13.00	FT	WL	MNW	SS	SS		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Unaffected	no
200	MW-12D	474949.69	1460378.34	919.31	918.92	916.40	FT	19.00	32.00	32.50	FT	WL	MNW	1S	1S		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	To Be Decommissioned	
201	MW-13	474513.42	1460608.55	948.68	947.97	946.30	FT	27.00	40.00	41.00	FT	WL	MNW	1S	WB		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Unaffected	yes
202	MW-14	474365.98	1460405.15	947.33	946.38	945.00	FT	17.00	30.00	32.00	FT	WL	MNW	1S	WB		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Unaffected	yes
203	MW-15	474519.64	1460320.18	940.31	939.47	937.70	FT	17.50	29.50	30.00	FT	WL	MNW	1S	WB		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Unaffected	yes
204	MW-16	474597.42	1460730.26	947.68	947.61	944.90	FT	96.50	109.50	115.00	FT	WL	MNW	UF	UF		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Decommissioned	
205	MW-16BC	474585.62	1460734.25	946.87	946.63	944.30	FT	185.50	198.00	200.00	FT	WL	MNW	DB	DB		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Decommissioned	
206	MW-17	474967.50	1460237.46	913.71	913.47	911.50	FT	39.00	51.00	79.00	FT	WL	MNW	2S	2S		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Unaffected	no
208	MW-19	475677.35	1459470.99	861.45	861.18	858.80	FT	92.00	105.00	125.50	FT	WL	MNW	DB	DB		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Unaffected	no
209	MW-02	475514.39	1459671.58	884.22	883.69	882.30	FT	75.00	88.00	89.00	FT	WL	MNW	DB	DB		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Unaffected	no
210	MW-20	475435.23	1459560.73	889.87	889.4	887.50	FT	41.50	51.50	52.50	FT	WL	MNW	UF	UF		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Unaffected	yes
211	MW-22	475257.29	1459401.92	893.41	893.05	890.80	FT	98.00	110.00	111.00	FT	WL	MNW	DB	DB		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Unaffected	yes
212	MW-23	475530.51	1459309.79	863.79	863.43	861.10	FT	53.00	65.00	65.00	FT	WL	MNW	DB	DB		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Decommissioned	
213	MW-24	474315.97	1460489.11	949.17	948.58	946.70	FT	23.00	35.00	116.50	FT	WL	MNW	1S	WB		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Decommissioned	
214	MW-25	474997.03	1460085.62	910.07	909.54	907.30	FT	24.00	35.00	35.00	FT	WL	MNW	1S	1S		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	To Be Decommissioned	
215	MW-26	474874.01	1460250.94	919.56	919.02	916.90	FT	24.00	36.00	36.00	FT	WL	MNW	1S	1S		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Unaffected	no
216	MW-27	474839.93	1460615.22	929.99	929.5	927.30	FT	24.00	36.00	36.00	FT	WL	MNW	1S	1S		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	To Be Decommissioned	
217	MW-28	474859.00	1460597.00	NA	NA	NA	NA	39.00	50.00	51.00	FT	WL	MNW	1S	1SH	Abandoned	Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	To Be Decommissioned	
218	MW-29	474997.15	1460195.22	912.53	912	909.70	FT	24.00	36.00	36.00	FT	WL	MNW	1S	1SH		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Unaffected	no
