

# Data Validation Package

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**October 2009**

**Groundwater and Surface Water Sampling  
at the  
Canonsburg, Pennsylvania, Disposal Site**

**December 2009**



**U.S. DEPARTMENT OF  
ENERGY**

Legacy  
Management

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# Contents

Sampling Event Summary .....	1
Sample Location Map, Canonsburg, Pennsylvania, Disposal Site .....	2
Data Assessment Summary.....	3
Water Sampling Field Activities Verification Checklist .....	5
Laboratory Performance Assessment.....	7
Sampling Quality Control Assessment .....	12
Certification .....	13

## **Attachment 1—Assessment of Anomalous Data**

Potential Outliers Report

## **Attachment 2—Data Presentation**

Groundwater Quality Data  
Surface Water Quality Data  
Static Water Level Data  
Hydrograph  
Time-Concentration Graphs

## **Attachment 3—Sampling and Analysis Work Order**

## **Attachment 4—Trip Report**

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# Sampling Event Summary

**Site:** Canonsburg, Pennsylvania, Disposal Site

**Sampling Period:** October 21, 2009

Five groundwater samples and one surface water sample were collected at the Canonsburg, Pennsylvania, Disposal Site to demonstrate compliance with standards as set forth in the 2000 *Ground Water Compliance Action Plan for the Canonsburg, Pennsylvania, UMTRA Project Site*. Water levels were measured at each sampled well. Sampling and analysis was conducted as specified in *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites* (LMS/PLN/S04351, continually updated). One duplicate sample was collected from location 0424.

The U.S. Department of Energy monitors groundwater and surface water at the Canonsburg site to demonstrate that uranium concentrations do not exceed U.S. Nuclear Regulatory Commission-approved alternate concentration limits (ACL) of 1.0 milligram per liter (mg/L) in groundwater and 0.01 mg/L at the point of exposure in Chartiers Creek.

The ACL for uranium was not exceeded in any of the point-of-compliance wells. The uranium concentration in well 0412 has decreased since the 2007 event when a notable increase was observed. The uranium concentration did not exceed the ACL at surface location 0602.

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Michele Miller  
Site Lead, S.M. Stoller

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Date



M:\LTS\111\0005\10\S02153\S0215300.mxd carverh 1/23/2006 4:57:10 PM

*Sample Location Map, Canonsburg, Pennsylvania, Disposal Site*

# **Data Assessment Summary**

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## Water Sampling Field Activities Verification Checklist

<b>Project</b>	Canonsburg, Pennsylvania	<b>Date(s) of Water Sampling</b>	October 21, 2009
<b>Date(s) of Verification</b>	November 25, 2009	<b>Name of Verifier</b>	Steve Donovan

	<b>Response (Yes, No, NA)</b>	<b>Comments</b>
1. Is the SAP the primary document directing field procedures?	Yes	
List other documents, SOPs, instructions.		Work Order Letter dated September 16, 2009.
2. Were the sampling locations specified in the planning documents sampled?	Yes	
3. Was a pre-trip calibration conducted as specified in the above-named documents?	Yes	Pre-trip calibration was performed on October 12, 2009.
4. Was an operational check of the field equipment conducted daily?	Yes	
Did the operational checks meet criteria?	Yes	
5. Were the number and types (alkalinity, temperature, specific conductance, pH, turbidity, DO, ORP) of field measurements taken as specified?	No	Dissolved oxygen was not measured at locations 0412 and 0602.
6. Was the category of the well documented?	Yes	
7. Were the following conditions met when purging a Category I well:		
Was one pump/tubing volume purged prior to sampling?	Yes	
Did the water level stabilize prior to sampling?	Yes	
Did pH, specific conductance, and turbidity measurements stabilize prior to sampling?	Yes	
Was the flow rate less than 500 mL/min?	Yes	
If a portable pump was used, was there a 4-hour delay between pump installation and sampling?	NA	

## Water Sampling Field Activities Verification Checklist (continued)

	Response (Yes, No, NA)	Comments
8. Were the following conditions met when purging a Category II well:		
Was the flow rate less than 500 mL/min?	Yes	
Was one pump/tubing volume removed prior to sampling?	Yes	
9. Were duplicates taken at a frequency of one per 20 samples?	Yes	A duplicate sample was collected from location 0424.
10. Were equipment blanks taken at a frequency of one per 20 samples that were collected with nondedicated equipment?	NA	
11. Were trip blanks prepared and included with each shipment of VOC samples?	NA	
12. Were QC samples assigned a fictitious site identification number?	Yes	Location ID 2817 was used for the duplicate sample.
Was the true identity of the samples recorded on the Quality Assurance Sample Log or in the Field Data Collection System (FDCS) report?	Yes	
13. Were samples collected in the containers specified?	Yes	
14. Were samples filtered and preserved as specified?	Yes	
15. Were the number and types of samples collected as specified?	Yes	
16. Were chain of custody records completed and was sample custody maintained?	Yes	
17. Are field data sheets signed and dated by both team members (hardcopies) or are dates present for the "Date Signed" fields (FDCS)?	Yes	
18. Was all other pertinent information documented on the field data sheets?	Yes	
19. Was the presence or absence of ice in the cooler documented at every sample location?	NA	Sample cooling was not required.
20. Were water levels measured at the locations specified in the planning documents?	Yes	

## Laboratory Performance Assessment

### General Information

Report Number (RIN): 09092616  
Sample Event: October 21, 2009  
Site(s): Canonsburg, Pennsylvania  
Laboratory: ALS Laboratory Group, Fort Collins, Colorado  
Work Order No.: 0910259  
Analysis: Uranium  
Validator: Steve Donovan  
Review Date: November 25, 2009

This validation was performed according to the *Environmental Procedures Catalog* (LMS/PRO/S04325, continually updated), "Standard Practice for Validation of Laboratory Data," GT-9(P). The procedure was applied at Level 3, Data Validation. See attached Data Validation Worksheets for supporting documentation on the data review and validation. The analysis was successfully completed. The samples were prepared and analyzed using accepted procedures based on methods specified by line item code, which are listed in Table 1.

