



# GROUNDWATER MONITORING DATA 2017 SAMPLING EVENT HARSHAW CHEMICAL COMPANY FUSRAP SITE

**U.S. Army Corps of Engineers  
Buffalo District**

**Building Strong®**

April 2018

## Formerly Utilized Sites Remedial Action Program

The Formerly Utilized Sites Remedial Action Program (FUSRAP) was initiated in 1974 to identify, investigate, and clean up or control sites throughout the United States that had been part of the Nation's early atomic weapons and energy programs during the 1940s, 1950s, and 1960s. When implementing FUSRAP, the United States Army Corps of Engineers follows the investigation and response framework of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, and the National Oil and Hazardous Substances Pollution Contingency Plan.

## Site Description

The 55-acre former Harshaw Chemical Company Site is located at 1000 Harvard Avenue, approximately five miles southwest of downtown Cleveland in Cuyahoga County, Ohio. The site is in a low-lying area adjacent to the Cuyahoga River and Big Creek. It is surrounded on three sides by industries and includes several developed and undeveloped land parcels. Between December 2014 and January 2015, the Corps of Engineers dismantled Building G-1 to enable safe access to investigate the underlying contaminated groundwater and refine soil volume estimates. From October to December 2015, BASF, the current property owner, also removed a warehouse, former foundry, former boiler house, a garage, and the former hydrogen fluoride plant wastewater treatment system. Consequently, no former industrial buildings exist on the site, although building slabs and foundations still exist. In addition, several segments of stormwater sewers were removed by the site owner to address uncontrolled discharges to the Cuyahoga River.

## Purpose

The purpose of groundwater monitoring is to determine the potential for movement of FUSRAP-related radiological contaminants associated with historical activities by the Manhattan Engineer District (MED) and Atomic Energy Commission (AEC). Between 1942 and 1954, various forms of uranium materials were produced in Building G-1 at the Harshaw Site under MED and AEC contracts.

A subset of the groundwater wells on-site are sampled annually. The Corps of Engineers interprets the results of monitoring at the site, and releases the annual groundwater monitoring data to the public annually. This information, along with a description of the site's conceptual groundwater model, can be found on the Buffalo District webpage in the Environmental Monitoring section; a website link is provided at the bottom of page 2 of this document.

## Scope

The Corps of Engineers has conducted annual groundwater monitoring at the Harshaw Site since 2008. From 2008 to 2013, the constituents of interest included isotopic radium (Ra-226, Ra-228), isotopic thorium (Th-228, Th-230, Th-232), isotopic uranium (U-234, U-235, U-238), and total uranium. Beginning with the 2013 sampling event, the parameters for analysis were decreased to only total uranium because the previous five years of sampling had shown that radium and thorium were rarely detected in site groundwater. Therefore, they were not a concern for groundwater. Additionally, analysis of isotopic uranium was no longer needed since total uranium results are sufficient for decision-making purposes.

The Corps of Engineers generally collected water levels from all accessible wells annually. In 2014, construction operations at the Harshaw Site limited the ability of the Corps of Engineers to safely collect samples. As a result, Corps of

Engineers personnel were only able to identify water levels and collect a limited number of groundwater and surface water samples.

The Corps of Engineers collected both filtered and unfiltered samples from the groundwater sampling locations on March 21, 2017. Figure 1 shows the 18 groundwater monitoring well locations sampled. Figure 2 shows all groundwater well locations. No surface water samples were collected in 2017. Figure 3 shows all previous surface water sampling locations. Figure 4 shows dissolved phase uranium (filtered total uranium) results for monitoring wells sampled in 2017. It highlights areas of soil above the radiological cleanup levels identified in the 2012 feasibility study. The areas of soil contamination above radiological cleanup levels were updated in 2015. They reflect the current understanding of FUSRAP-related contamination at the site.

## Results and Interpretation

The United States Environmental Protection Agency's maximum contaminant level for uranium in drinking water is 30 micrograms per liter ( $\mu\text{g/L}$ ). This standard was exceeded in nine wells near the former Building G-1 location during the 2017 sampling event. The groundwater and surface water at the site are not currently drinking water sources. Consequently, the sampling results indicate that current site conditions are protective of human health.