219	MW-02A	475500.91	1459653.22	885.43	884.72	883.30	FT	41.00	49.50	50.00	FT	WL	MNW	UF	UF		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Unaffected	yes
220	MW-03	475394.45	1459519.68	890.5	889.96	888.30	FT	39.00	52.00	52.50	FT	WL	MNW	UF	UF		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Unaffected	yes
222	MW-30A	474253.98	1460609.40	953.14	952.87	950.30	FT	117.00	126.00		FT	WL	MNW	UF	UF		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Decommissioned	
223	MW-31	474669.69	1459663.01	930.91	930.61	928.60	FT	87.00	98.50		FT	WL	MNW	UF	UF		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Decommissioned	
224	MW-32	474745.92	1460072.69	925.89	925.5	923.50	FT	37.00	60.00	63.00	FT	WL	MNW	1S	1S		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Unaffected	yes
225	MW-33	474515.36	1460328.97	940.76	940.32	938.40	FT	48.00	82.00	82.00	FT	WL	MNW	2S	2S		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Unaffected	yes
226	MW-34A	474743.01	1460055.63	926.84	925.88	924.30	FT	156.00	185.00	190.00	FT	WL	MNW	DB	DB		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Unaffected	yes
227	MW-35	474981.10	1460241.46	913.68	913.29	911.20	FT	140.00	165.00	170.00	FT	WL	MNW	DB	DB		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Unaffected	no
228	MW-36	475560.05	1459375.39	862.39	861.98	858.70	FT	57.00	80.00	80.00	FT	WL	MNW	DB	DB		Monitoring Wells Installed During 1995 Field Investigation	Decommissioned	
229	MW-37	474864.49	1460596.71	926.58	926.23	924.30	FT	55.00	67.17	75.00	FT	WL	MNW	2S	2S		Monitoring Wells Installed During 1995 Field Investigation	To Be Decommissioned	
230	MW-38	474628.85	1460617.36	944.04	943.81	941.70	FT	48.00	60.00	77.50	FT	WL	MNW	1S	1S		Monitoring Wells Installed During 1995 Field Investigation	Decommissioned	
231	MW-39	475248.58	1459391.74	891.99	891.72	890.00	FT	43.50	56.45	60.50	FT	WL	MNW	UF	UF		Monitoring Wells Installed During 1995 Field Investigation	Unaffected	yes
232	MW-04	475232.00	1459378.00	NA	NA	NA	NA	42.00	55.50	56.00	FT	WL	MNW	UF	UF	Abandoned	Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Unaffected	no
233	MW-40	474510.49	1460314.48	939.63	939.39	937.30	FT	167.50	189.65	191.50	FT	WL	MNW	DB	DB		Monitoring Wells Installed During 1995 Field Investigation	Unaffected	yes
234	MW-41	474948.60	1460120.09	912.86	912.59	910.60	FT	22.50	34.65	50.00	FT	WL	MNW	1S	1S		Monitoring Wells Installed During 1995 Field Investigation	To Be Decommissioned	
236	MW-42	474874.08	1460180.20	916.5	916.2	914.50	FT	27.50	39.60	50.00	FT	WL	MNW	1S	1S		Monitoring Wells Installed During 1995 Field Investigation	To Be Decommissioned	
237	MW-43	474929.41	1460278.27	916.32	916.07	914.30	FT	33.00	46.00	55.00	FT	WL	MNW	2S	1SH		Monitoring Wells Installed During 1995 Field Investigation	Unaffected	no
238	MW-44	474794.04	1460541.96	930.98	930.66	928.90	FT	40.00	52.00	60.00	FT	WL	MNW	1S	1SH		Monitoring Wells Installed During 1995 Field Investigation	To Be Decommissioned	