*Table 1. Analytes and Methods*

Analyte	Line Item Code	Prep Method	Analytical Method
Uranium	LMM-02	SW-846 3005A	SW-846 6020

### Sample Shipping/Receiving

ALS Laboratory Group, Fort Collins, Colorado, received seven water samples on October 23, 2009, accompanied by a Chain of Custody (COC) form. The COC form was checked to confirm that all of the samples were listed on the form and that signatures and dates were present indicating sample relinquishment and receipt. The sample submittal had no errors or omissions. Copies of the air waybill labels were included with the sample receiving documentation.

### Preservation and Holding Times

The sample shipments were received cool and intact at ambient temperature which complies with requirements. All samples were received in the correct container types and had been preserved correctly for the requested analyses. All samples were analyzed within the applicable holding times.

### Data Qualifier Summary

The analytical results were qualified as listed in Table 2.

Table 2. Data Qualifier Summary

Sample Number	Location	Analyte	Flag	Reason
0910259-5	0424	Uranium	U	Less than 5 times the method blank
0910259-7	0424 duplicate	Uranium	U	Less than 5 times the method blank

### Laboratory Instrument Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for all analytes. Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run and of producing a linear curve. Compliance requirements for continuing calibration checks are established to ensure that the instrument continues to be capable of producing acceptable qualitative and quantitative data. All laboratory instrument calibrations were performed correctly in accordance with the cited methods.

#### *Method SW-846 6020*

Calibrations for uranium were performed November 4, 2009. The initial calibrations were performed using six calibration standards resulting in calibration curves with correlation coefficient values greater than 0.995. The absolute values of the curve intercepts were less than 3 times the method detection limit (MDL). Calibration and laboratory spike standards were prepared from independent sources. Initial and continuing calibration verification (CCV) checks were made at the required frequency resulting in 11 CCVs. All initial and continuing calibration verification results were within the acceptance range. Reporting limit verification checks were made at the required frequency to verify the linearity of the calibration curves near the practical quantitation limit. The check results were within the acceptance range. The mass calibration and resolution was checked at the beginning of each analytical run in accordance with the procedure. Internal standard recoveries were stable and within acceptance ranges.

### Method and Calibration Blanks

Method blanks are analyzed to assess any contamination that may have occurred during sample preparation. Calibration blanks are analyzed to assess instrument contamination prior to and during sample analysis. All initial and continuing calibration blank results were below the practical quantitation limits. In cases where blank concentration exceeds the instrument detection limit, the associated sample results are qualified with a “U” flag (not detected) when the sample result is greater than the MDL but less than 5 times the blank concentration.

### Inductively Coupled Plasma (ICP) Interference Check Sample (ICS) Analysis

ICP interference check samples ICSA and ICSAB were analyzed at the required frequency to verify the instrumental interelement and background correction factors. All check sample results met the acceptance criteria.

### Matrix Spike Analysis

Matrix spike and matrix spike duplicate (MS/MSD) pairs were analyzed for all analytes as a measure of method performance in the sample matrix. Matrix spike data are not evaluated when the concentration of the unspiked sample is greater than 4 times the spike concentration. The MS/MSD recoveries met the acceptance criteria for all analytes evaluated.

### Laboratory Replicate Analysis

The relative percent difference values for the laboratory replicate sample and matrix spike duplicate sample results were less than twenty percent indicating acceptable laboratory precision.

### Laboratory Control Samples (LCS)

LCS were analyzed at the correct frequency to provide information on the accuracy of the analytical method and the overall laboratory performance, including sample preparation. The LCS results were acceptable.

### Metals Serial Dilution

Serial dilutions were performed during the metals analysis to monitor physical or chemical interferences that may exist in the sample matrix. A serial dilution was prepared and analyzed for uranium with acceptable results.

### Detection Limits/Dilutions

Samples were diluted in a consistent and acceptable manner when required. The required detection limits were achieved.

### Completeness

Results were reported in the correct units for all analytes requested using contract-required laboratory qualifiers.

### Electronic Data Deliverable (EDD) File

The EDD file arrived on November 11, 2009. The Sample Management System EDD validation module was used to verify that the EDD file was complete and in compliance with requirements. The module compares the contents of the file to the requested analyses to ensure all and only the requested data are delivered. The contents of the EDD were manually examined to verify that the sample results accurately reflect the data contained in the sample data package.