Groundwater flow at the Harshaw Site is controlled by unconsolidated soil deposits, the topography of the underlying shale bedrock, and the relative elevation of the Cuyahoga River and Big Creek. It is also controlled by the operation of the present owner's groundwater extraction system, which is designed to control nickel inflows to site sewers.

Groundwater elevation data are presented on Table 1. They are consistent with findings from the remedial investigation report that showed predominately west to east groundwater flow directions. This is confirmed in Figures 5 through 14, which present the potentiometric surface contours for the years 2008 through 2017. The Groundwater Conceptual Site Model fact sheet, available on the U.S. Army Corps of Engineers Buffalo District's webpage link listed at the bottom of this page, details the site hydrogeologic conditions and associated groundwater modeling program.

Table 2 lists the unfiltered (total) and filtered (dissolved phase) analytical results in groundwater. Table 3 presents analytical results for surface water from prior years' monitoring events. Statistical analyses of long-term uranium trends will be included in the future release of a feasibility study addendum (planned during 2018); in general, the total uranium concentrations show minor variability that statistically indicates generally stable trends. Uranium concentrations reflect conditions first monitored in 2003, although the distribution of concentrations are more refined.

The uranium impacts to groundwater are centered on the former Building G-1 location in the northern portion of the site (see Figure 4). This building and its extension to the north served as the main uranium ore receiving, storage, processing, and shipping facilities. Wells downgradient of this area do not show significant impacts to groundwater; this indicates that the plume is not subject to significant transport. Spatial consistency of uranium values in the site wells over time (2003 to 2017) indicate that the plume is stable because the subsurface sediments attenuate the uranium via sorption and dispersion while migrating from the former Building G-1 area. Analytical results indicate that a number of locations have uranium concentrations greater than what is seen in background wells west and south of the site.

Shallow fill well points SP-1 and SP-2 were installed in the fall of 2016 to assess perched groundwater evident in shallow (near-surface) fill on and near the site. Water was detected in these wells for the first time during the 2017 monitoring event and samples were collected. The total uranium results at locations SP-1 and SP-2 were both above the standard during the 2017 sampling, which was consistent with surrounding soil conditions.

No surface water samples were collected during the 2017 sampling event.