239	MW-45	474707.54	1460371.90	929.9	929.64	927.70	FT	53.00	65.17	80.00	FT	WL	MNW	2S	2S		Monitoring Wells Installed During 1995 Field Investigation	Unaffected	yes
240	MW-46	474757.33	1460209.91	924.18	923.86	922.40	FT	77.70	89.70	93.00	FT	WL	MNW	UF	UF		Monitoring Wells Installed During 1995 Field Investigation	Unaffected	yes
241	MW-05	475426.21	1459213.58	865.49	864.9	862.90	FT	12.50	25.50	26.00	FT	WL	MNW	UF	UF		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Unaffected	yes
242	MW-06	475555.95	1459366.56	862.36	861.82	860.00	FT	14.50	25.00	30.00	FT	WL	MNW	UF	UF		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Decommissioned	
243	MW-07	474862.82	1460008.03	921.52	920.97	919.10	FT	21.00	31.00	33.00	FT	WL	MNW	1S	1S		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Unaffected	yes
244	MW-08	474646.43	1460245.79	931.77	931.27	929.30	FT	22.00	34.00	34.00	FT	WL	MNW	1S	1S		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Unaffected	yes
246	MW-09A	474502.63	1460478.56	945.45	944.9	943.30	FT			41.00	FT	WL	MNW	1S			Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Unaffected	yes
249	PZ-01	475012.32	1460057.73	907.53	907.08	905.30	FT	5.50	17.00	18.00	FT	PZ	PZ	SS	SS		From CAD, NAD 27	To Be Decommissioned	
250	PZ-02	474931.25	1460146.14	913.49	912.86	910.70	FT	7.00	18.00	18.00	FT	PZ	PZ	SS	SS		From CAD, NAD 27	To Be Decommissioned	
252	PZ-03A	474874.50	1460282.09	920.72	920.18	918.20	FT	6.00	18.00	18.00	FT	PZ	PZ	SS	SS		From CAD, NAD 27	To Be Decommissioned	
253	PZ-04	474923.07	1460472.73	920.85	920.61	918.80	FT	7.00	18.00	20.00	FT	PZ	PZ	SS	SS		From CAD, NAD 27	To Be Decommissioned	
254	PZ-05	474834.66	1460595.88	929.78	929.48	927.40	FT	6.50	18.00	19.00	FT	PZ	PZ	SS	SS		From CAD, NAD 27	To Be Decommissioned	
256	PZ-06A	474678.01	1460656.96	943.23	942.82	940.80	FT	6.50	18.00	20.00	FT	PZ	PZ	SS	SS		From CAD, NAD 27	To Be Decommissioned	
257	PZ-07	474602.29	1460545.24	NA	942.67	941.10	FT	6.00	18.00	20.00	FT	PZ	PZ	SS	SS		From CAD, NAD 27	To Be Decommissioned	

USACE Northing Eastings
From: SLDA_GW_Locations_2010.dbf

LOC_KEY	LOCID	NCOORD	ECOORD	CASING	MPELEV	SURFELEV	ELEVUNITS	SCREEN_TOP	SCREEN_BOT	DEPTH	CRDUNITS	LTCCODE	WTCCODE	GZCCODE	HYDRO_UNIT	REMARK	LOCDESC	Dispositio	AnnualSam
258	PZ-08	474666.96	1460375.71	933.31	932.98	930.40	FT	6.50	17.50	18.00	FT	PZ	PZ	SS	SS		From CAD, NAD 27	Unaffected	no
259	PZ-09	474527.33	1460302.34	938.49	937.66	935.90	FT	6.00	18.00	18.00	FT	PZ	PZ	SS	SS			Unaffected	yes
310	TWSP 01-01	474995.61	1460054.38	NA	909.36	906.90	FT	6.00	11.00	11.50	FT	SP	TWS	SS	SS		Installed in 1993	To Be Decommissioned	
311	TWSP 01-12	474815.74	1460170.79	NA	921.57	919.20	FT	6.00	9.50	10.20	FT	SP	TWS	SS	SS		Installed in 1995	To Be Decommissioned	
312	TWSP 01-02	474963.75	1460077.77	NA	912.02	909.90	FT	5.50	10.50	11.00	FT	SP	TWS	SS	SS		Installed in 1993	To Be Decommissioned	
313	TWSP 01-03	474923.31	1460106.93	NA	915.17	912.90	FT	6.00	11.00	11.50	FT	SP	TWS	SS	SS		Installed in 1993	To Be Decommissioned	