## SAMPLE MANAGEMENT SYSTEM

### General Data Validation Report

RIN: 09092616 Lab Code: PAR Validator: Steve Donovan Validation Date: 11/25/2009  
Project: Canonsburg Analysis Type: ☒ Metals ☐ General Chem ☐ Rad ☐ Organics  
# of Samples: 7 Matrix: WATER Requested Analysis Completed: Yes

#### Chain of Custody

Present: OK Signed: OK Dated: OK

#### Sample

Integrity: OK Preservation: OK Temperature: OK

#### Select Quality Parameters

- ☒ Holding Times
- ☒ Detection Limits
- ☐ Field/Trip Blanks
- ☒ Field Duplicates

All analyses were completed within the applicable holding times.

The reported detection limits are equal to or below contract requirements.

There was 1 duplicate evaluated.

# SAMPLE MANAGEMENT SYSTEM

Page 1 of 1

## Metals Data Validation Worksheet

RIN: 09092616

Lab Code: PAR

Date Due: 11/20/2009

Matrix: Water

Site Code: CAN01

Date Completed: 11/13/2009

Analyte	Date Analyzed	CALIBRATION							Method	LCS %R	MS %R	MSD %R	Dup. RPD	ICSAB %R	Serial Dil. %R	CRI %R
		Int.	R^2	ICV	CCV	ICB	CCB	Blank								
URANIUM	11/04/2009	0.0000	1.0000	OK	OK	OK	OK	OK		97.0	104.0	102.0	0.0	106.0	3.0	97.0
URANIUM	11/04/2009												1.0			

## **Sampling Quality Control Assessment**

The following information summarizes and assesses quality control for this sampling event.

### **Sampling Protocol**

All monitor well sample results were qualified with an “F” flag in the database indicating the wells were purged and sampled using the low-flow sampling method. Additionally, sample results for wells 0406A and 0413 were qualified with a “Q” flag indicating the data are qualitative because these wells are Category II based on turbidity and water level drawdown.

### **Equipment Blank Assessment**

An equipment blank was not necessary because new pump-head tubing was used at each location.

### **Field Duplicate Assessment**

Field duplicate samples are collected and analyzed as an indication of overall precision of the measurement process. The precision observed includes both field and laboratory precision and has more variability than laboratory duplicates which measure only laboratory performance. Duplicate samples were collected from location 0424. The duplicate results met the U.S. Environmental Protection Agency recommended laboratory duplicate criteria of having a relative percent difference of less than 20 percent for results that are greater than 5 times the practical quantitation limit, demonstrating acceptable precision.



### Certification

All laboratory analytical quality control criteria were met except as qualified in this report. The data qualifiers listed on the SEEPro database reports are defined on the last page of each report. All data in this package are considered validated and available for use.

Laboratory Coordinator:

Steve Donivan  
Steve Donivan

12-17-2009  
Date

Data Validation Lead:

Steve Donivan  
Steve Donivan

12-17-2009  
Date

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# **Attachment 1**

## **Assessment of Anomalous Data**

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## **Potential Outliers Report**

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## Potential Outliers Report

Potential outliers are measurements that are extremely large or small relative to the rest of the data and, therefore, are suspected of misrepresenting the population from which they were collected. Potential outliers may result from transcription errors, data-coding errors, or measurement system problems. However, outliers may also represent true extreme values of a distribution and indicate more variability in the population than was expected.

Statistical outlier tests give probabilistic evidence that an extreme value does not "fit" with the distribution of the remainder of the data and is therefore a statistical outlier. These tests should only be used to identify data points that require further investigation. The tests alone cannot determine whether a statistical outlier should be discarded or corrected within a data set.

There are three steps involved in identifying extreme values or outliers:

1. Identify extreme values that may be potential outliers by generating the Outliers Report using the Sample Management System from data in the SEEPro database. The application compares the new data set with historical data and lists the new data that fall outside the historical data range. A determination is also made if the data are normally distributed using the Shapiro-Wilk Test.
2. Apply the appropriate statistical test. Dixon's Extreme Value test is used to test for statistical outliers when the sample size is less than or equal to 25. This test considers both extreme values that are much smaller than the rest of the data (case 1) and extreme values that are much larger than the rest of the data (case 2). This test is valid only if the data without the suspected outlier are normally distributed. Rosner's Test is a parametric test that is used to detect outliers for sample sizes of 25 or more. This test also assumes that the data without the suspected outliers are normally distributed.
3. Scientifically review statistical outliers and decide on their disposition.

There were no potential outliers identified, and the data for this event are acceptable as qualified.

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## **Attachment 2**

### **Data Presentation**

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## **Groundwater Quality Data**

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**Groundwater Quality Data by Location (USEE100) FOR SITE CAN01, Canonsburg Disposal Site**

REPORT DATE: 12/4/2009

Location: 0406A WELL Replacement well for 0406.