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**Legend**

● Groundwater Monitoring Well

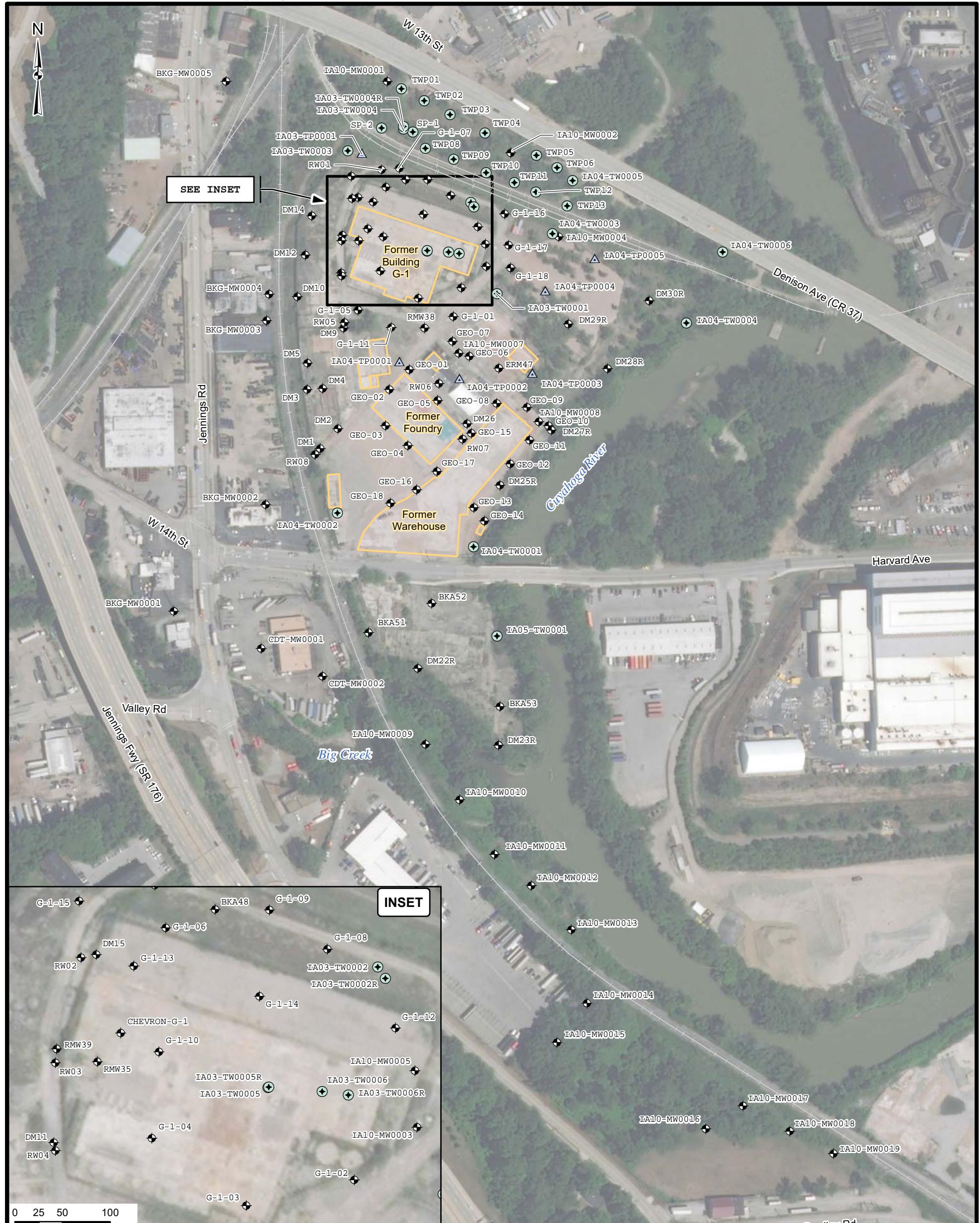
○ Former Site Buildings

0 125 250 500  
Feet



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**2017 SAMPLING LOCATIONS**

**Legend**

- ◆ Monitoring Well Location
- △ Piezometer Location
- Temporary Well Point
- Former Site Buildings

0 125 250 500 Feet



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**GROUNDWATER MONITORING WELLS**

Document Name:  
180305\_MonitoringWells.mxd  
Drawn By: H5TDESPM  
Date Saved: 05 Mar 2018  
Time Saved: 11:15:28 AM

FORMER HARSHAW CHEMICAL COMPANY  
CLEVELAND, OHIO

FIGURE 2

**Legend**

- △ Surface Water Sample
- Former Site Buildings

0 125 250 500  
Feet



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**SURFACE WATER SAMPLING LOCATIONS**

**Legend**

- |                                    |   |
|------------------------------------|---|
| <b>Total Uranium Concentration</b> | Soil Above Feasibility Study Cleanup Levels |
| • < 1 ug/L                         | Former Site Buildings                       |
| ● 1 - 3 ug/L                       |   |
| ● 3 - 10 ug/L                      |   |
| ● 10 - 30 ug/L                     |   |
| ● > 30 ug/L                        |   |

0 125 250 500  
Feet



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### TOTAL DISSOLVED URANIUM IN GROUNDWATER JUNE 2016

**Legend**

- Monitoring Well
- Groundwater Elevation Contour (ft amsl)
- Former Site Buildings

0 100 200 400  
Feet



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### GROUNDWATER POTENTIOMETRIC SURFACE MAP - MAY 2008

**Legend**

● Monitoring Well

— Groundwater Elevation Contour (ft amsl)

○ Former Site Buildings

0 100 200 400  
Feet



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### GROUNDWATER POTENTIOMETRIC SURFACE MAP - MAY 2009

**Legend**

- Monitoring Well
- Groundwater Elevation Contour (ft amsl)
- Former Site Buildings

0 100 200 400  
Feet



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### GROUNDWATER POTENTIOMETRIC SURFACE MAP - MAY 2010

**Legend**

● Monitoring Well

— Groundwater Elevation Contour (ft amsl)

○ Former Site Buildings

0 100 200 400  
Feet



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### GROUNDWATER POTENTIOMETRIC SURFACE MAP - MAY 2011



Legend

- Legend**

  -  Monitoring Well
  -  Groundwater Elevation Contour (ft amsl)
  -  Former Site Buildings

A horizontal scale bar divided into four segments of 100 feet each, starting from 0 and ending at 400. The word "Feet" is written at the right end of the bar.