314	TWSP 01-04	474883.37	1460136.54	NA	917.62	915.50	FT	6.00	11.00	11.50	FT	SP	TWS	SS	SS		Installed in 1993	To Be Decommissioned	
315	TWSP 01-05	474845.66	1460168.38	NA	920.92	917.60	FT	5.50	9.00	9.50	FT	SP	TWS	SS	SS		Installed in 1993	To Be Decommissioned	
316	TWSP 01-06	474805.97	1460200.97	NA	922.26	919.70	FT	5.50	10.50	11.00	FT	SP	TWS	SS	SS		Installed in 1993	To Be Decommissioned	
317	TWSP 01-07	474979.26	1460065.51	NA	910.94	908.50	FT	6.00	11.00	11.70	FT	SP	TWS	SS	SS		Installed in 1995	To Be Decommissioned	
318	TWSP 10-01	475553.92	1459569.29	NA	853.05	850.70	FT	5.50	15.50	16.00	FT	SP	TWS	UF	UF		Installed in 1993	To Be Decommissioned	
319	TWSP 10-02	475530.70	1459523.57	NA	854.3	852.00	FT	6.00	16.00	16.50	FT	SP	TWS	UF	UF		Installed in 1993	To Be Decommissioned	
320	TWSP 10-03	475502.29	1459482.20	NA	855.79	852.90	FT	7.00	17.00	17.50	FT	SP	TWS	UF	UF		Installed in 1993	To Be Decommissioned	
321	TWSP 02-01	474816.94	1460263.83	NA	923.82	921.60	FT	6.00	12.00	12.50	FT	SP	TWS	SS	SS		Installed in 1993	To Be Decommissioned	
322	TWSP 02-02	474839.57	1460302.39	NA	924.26	922.20	FT	6.00	14.00	14.50	FT	SP	TWS	SS	SS		Installed in 1993	To Be Decommissioned	
323	TWSP 02-03	474866.76	1460340.87	NA	923.72	921.70	FT	5.50	14.50	15.00	FT	SP	TWS	SS	SS		Installed in 1993	To Be Decommissioned	
324	TWSP 02-04	474896.34	1460385.69	NA	923.43	921.00	FT	6.00	14.50	15.00	FT	SP	TWS	SS	SS		Installed in 1993	To Be Decommissioned	
325	TWSP 02-05	474825.38	1460281.35	NA	924.7	921.40	FT	6.00	12.00	12.80	FT	SP	TWS	SS	SS		Installed in 1995	To Be Decommissioned	
326	TWSP 02-06	474851.13	1460320.59	NA	923.56	921.60	FT	6.00	11.50	12.20	FT	SP	TWS	SS	SS		Installed in 1995	To Be Decommissioned	
327	TWSP 02-07	474881.82	1460361.41	NA	923.64	921.40	FT	6.00	15.00	15.50	FT	SP	TWS	SS	SS		Installed in 1995	To Be Decommissioned	
328	TWSP 03-02	474886.85	1460497.02	NA	924.34	921.70	FT	6.00	10.00	10.50	FT	SP	TWS	SS	SS		Installed in 1993	To Be Decommissioned	
329	TWSP 04-01	474801.70	1460597.70	NA	933.61	931.30	FT	5.50	13.50	14.00	FT	SP	TWS	SS	SS		Installed in 1993	To Be Decommissioned	
330	TWSP 04-02	474781.13	1460631.39	NA	936.44	934.20	FT	7.00	17.00	17.50	FT	SP	TWS	SS	SS		Installed in 1993	To Be Decommissioned	
331	TWSP 05-01	474766.53	1460660.37	NA	938.08	935.60	FT	5.50	12.50	13.00	FT	SP	TWS	SS	SS		Installed in 1993	To Be Decommissioned	
332	TWSP 05-02	474792.61	1460693.54	934.84	934.84	934.70	FT	5.50	13.00	13.50	FT	SP	TWS	SS	SS		Installed in 1993	To Be Decommissioned	
333	TWSP 05-03	474813.83	1460717.53	NA	935.84	933.40	FT	5.50	13.50	14.00	FT	SP	TWS	SS	SS		Installed in 1993	To Be Decommissioned	
334	TWSP 05-04	474766.47	1460660.67	NA	936.66	934.10	FT	6.00	13.00	13.50	FT	SP	TWS	SS	SS		Installed in 1995	To Be Decommissioned	
335	TWSP 05-05	474770.77	1460647.97	NA	937.6	935.20	FT	5.80	15.00	15.80	FT	SP	TWS	SS	SS		Installed in 1995	To Be Decommissioned	