Parameter	Units	Sample Date	ID	Depth Range (Ft BLS)			Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Dissolved Oxygen	mg/L	10/21/2009	N001	5	-	15	2.23		FQ	#		
Oxidation Reduction Potential	mV	10/21/2009	N001	5	-	15	-131.8		FQ	#		
pH	s.u.	10/21/2009	N001	5	-	15	6.94		FQ	#		
Specific Conductance	umhos /cm	10/21/2009	N001	5	-	15	1686		FQ	#		
Temperature	C	10/21/2009	N001	5	-	15	18.79		FQ	#		
Turbidity	NTU	10/21/2009	N001	5	-	15	8.68		FQ	#		
Uranium	mg/L	10/21/2009	N001	5	-	15	0.00053		FQ	#	0.0000017	

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**Groundwater Quality Data by Location (USEE100) FOR SITE CAN01, Canonsburg Disposal Site**

REPORT DATE: 12/4/2009

Location: 0412 WELL

Parameter	Units	Sample Date	ID	Depth Range (Ft BLS)	Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Oxidation Reduction Potential	mV	10/21/2009	N001	13.21 - 18.21	-36.3		F	#		
pH	s.u.	10/21/2009	N001	13.21 - 18.21	6.41		F	#		
Specific Conductance	umhos/cm	10/21/2009	N001	13.21 - 18.21	2343		F	#		
Temperature	C	10/21/2009	N001	13.21 - 18.21	12.64		F	#		
Turbidity	NTU	10/21/2009	N001	13.21 - 18.21	9.51		F	#		
Uranium	mg/L	10/21/2009	N001	13.21 - 18.21	0.15		F	#	0.0000087	

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**Groundwater Quality Data by Location (USEE100) FOR SITE CAN01, Canonsburg Disposal Site**

REPORT DATE: 12/4/2009

Location: 0413 WELL

Parameter	Units	Sample Date	ID	Depth Range (Ft BLS)			Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Dissolved Oxygen	mg/L	10/21/2009	N001	6.05	-	11.05	1.83		FQ	#		
Oxidation Reduction Potential	mV	10/21/2009	N001	6.05	-	11.05	-19.9		FQ	#		
pH	s.u.	10/21/2009	N001	6.05	-	11.05	6.84		FQ	#		
Specific Conductance	umhos /cm	10/21/2009	N001	6.05	-	11.05	13		FQ	#		
Temperature	C	10/21/2009	N001	6.05	-	11.05	16.09		FQ	#		
Turbidity	NTU	10/21/2009	N001	6.05	-	11.05	24.1		FQ	#		
Uranium	mg/L	10/21/2009	N001	6.05	-	11.05	0.14		FQ	#	0.0000087	

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**Groundwater Quality Data by Location (USEE100) FOR SITE CAN01, Canonsburg Disposal Site**

REPORT DATE: 12/4/2009

Location: 0414B WELL Replacement well for 0414A.

Parameter	Units	Sample Date	ID	Depth Range (Ft BLS)	Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Dissolved Oxygen	mg/L	10/21/2009	N001	-	3.62		F	#		
Oxidation Reduction Potential	mV	10/21/2009	N001	-	10.6		F	#		
pH	s.u.	10/21/2009	N001	-	6.47		F	#		
Specific Conductance	umhos /cm	10/21/2009	N001	-	583		F	#		
Temperature	C	10/21/2009	N001	-	14.99		F	#		
Turbidity	NTU	10/21/2009	N001	-	8.29		F	#		
Uranium	mg/L	10/21/2009	N001	-	0.0017		F	#	0.0000017	

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**Groundwater Quality Data by Location (USEE100) FOR SITE CAN01, Canonsburg Disposal Site**

REPORT DATE: 12/4/2009

Location: 0424 WELL

Parameter	Units	Sample Date	ID	Depth Range (Ft BLS)		Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Dissolved Oxygen	mg/L	10/21/2009	N001	7.58	- 12.58	6.81		F	#		
Oxidation Reduction Potential	mV	10/21/2009	N001	7.58	- 12.58	-55.3		F	#		
pH	s.u.	10/21/2009	N001	7.58	- 12.58	6.62		F	#		
Specific Conductance	umhos /cm	10/21/2009	N001	7.58	- 12.58	1616		F	#		
Temperature	C	10/21/2009	N001	7.58	- 12.58	15.95		F	#		
Turbidity	NTU	10/21/2009	N001	7.58	- 12.58	9.65		F	#		
Uranium	mg/L	10/21/2009	N001	7.58	- 12.58	0.000024	B	UF	#	0.0000017	
Uranium	mg/L	10/21/2009	N002	7.58	- 12.58	0.000021	B	UF	#	0.0000017	

SAMPLE ID CODES: 000X = Filtered sample (0.45 µm). N00X = Unfiltered sample. X = replicate number.

**LAB QUALIFIERS:**

- \* Replicate analysis not within control limits.
- > Result above upper detection limit.
- A TIC is a suspected aldol-condensation product.
- B Inorganic: Result is between the IDL and CRDL. Organic: Analyte also found in method blank.
- C Pesticide result confirmed by GC-MS.
- D Analyte determined in diluted sample.
- E Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
- H Holding time expired, value suspect.
- I Increased detection limit due to required dilution.
- J Estimated
- N Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compound (TIC).
- P > 25% difference in detected pesticide or Aroclor concentrations between 2 columns.
- U Analytical result below detection limit.
- W Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
- X,Y,Z Laboratory defined qualifier, see case narrative.

**DATA QUALIFIERS:**

- F Low flow sampling method used.
- L Less than 3 bore volumes purged prior to sampling.
- U Parameter analyzed for but was not detected.
- G Possible grout contamination, pH > 9.
- Q Qualitative result due to sampling technique.
- X Location is undefined.
- J Estimated value.
- R Unusable result.

**QA QUALIFIER:**

- # Validated according to quality assurance guidelines.