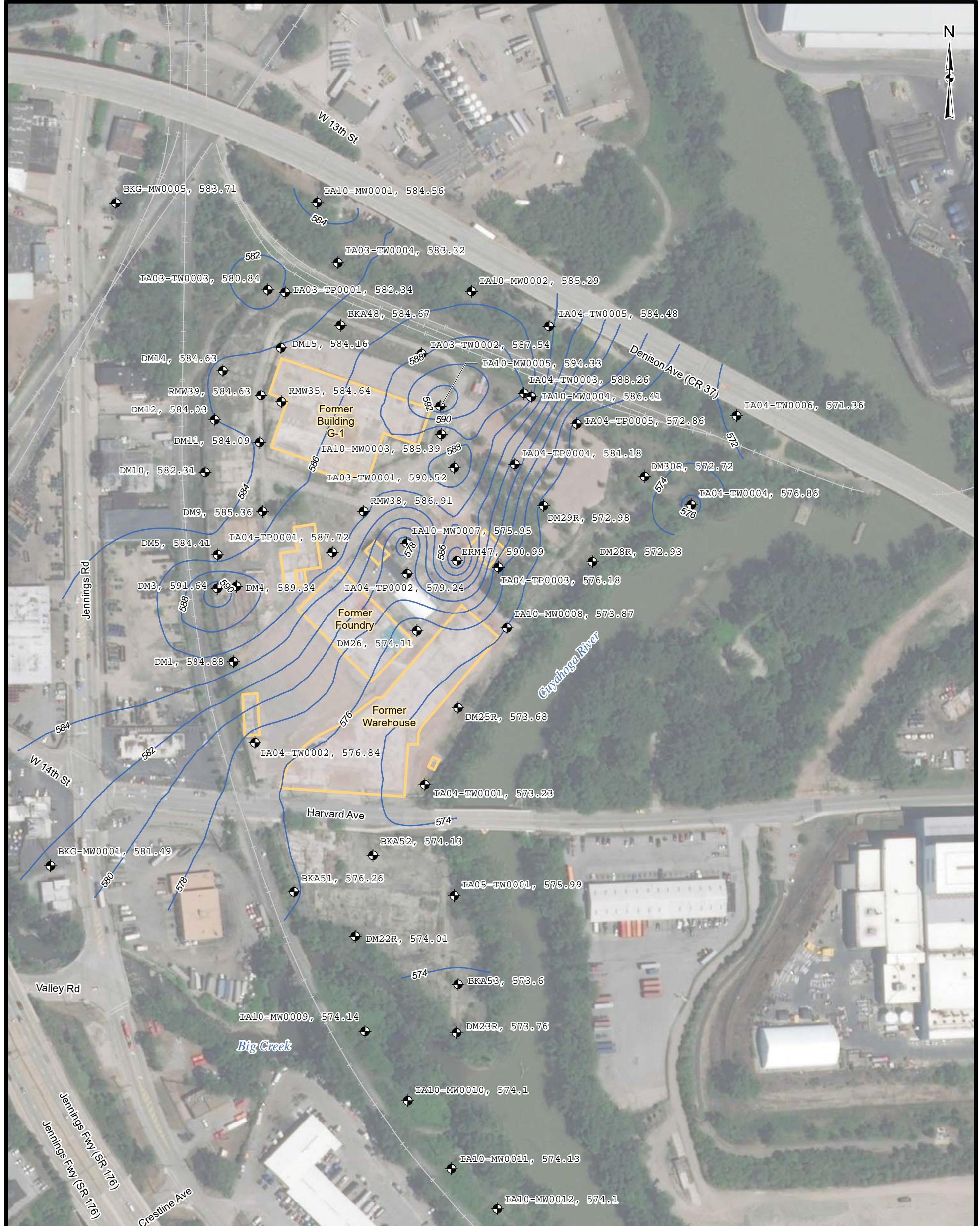
The logo for the U.S. Army Corps of Engineers Buffalo District. It features a red square with a white outline and a white cross inside. To the left of the square, the words "U.S. Army Corps of Engineers" are written in a bold, black, sans-serif font. Below this, "Buffalo District" is written in a smaller, regular black font.