336	TWSP 06-01	474766.35	1460577.55	NA	935.2	932.90	FT	6.00	12.50	13.00	FT	SP	TWS	SS	SS		Installed in 1993	To Be Decommissioned	
337	TWSP 06-02	474731.90	1460614.45	NA	939.28	937.10	FT	5.00	15.00	15.50	FT	SP	TWS	SS	SS		Installed in 1993	To Be Decommissioned	
338	TWSP 06-03	474696.11	1460649.79	NA	942.16	939.70	FT	6.50	16.50	17.00	FT	SP	TWS	SS	SS		Installed in 1993	To Be Decommissioned	
339	TWSP 06-04	474715.09	1460631.85	NA	941.53	938.60	FT	6.00	16.00	16.50	FT	SP	TWS	SS	SS		Installed in 1995	To Be Decommissioned	
340	TWSP 07-01	474740.19	1460545.95	NA	935.62	933.20	FT	6.00	14.50	15.00	FT	SP	TWS	SS	SS		Installed in 1993	To Be Decommissioned	
341	TWSP 07-02	474701.57	1460577.95	NA	939.73	937.50	FT	5.50	15.50	16.00	FT	SP	TWS	SS	SS		Installed in 1993	To Be Decommissioned	
342	TWSP 07-03	474662.15	1460608.74	NA	943.21	939.30	FT	7.50	17.50	18.00	FT	SP	TWS	SS	SS		Installed in 1993	To Be Decommissioned	
343	TWSP 07-04	474753.41	1460561.23	NA	935.54	933.20	FT	6.00	14.60	15.20	FT	SP	TWS	SS	SS		Installed in 1995	To Be Decommissioned	
344	TWSP 07-05	474719.00	1460563.87	NA	937.56	935.60	FT	6.00	13.00	13.50	FT	SP	TWS	SS	SS		Installed in 1995	To Be Decommissioned	
345	TWSP 07-06	474681.68	1460592.83	NA	941.81	939.30	FT	6.00	15.00	15.60	FT	SP	TWS	SS	SS		Installed in 1995	To Be Decommissioned	
346	TWSP 08-01	474627.65	1460562.82	NA	941.63	939.30	FT	8.00	18.00	18.50	FT	SP	TWS	SS	SS		Installed in 1993	To Be Decommissioned	
347	TWSP 08-02	474615.97	1460572.22	NA	943.49	941.30	FT	9.50	19.50	20.00	FT	SP	TWS	SS	SS		Installed in 1993	To Be Decommissioned	
348	TWSP 09-01	474819.19	1460382.93	NA	926.75	924.50	FT	6.50	11.50	12.00	FT	SP	TWS	SS	SS		Installed in 1993	To Be Decommissioned	
349	TWSP 09-02	474839.49	1460417.89	NA	926.37	924.50	FT	6.00	12.00	12.50	FT	SP	TWS	SS	SS		Installed in 1993	To Be Decommissioned	
350	TWSP 09-03	474860.55	1460452.06	NA	926.13	924.30	FT	6.00	12.00	12.50	FT	SP	TWS	SS	SS		Installed in 1993	To Be Decommissioned	
351	TWSP 09-04	474830.25	1460398.56	NA	926.7	924.40	FT	6.00	10.50	11.00	FT	SP	TWS	SS	SS		Installed in 1995	To Be Decommissioned	
352	TWSP 09-05	474851.32	1460434.89	NA	926.43	924.40	FT	6.00	11.00	11.80	FT	SP	TWS	SS	SS		Installed in 1995	To Be Decommissioned	
388	01U29	474985.00	1460104.00	NA	NA	NA	NA				FT	BH	PZ	SS	SS	Abandoned	Borings Advanced During the Site Characterization (1990-1993)	To Be Decommissioned	
438	10L32	475637.54	1459665.53	848.69	848.69	845.50	FT				FT	BH	PZ	UF	UF		Borings Advanced During the Site Characterization (1990-1993)	Unaffected	no
439	10L31	475611.15	1459495.75	859.84	859.84	857.00	FT				FT	BH	PZ	UF	UF		Borings Advanced During the Site Characterization (1990-1993)	Unaffected	yes
445	10L30	475314.21	1459214.16	864.38	864.38	861.60	FT				FT	BH	PZ	UF	UF		Borings Advanced During the Site Characterization (1990-1993)	Decommissioned	
452	02U11	474863.23	1460294.30	NA	925.99	920.70	FT			17.00	FT	BH	PZ	SS	SS		Borings Advanced During the Site Characterization (1990-1993)	To Be Decommissioned	