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## **Surface Water Quality Data**

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# **Surface Water Quality Data by Location (USEE102) FOR SITE CAN01, Canonsburg Disposal Site**

REPORT DATE: 12/4/2009

Location: 0602 SURFACE LOCATION RESERVED MGILBERT, WQD, 4/24/89

Parameter	Units	Sample Date	ID	Result	Qualifiers Lab	QA	Detection Limit	Uncertainty
Oxidation Reduction Potential	mV	10/21/2009	N001	46.2		#		
pH	s.u.	10/21/2009	N001	7.85		#		
Specific Conductance	umhos/cm	10/21/2009	N001	1287		#		
Temperature	C	10/21/2009	N001	11.42		#		
Turbidity	NTU	10/21/2009	N001	5.77		#		
Uranium	mg/L	10/21/2009	N001	0.00048		#	0.0000017	

SAMPLE ID CODES: 000X = Filtered sample (0.45 µm). N00X = Unfiltered sample. X = replicate number.

## LAB QUALIFIERS:

- \* Replicate analysis not within control limits.
- > Result above upper detection limit.
- A TIC is a suspected aldol-condensation product.
- B Inorganic: Result is between the IDL and CRDL. Organic: Analyte also found in method blank.
- C Pesticide result confirmed by GC-MS.
- D Analyte determined in diluted sample.
- E Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
- H Holding time expired, value suspect.
- I Increased detection limit due to required dilution.
- J Estimated
- N Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compound (TIC).
- P > 25% difference in detected pesticide or Aroclor concentrations between 2 columns.
- U Analytical result below detection limit.
- W Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
- X,Y,Z Laboratory defined qualifier, see case narrative.

## DATA QUALIFIERS:

- F Low flow sampling method used.
- L Less than 3 bore volumes purged prior to sampling.
- U Parameter analyzed for but was not detected.
- G Possible grout contamination, pH > 9.
- Q Qualitative result due to sampling technique.
- X Location is undefined.
- J Estimated value.
- R Unusable result.

## QA QUALIFIER:

- # Validated according to quality assurance guidelines.

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## **Static Water Level Data**

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**STATIC WATER LEVELS (USEE700) FOR SITE CAN01, Canonsburg Disposal Site**  
**REPORT DATE: 12/4/2009**

Location Code	Flow Code	Top of Casing Elevation (Ft)	Measurement Date	Time	Depth From Top of Casing (Ft)	Water Elevation (Ft)	Water Level Flag
0406A		941.26	10/21/2009	14:43:13	9.81	931.45	
0412	O	949.7	10/21/2009	09:23:55	15.92	933.78	
0413	O	940.36	10/21/2009	15:28:50	8.74	931.62	
0414B		943.65	10/21/2009	13:52:08	10.71	932.94	
0424	C	942.25	10/21/2009	11:01:19	14.25	928	