## GROUNDWATER POTENTIOMETRIC SURFACE MAP - MAY 2012

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Drawn By: H5TDESPM  
Date Saved: 11 Apr 2017  
Time Saved: 8:51:54 AM

FORMER HARSHAW CHEMICAL COMPANY  
CLEVELAND, OHIO

**FIGURE 9**

**Legend**

● Monitoring Well

— Groundwater Elevation Contour (ft amsl)

○ Former Site Buildings

0 100 200 400  
Feet



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### GROUNDWATER POTENTIOMETRIC SURFACE MAP - MAY 2013

**Legend**

● Monitoring Well

— Groundwater Elevation Contour (ft amsl)

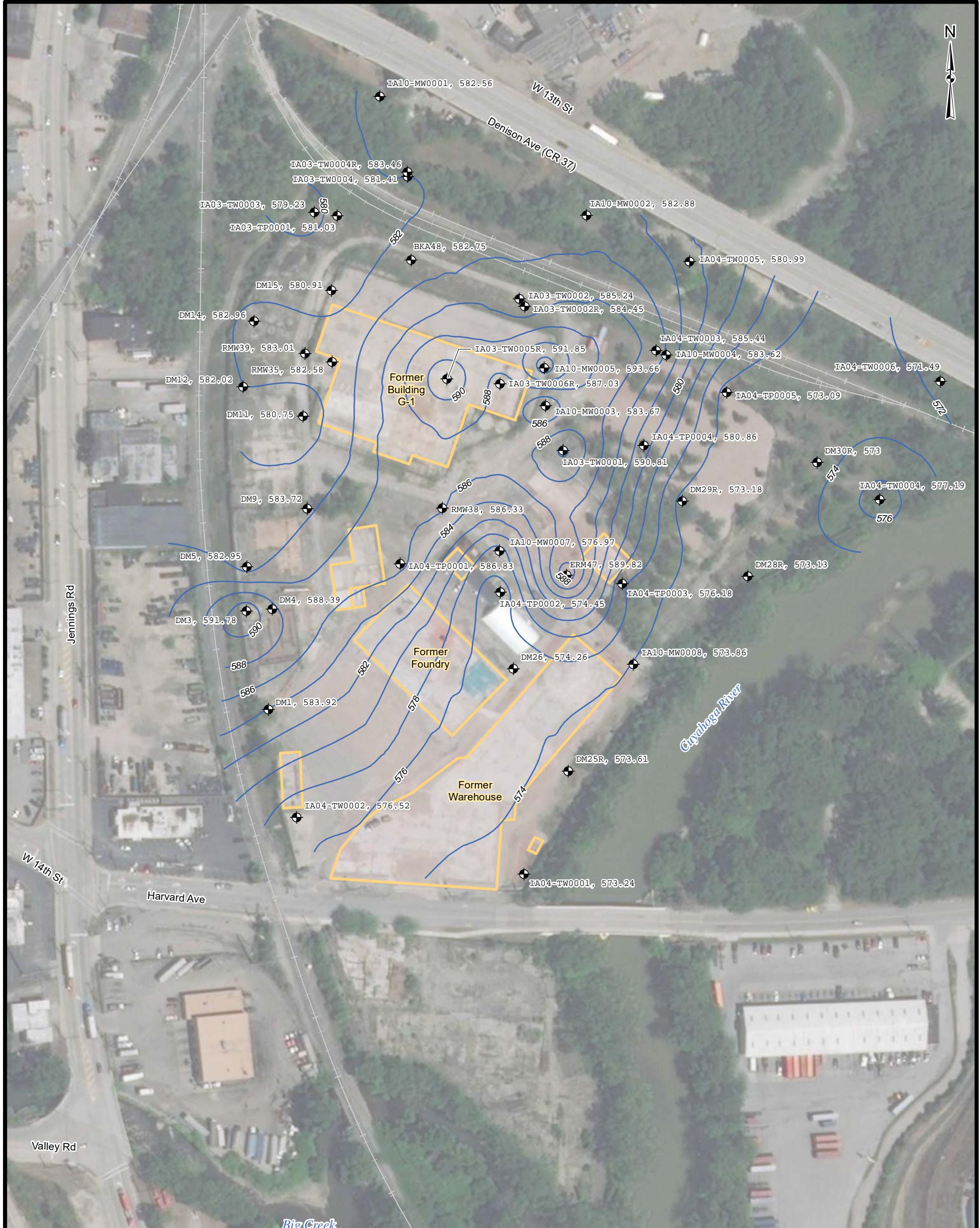
○ Former Site Buildings

0 75 150 300  
Feet



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### GROUNDWATER POTENTIOMETRIC SURFACE MAP - APRIL 2014

**Legend**

● Monitoring Well

— Groundwater Elevation Contour (ft amsl)