456	03U05	474911.30	1460475.84	NA	924.1	919.60	FT			10.42	FT	BH	PZ	SS	SS		Borings Advanced During the Site Characterization (1990-1993)	To Be Decommissioned	
459	09U07	474868.01	1460442.05	NA	927.69	923.90	FT			15.75	FT	BH	PZ	SS	SS		Borings Advanced During the Site Characterization (1990-1993)	To Be Decommissioned	
465	08U05	474666.12	1460498.62	NA	940.93	935.40	FT			12.00	FT	BH	PZ	SS	SS		Borings Advanced During the Site Characterization (1990-1993)	Unaffected	no
466	08U04	474684.62	1460511.98	NA	938.94	933.70	FT			20.00	FT	BH	PZ	SS	SS		Borings Advanced During the Site Characterization (1990-1993)	Unaffected	no
474	06U05	474752.61	1460622.86	NA	941.26	935.90	FT			14.00	FT	BH	PZ	SS	SS		Borings Advanced During the Site Characterization (1990-1993)	To Be Decommissioned	
479	05U07	474769.43	1460714.57	NA	NA	935.10	FT			14.00	FT	BH	PZ	SS	SS	Abandoned	Borings Advanced During the Site Characterization (1990-1993)	Unaffected	no
502	MW-21	475350.60	1459428.07	888.32	887.82	885.00	FT	41.00	47.50	47.50	FT	WL	MNW	UF	UF		Monitoring Wells/Piezometers Installed During Site Characterization (1990-1993)	Unaffected	yes
503	TWSP 10-04	475473.46	1459440.21	NA	856.74	854.50	FT	7.50	17.50	18.00	FT	SP	TWS	UF	UF		Installed in 1993	To Be Decommissioned	
504	TWSP 10-05	475453.39	1459411.81	NA	857.73	855.60	FT	8.50	18.50	19.00	FT	SP	TWS	UF	UF		Installed in 1993	To Be Decommissioned	
505	TWSP 10-06	475423.88	1459370.27	NA	859.4	857.50	FT	9.50	19.50	20.00	FT	SP	TWS	UF	UF		Installed in 1993	To Be Decommissioned	
506	TWSP 10-07	475395.53	1459329.43	NA	861.89	859.10	FT	11.00	21.00	21.50	FT	SP	TWS	UF	UF		Installed in 1993	To Be Decommissioned	

USACE Northing Eastings
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LOC_KEY	LOCID	NCOORD	ECOORD	CASING	MPELEV	SURFELEV	ELEVUNITS	SCREEN_TOP	SCREEN_BOT	DEPTH	CRDUNITS	LTCCODE	WTCCODE	GZCCODE	HYDRO_UNIT	REMARK	LOCDESC	Dispositio	AnnualSam
507	TWSP 10-08	475369.90	1459284.43	NA	862.4	860.30	FT	11.50	21.50	22.00	FT	SP	TWS	UF	UF		Installed in 1993	To Be Decommissioned	
508	TWSP 01-08	474943.49	1460091.37	NA	914.41	912.00	FT	6.00	11.00	11.50	FT	SP	TWS	SS	SS		Installed in 1995	To Be Decommissioned	
509	TWSP 01-10	474864.31	1460151.03	NA	918.68	916.50	FT	6.00	8.50	9.10	FT	SP	TWS	SS	SS		Installed in 1995	To Be Decommissioned	
510	TWSP 03-01	474928.21	1460463.33	NA	920.89	918.50	FT	5.50	8.50	9.00	FT	SP	TWS	SS	SS		Installed in 1993	Unaffected	no
511	TWSP 10-09	475546.28	1459547.54	NA	854.06	851.70	FT	6.00	14.00	14.70	FT	SP	TWS	UF	UF		Installed in 1995	To Be Decommissioned	
512	TWSP 10-10	475488.83	1459461.75	NA	855.39	853.30	FT	6.00	15.00	16.00	FT	SP	TWS	UF	UF		Installed in 1995	To Be Decommissioned	
513	TWSP 10-11	475440.26	1459394.33	NA	858.01	856.70	FT	6.50	18.50	19.00	FT	SP	TWS	UF	UF		Installed in 1995	To Be Decommissioned	
514	TWSP 10-13	475412.49	1459301.50	NA	862.82	860.70	FT	11.00	21.00		FT	SP	TWS	UF	UF		Installed in 1995	To Be Decommissioned	