FLOW CODES: B BACKGROUND C CROSS GRADIENT D DOWN GRADIENT F OFF SITE  
N UNKNOWN O ON SITE U UPGRADIENT

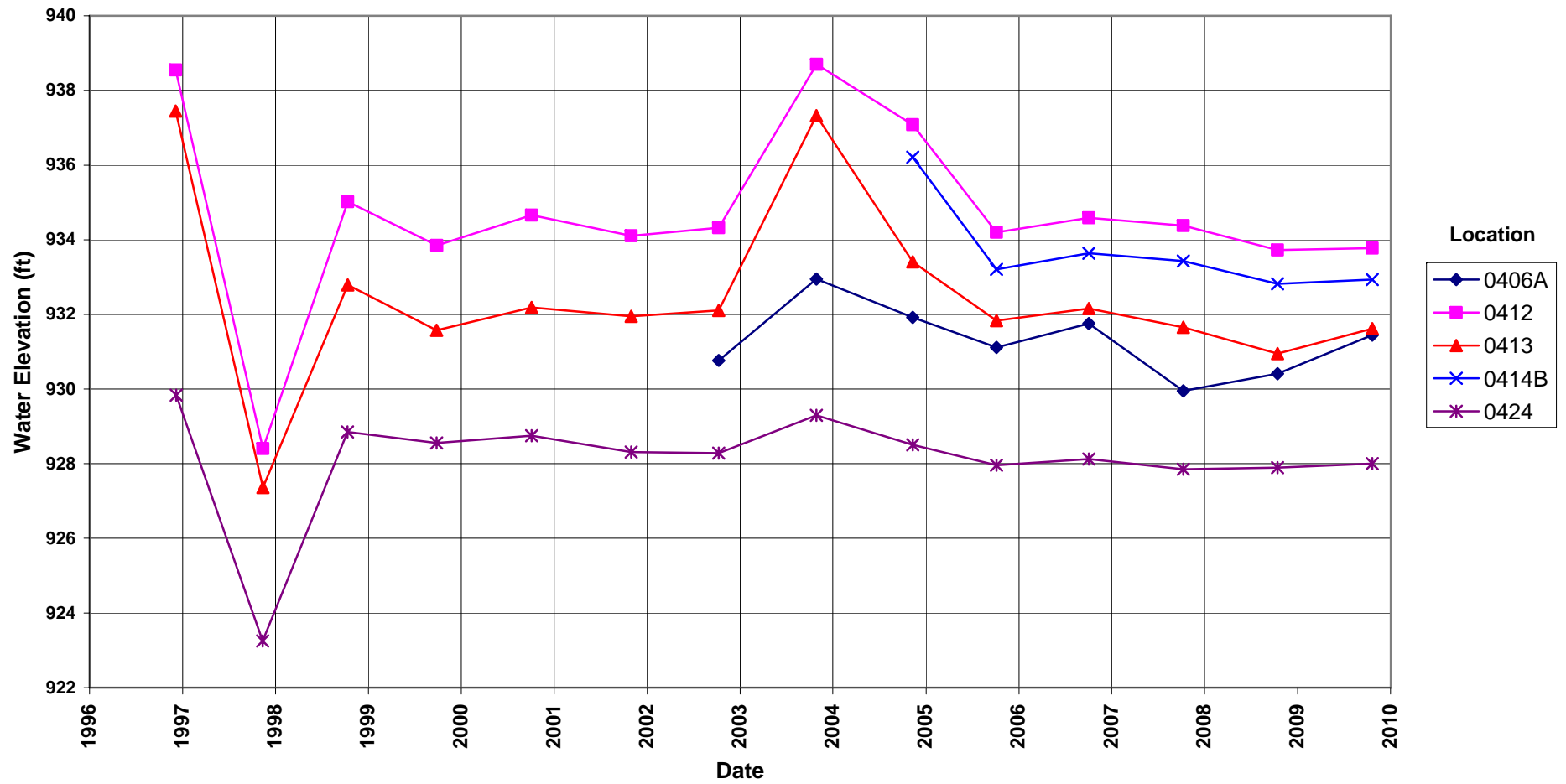
WATER LEVEL FLAGS: D Dry F FLOWING

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# Hydrograph

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## Canonsburg Disposal Site Hydrograph



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## **Time-Concentration Graphs**

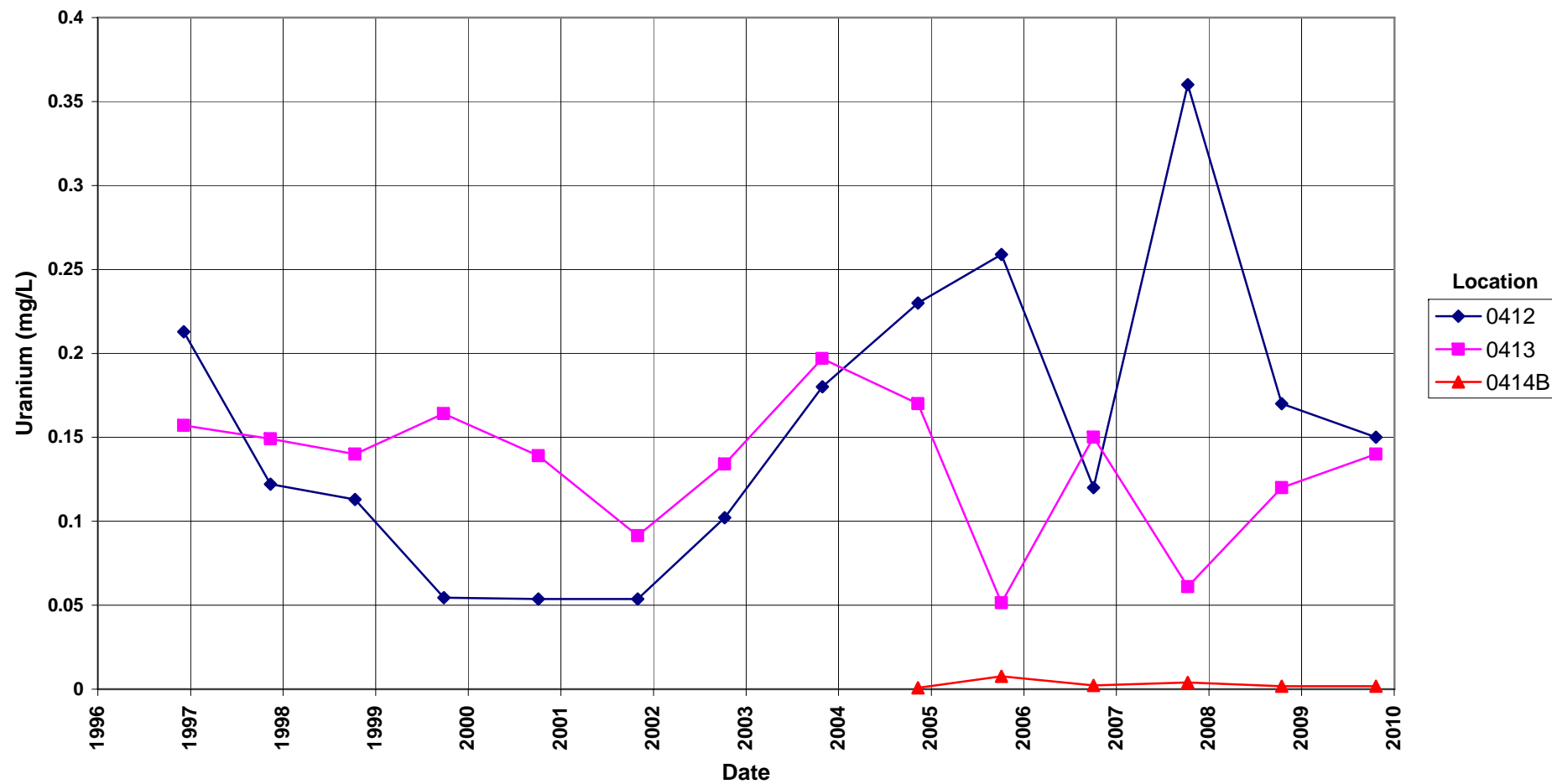
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# Canonsburg Disposal Site Point of Compliance Wells