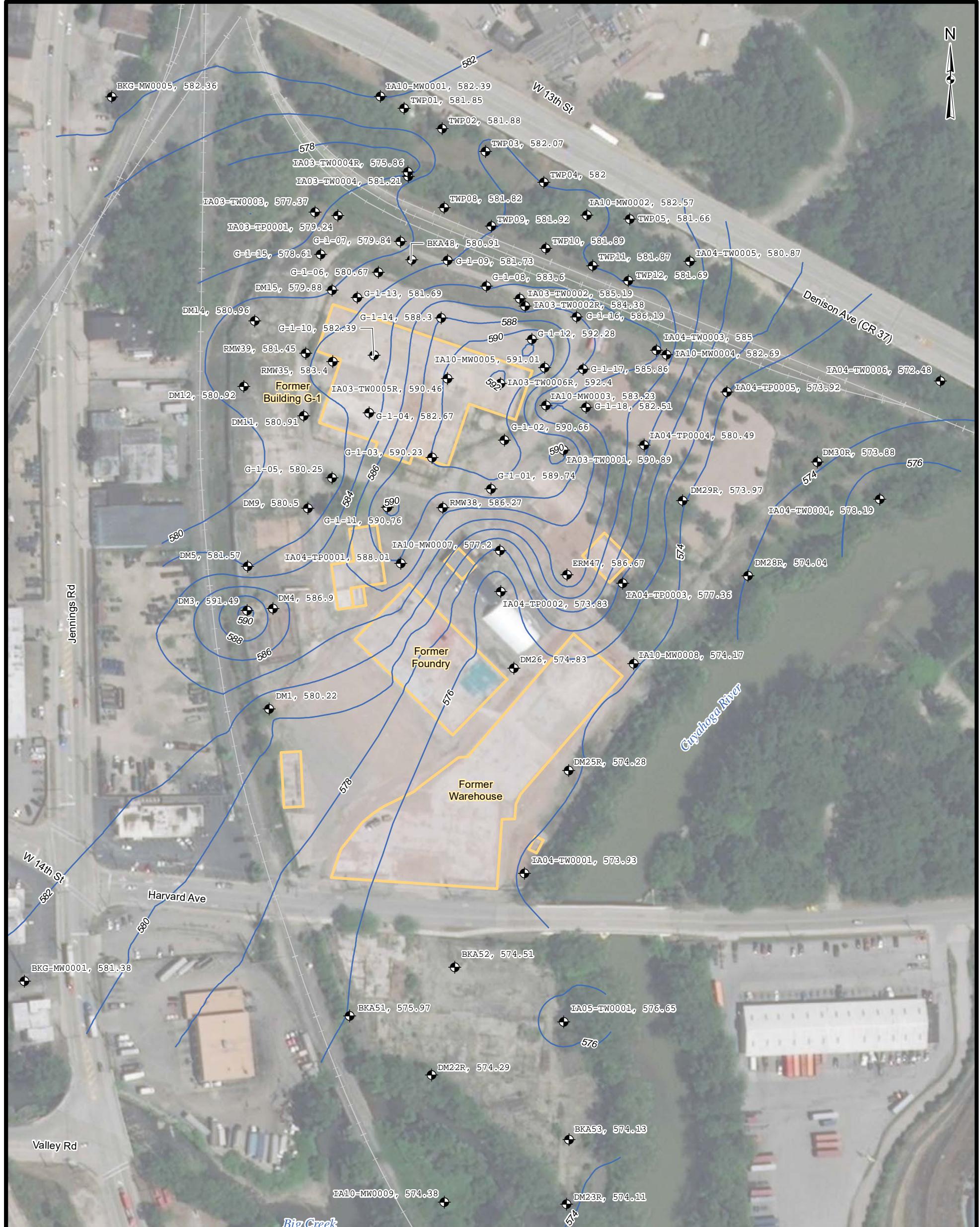
○ Former Site Buildings

0 75 150 300  
Feet



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### GROUNDWATER POTENTIOMETRIC SURFACE MAP - MAY 2015

**Legend**

● Monitoring Well

— Groundwater Elevation Contour (ft amsl)