515	TWSP 10-12	475380.79	1459307.16	NA	861.92	860.00	FT	9.00	21.00	22.00	FT	SP	TWS	UF	UF		Installed in 1995	To Be Decommissioned	
516	TWSP B-01	475034.67	1459432.14	913.77	913.77	NA	NA	6.00	10.00	10.70	FT	SP	TWS	SS	SS		Installed in 1995	Decommissioned	
517	TWSP B-02	474994.64	1459461.02	910.71	910.71	NA	NA	6.00	11.00	11.70	FT	SP	TWS	SS	SS		Installed in 1995	Decommissioned	
518	TWSP 01-09	474903.24	1460121.46	NA	915.97	914.10	FT	6.00	10.50	11.20	FT	SP	TWS	SS	SS		Installed in 1995	To Be Decommissioned	
519	TWSP 01-11	474834.25	1460197.78	NA	920.29	918.20	FT	6.00	7.50	7.90	FT	SP	TWS	SS	SS		Installed in 1995	To Be Decommissioned	
761	TPZ-01	475252.08	1460250.97	NA	924.30	921.00	FT				FT	PZ	TPZ	1S			1999 Field Investigation (Fate and Transport)	Unaffected	no
762	TPZ-02	475073.88	1460555.19	NA	926.38	924.60	FT				FT	PZ	TPZ	1S			1999 Field Investigation (Fate and Transport)	Unaffected	no
763	TPZ-03	475102.50	1460052.79	NA	895.5	892.60	FT				FT	PZ	TPZ	1S			1999 Field Investigation (Fate and Transport)	Unaffected	no
764	TPZ-04	474971.08	1460247.79	NA	914.09	911.60	FT				FT	PZ	TPZ	1S			1999 Field Investigation (Fate and Transport)	Unaffected	no
765	TPZ-05	474869.71	1460188.39	916.51	916.44	914.80	FT				FT	PZ	TPZ	1S			1999 Field Investigation (Fate and Transport)	To Be Decommissioned	
766	TPZ-06	475054.27	1460186.93	NA	907.77	904.80	FT				FT	PZ	TPZ	SS			1999 Field Investigation (Fate and Transport)	Unaffected	no
767	TPZ-07	474986.69	1460453.15	NA	917.35	914.00	FT				FT	PZ	TPZ	SS			1999 Field Investigation (Fate and Transport)	Unaffected	no
768	TPZ-08	474889.58	1460644.92	NA	924.45	921.60	FT				FT	PZ	TPZ	SS				Unaffected	no
7984	NWS-03	474409.70	1461130.00	946.87	946.87	944.90	FT				FT	WL	MNW	L				Unaffected	no
8018	MW-50	475062.59	1460107.73	902.02	901.87	899.10	FT				FT	WL	MNW	1S				Unaffected	no
8019	MW-51	474892.83	1460685.09	925.43	925.16	922.70	FT				FT	WL	MNW	1S				Unaffected	no
8020	MW-52	474767.91	1460081.72	924.73	924.46	921.90	FT				FT	WL	MNW	2S				Unaffected	yes
8021	MW-53	474883.38	1460681.58	925.34	925.1	922.70	FT				FT	WL	MNW	2S				Unaffected	no
8022	MW-54	475381.64	1459132.10	861.88	861.72	858.60	FT				FT	WL	MNW	UF				Decommissioned	
8023	MW-56	475631.65	1459384.09	861.95	861.75	859.40	FT				FT	WL	MNW	UF				Decommissioned	
8024	MW-57	474430.33	1460856.37	948.63	948.48	945.60	FT				FT	WL	MNW	UF				Decommissioned	
8025	MW-58	475686.53	1459760.00	838.93	838.67	836.70	FT				FT	WL	MNW	DB				Unaffected	no
8026	MW-59	474494.87	1460031.85	932.45	932.23	929.40	FT				FT	WL	MNW	SS				Unaffected	no
8027	MW-64	473972.91	1461139.17	946.5	946.2	943.90	FT				FT	WL	MNW	SS				Unaffected	no
8028	MW-69	474413.33	1461122.42	947.43	947.28	945.50	FT				FT	WL	MNW	SS				Unaffected	no
8029	MW-74	475034.11	1460563.70	925.3	924.99	923.00	FT				FT	WL	MNW	SS				Unaffected	no
8030	NWS-01A	474446.87	1460062.14	931.57	931.57	929.10	FT				FT	WL	MNW	L				Unaffected	no