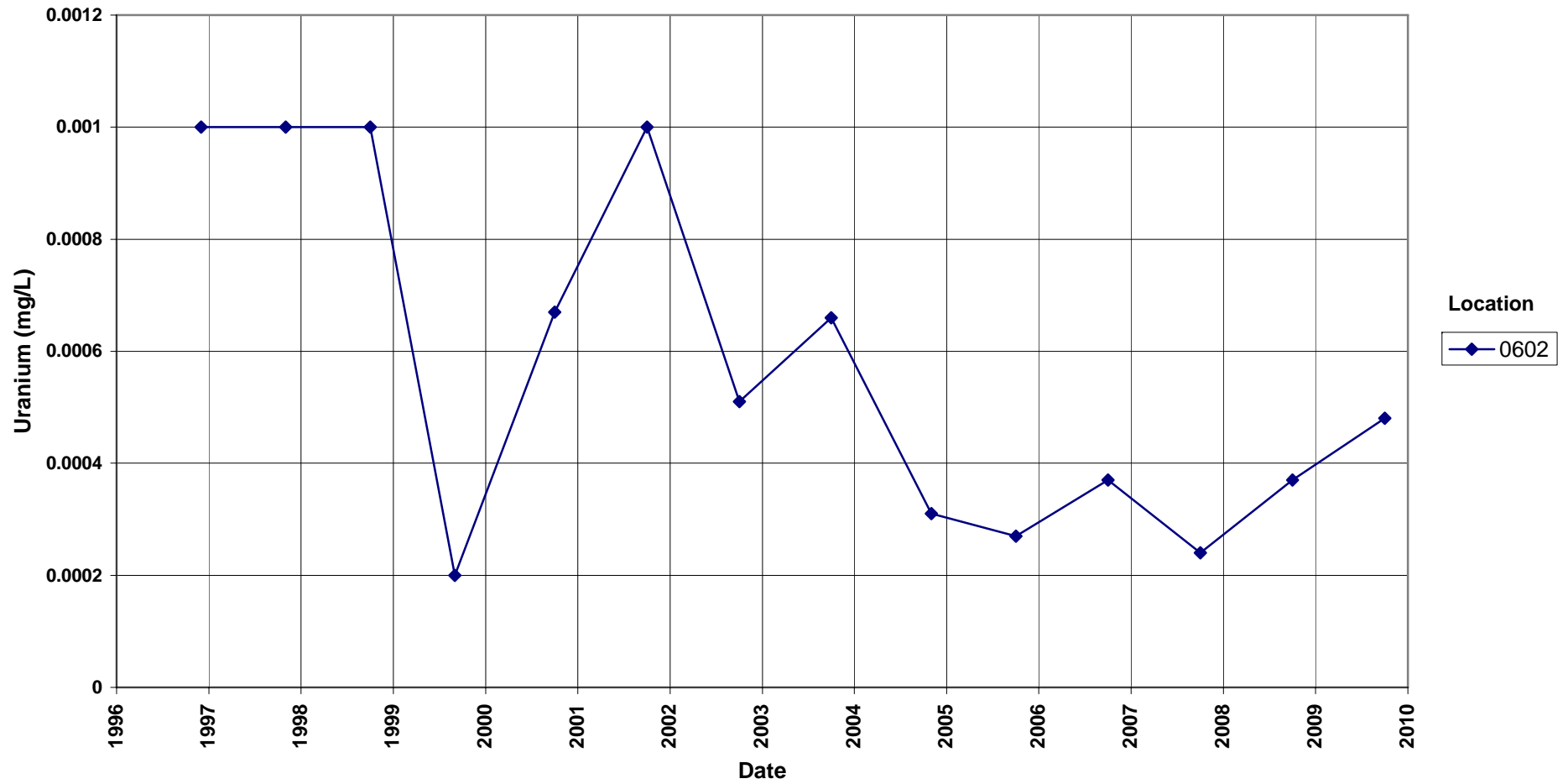
## Uranium Concentration

Alternate Concentration Limit = 1.0 mg/L



# Canonsburg Disposal Site Surface Location Uranium Concentration

Alternate Concentration Limit = 0.01 mg/L



# **Attachment 3**

## **Sampling and Analysis Work Order**

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*established 1959*

Task Order LM00-501  
Control Number 09-1070

September 16, 2009

U.S. Department of Energy  
Office of Legacy Management  
ATTN: Jack Craig  
Site Manager  
3600 Collins Ferry Road  
Morgantown, WV 26505

SUBJECT: Contract No. DE-AM01-07LM00060, Stoller  
October 2009 Environmental Sampling at Canonsburg, Pennsylvania,  
Disposal Site

REFERENCE: Task Order LM00-501-02-103-402, Canonsburg, PA, Site

Dear Mr. Craig:

The purpose of this letter is to inform you of the upcoming sampling event at Canonsburg, Pennsylvania. Enclosed are the map and tables specifying sample locations and analytes for routine monitoring at the Canonsburg site. Water quality data will be collected from this site as part of the environmental sampling currently scheduled to begin the week of October 19, 2009.