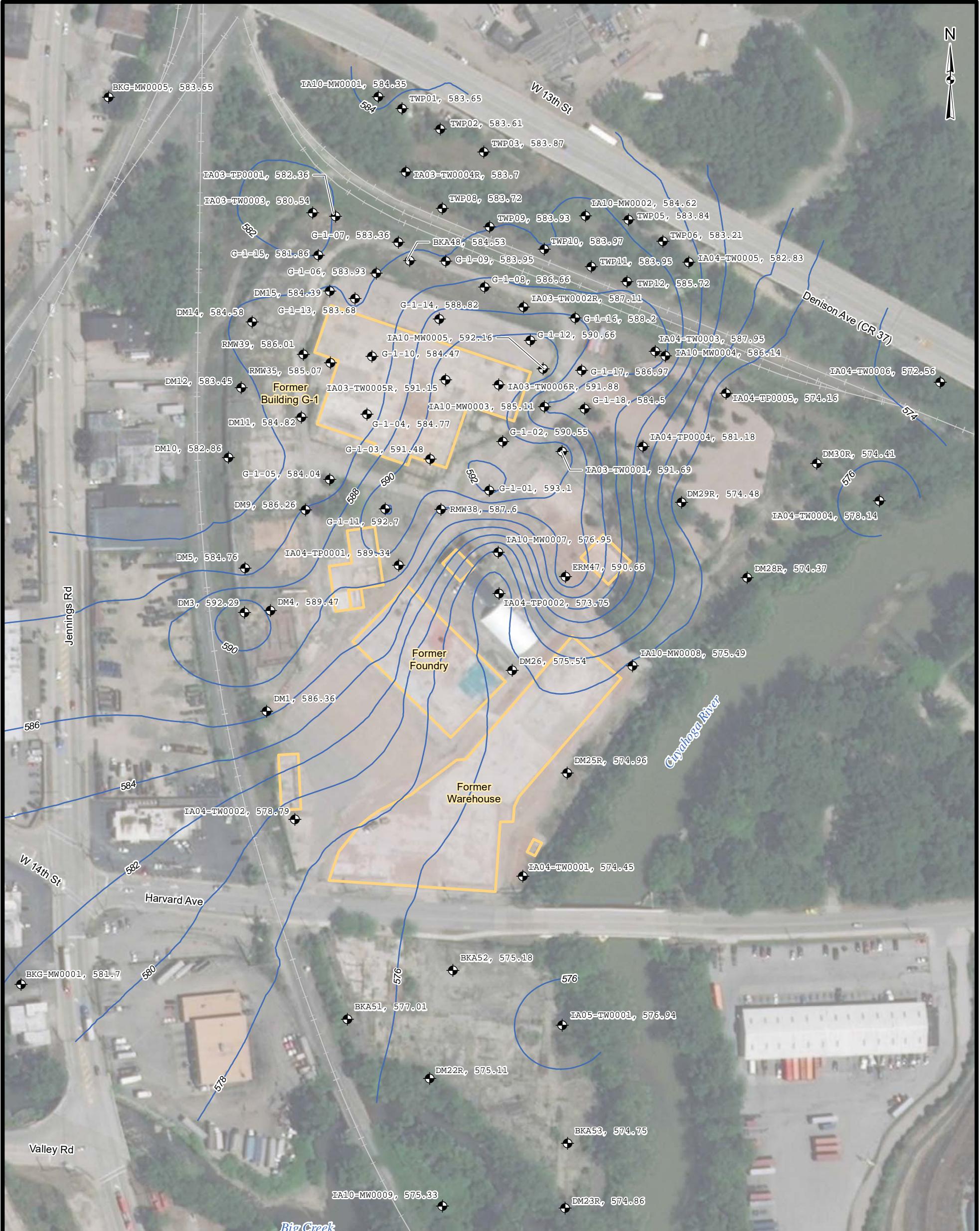
○ Former Site Buildings

0 75 150 300  
Feet



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### GROUNDWATER POTENTIOMETRIC SURFACE MAP - JUNE 2016

**Legend**

● Monitoring Well

— Groundwater Elevation Contour (ft amsl)

○ Former Site Buildings

0 75 150 300  
Feet



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### GROUNDWATER POTENTIOMETRIC SURFACE MAP - MARCH 2017

**Table 2: Harshaw FUSRAP Site**  
Analytical Results for Groundwater Samples

Well	Year	RADIUM-226	RADIUM-228	THORIUM-228	THORIUM-230	THORIUM-232	URANIUM-234	URANIUM-235	URANIUM-238	TOTAL URANIUM	TOTAL URANIUM
Units		pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	ug/L
USEPA MCLs		5	5	15	15	15				27	30
BKA48	2003		1.17 U		21.4			13.6 U	116 U	0	578
	2003			0.0601 U	0.814 U	0.176 U	126	9.08	126	261.08	367
	2004	0.465	1.33 U	0.0945 U	0.15 U	0.134 U	141	11.3	138	290.3	453
	2007	0.36 J	2.06 U	0.0904	-0.0064 U	-0.00585 U	63.3	4.31	65.4	304.21	193.8432432456
	2008	0.322 U	0.49 U	R	0.389	0.106 U		3.82	115	233.82	271
	2009	0.713	0.94 U	-0.00817 U	0.0533	0.00671 U		10.1	144	293.1	457