8031	NWS-02	473976.39	1461147.31	946.35	946.35	943.30	FT				FT	WL	MNW	L				Unaffected	no
8033	NWS-04	475030.00	1460581.27	925.25	925.25	922.40	FT				FT	WL	MNW	L				Unaffected	no
8034	NWS-05	475148.45	1460199.00	914.28	914.28	912.50	FT				FT	WL	MNW	L				Unaffected	no
8043	MW-47	474769.62	1460063.55	925.18	925	922.20	FT				FT	WL	MNW	SS				Unaffected	yes
8044	NWS-01A-01	474446.87	1460062.14	931.57	932.02	929.10	FT				FT	WL	MNW	1S				Unaffected	no
8045	NWS-01A-02	474446.87	1460062.14	931.57	931.92	929.10	FT				FT	WL	MNW	2S				Unaffected	no
8046	NWS-01A-03	474446.87	1460062.14	931.57	931.90	929.10	FT				FT	WL	MNW	UF				Unaffected	no
8047	NWS-01A-04	474446.87	1460062.14	931.57	931.97	929.10	FT				FT	WL	MNW	DB				Unaffected	no
8048	NWS-02-01	473976.39	1461147.31	946.35	946.53	943.30	FT				FT	WL	MNW	1S				Unaffected	no
8049	NWS-02-02	473976.39	1461147.31	946.35	946.50	943.30	FT				FT	WL	MNW	2S				Unaffected	no
8050	NWS-02-03	473976.39	1461147.31	946.35	946.49	943.30	FT				FT	WL	MNW	UF				Unaffected	no
8051	NWS-02-04	473976.39	1461147.31	946.35	946.75	943.30	FT				FT	WL	MNW	DB				Unaffected	no
8052	NWS-03-01	474409.70	1461130.00	946.87	947.20	944.90	FT				FT	WL	MNW	1S				Unaffected	no
8053	NWS-03-02	474409.70	1461130.00	946.87	947.16	944.90	FT				FT	WL	MNW	2S				Unaffected	no
8054	NWS-03-03	474409.70	1461130.00	946.87	947.19	944.90	FT				FT	WL	MNW	UF				Unaffected	no
8055	NWS-03-04	474409.70	1461130.00	946.87	947.21	944.90	FT				FT	WL	MNW	DB				Unaffected	no
8056	NWS-04-01	475030.00	1460581.27	925.25	925.73	922.40	FT				FT	WL	MNW	1S				Unaffected	no
8057	NWS-04-02	475030.00	1460581.27	925.25	925.72	922.40	FT				FT	WL	MNW	2S				Unaffected	no
8058	NWS-04-03	475030.00	1460581.27	925.25	925.85	922.40	FT				FT	WL	MNW	UF				Unaffected	no
8059	NWS-04-04	475030.00	1460581.27	925.25	925.77	922.40	FT				FT	WL	MNW	DB				Unaffected	no
8060	NWS-05-01	475148.45	1460199.00	914.28	914.79	912.50	FT				FT	WL	MNW	1S				Unaffected	no
8061	NWS-05-02	475148.45	1460199.00	914.28	914.87	912.50	FT				FT	WL	MNW	2S				Unaffected	no
8062	NWS-05-03	475148.45	1460199.00	914.28	914.80	912.50	FT				FT	WL	MNW	UF				Unaffected	no
8063	NWS-05-04	475148.45	1460199.00	914.28	914.83	912.50	FT				FT	WL	MNW	DB				Unaffected	no
8064	NWS-05-05	475148.45	1460199.00	914.28	914.89	912.50	FT				FT	WL	MNW	DB2				Unaffected	no
8338	MW-60	474446.87	1460062.14	931.28	931.12	929.13					FT	WL	MNW	1S				Decommissioned	

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LOC_KEY	LOCID	NCOORD	ECOORD	CASING	MPELEV	SURFELEV	ELEVUNITS	SCREEN_TOP	SCREEN_BOT	DEPTH	CRDUNITS	LTCCODE	WTCCODE	GZCCODE	HYDRO_UNIT	REMARK	LOCDESC	Dispositio	AnnualSam
0	MW-80	0.00	0.00											1S				Unaffected	no
0	MW-81	0.00	0.00											1S				Unaffected	no
0	MW-82	0.00	0.00											1S				Unaffected	no
0	MW-83	0.00	0.00											2S				Unaffected	no
0	MW-84	0.00	0.00											1S				Unaffected	no
0	MW-86	0.00	0.00											1S				Unaffected	no
0	MW-61	0.00	0.00											2S				Unaffected	yes