The following lists show the wells (with zone of completion) and surface locations scheduled to be sampled during this event.

**Monitor Wells\***

406A Um      412 Um      413 Um      414B Nr      424 Um

\*NOTE: Um = Unconsolidated materials; Nr = No recovery of data for classifying

**Surface Locations\***

602

All samples will be collected as directed in the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites*. Access agreements are being reviewed and are expected to be complete by the beginning of fieldwork.

Jack Craig  
Control Number 09-1070  
Page 2

Please contact me at (412) 818-7015 if you have any questions.

Sincerely,



Digitally signed by Michele L. Miller  
DN: cn=Michele L. Miller, o=us, ou=,  
s. government, ou=department of  
energy, public cas, people  
Date: 2009.09.15 14:50:43 -0400

Michele Miller  
Project Manager

MM/lcg/lb

Enclosures (3)

cc: (electronic)

Cheri Bahrke, Stoller  
Steve Donovan, Stoller  
Bev Gallagher, Stoller  
Lauren Goodknight, Stoller  
Michele Miller, Stoller  
EDD Delivery  
rc-grand.junction

## Constituent Sampling Breakdown

Site	Canonsburg		Required Detection Limit (mg/L)	Analytical Method	Line Item Code
Analyte	Groundwater	Surface Water			
Approx. No. Samples/yr	5	1			
<b>Field Measurements</b>					
Alkalinity	X	X			
Dissolved Oxygen	X	X			
Redox Potential	X	X			
pH	X	X			
Specific Conductance	X	X			
Turbidity	X	X			
Temperature	X	X			
<b>Laboratory Measurements</b>					
Aluminum					
Ammonia as N (NH3-N)					
Calcium					
Chloride					
Chromium					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Nitrate + Nitrite as N (NO3+NO2)-N					
Potassium					
Selenium					
Silica					
Sodium					
Strontium					
Sulfate					
Sulfide					
Total Dissolved Solids					
Total Organic Carbon					
Uranium	X	X	0.0001	SW-846 6020	LMM-02
Vanadium					
Zinc					
<b>Total No. of Analytes</b>	<b>1</b>	<b>1</b>			

Note: All analyte samples are considered unfiltered unless stated otherwise. All private well samples are to be unfiltered. The total number of analytes does not include field parameters.

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## **Attachment 4**

### **Trip Report**

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*Memorandum*

Control Number N/A

DATE: November 16, 2009

TO: Michele Miller

FROM: Jeff Walters

SUBJECT: Trip Report

**Site:** Canonsburg, PA

**Dates of Sampling Event:** October 21 and 22, 2009

**Team Members:** Mike Stott and Jeff Walters

**Number of Locations Sampled:** 5 monitor wells, 1 surface water sample, and one duplicate sample. Samples were collected for the following analysis: uranium. Table 1 lists locations and times sampled.

**Table 1. Locations Sampled**

Location	Date	Time	Notes
0406A	10/21/09	1443	
0412	10/21/09	0923	
0413	10/21/09	1528	
0414B	10/21/09	1352	
0424	10/21/09	1101	
0602	10/21/09	1015	Surface water
2817	10/21/09	1200	Duplicate of 0424

**RIN Number Assigned:** 09092616.

**Locations Not Sampled/Reason:** None.

**Field Variance:** None.

**Quality Control Sample Cross Reference:** One duplicate sample was collected for this event. Table 2 lists the false identification number assigned to the sample collected for quality control.

**Table 2. QC Sample Cross-Reference**

False ID	True ID	Sample Type	Analytes	Date Sampled
2817	0424	Duplicate	U	10/21/09

**Water Level Measurements:** Water levels were collected from all sampled monitor wells.

**Sampling Method:** Monitor wells were sampled using a peristaltic pump and dedicated tubing. The low flow purge method was used. The surface water sample was collected by container immersion.

**Well Inspection Summary:** Well inspections were performed at all sampled wells. The PVC well casing for well 0412 was notched to allow the protective cover pin to slide freely through the cap and then be locked. Wells 0406A, 0414B, and 0424 had weep holes drilled into the bottom of the protective casings. Wells 0406A, 0412, and 0414B were temporarily labeled with a grease pen. Wells not listed below are in good condition. Table 3 lists monitoring well maintenance issues:

**Table 3. Monitoring Well Maintenance Needs**

Well Identification	Issue	Recommended maintenance
0414B	This well is surrounded by saturated ground and the concrete pad has sunk about 2 inches. The pad and the bollards are currently loose.	Monitor the area to see if it dries out. The pad and bollards may become firm.
0406A	Temporarily labeled with grease pen	Install stamped brass or aluminum ID tags with rivets onto the protective casings.
0412	Temporarily labeled with grease pen	Install stamped brass or aluminum ID tags with rivets onto the protective casings.
0414B	Temporarily labeled with grease pen	Install stamped brass or aluminum ID tags with rivets onto the protective casings.

**Equipment:** The Pinellas Laptop computer with the Field Data Collection System, a Grand Junction YSI meter, and a Fernald turbidity meter were used. All other equipment and supplies were from Fernald.

**Site Issues:** None.

**Notes for the Next Trip:** The issues listed in Table 3 should be completed to maintain the wells. Although the sampled wells were inspected during purging, a more thorough inspection of these and all site wells should be performed during the next visit.

(JW/lcg)

cc: (electronic)  
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EDD Delivery