	2010	0.109 U	0 U	0.006 U	0 U	0.128 U	105	1.22	110	216.22	270
	2011	0 U	2.73	0.125 U	0.113 J	0.01 U	83.7	4.48	84.5	172.68	254
	2012	0.0988 U	0.212 U	0.05 U	-0.026 U	-0.006 U	85.5	5.05	87.9	178.45	300
	2013										501
	2015										272
	2016										343
	2017										478
BKA48 (Filtered)	2003		0.00367 U	0.383 U	0.0544 U	130	7.61	131	268.61	400	
	2004	0.72	1.07 U	0.0822 U	0.937 U	0.199 U	149	16.2	155	320.2	402
	2007	0.2 J	0.44 U	0.25 U	0.153 U	0.02 U	78	3.46	73	154.46	216.369369372
	2010	0.113 U	0 U	0.076 U	0.28 U	0.055 U	103	0.7	122	225.7	298
	2011	0.285 J	0.58 J	0.129 U	0.178 J	0.008 U	79.1	4.48	76.7	160.28	253
	2012	0.0531 U	0.31 J	0.11 J	-0.029 U	-0.005 U	108	6	111	225	366
	2013										500
	2015										265
	2016										341
	2017										486
BKA51	2003		3.7 U		85			30.3 U	74.6 U	0	0.0771 U
BKA52	2003		8.35 U		49.4			4 U	0 U	0	0.119 U
BKAS3	2003		1.33 U		59.9			16.2 U	36 U	0	0.0233 U
	2003		0.442 U	-0.0595 U	-0.00152 U	0.085 U	0.0321 U	0 U	0	0	0 U
	2004	1.28	1.52	0.626 U	0.798 U	0.105 U	0.105 U	0.0747 U	-0.0162 U	0	0.216
	2007	0.77 J	0.47 J	0.28 J	0.36 J	0.045 U	0.053 J	0.007 U	0.023 U	0.053	0.068171171172 U
	2008	1.15	1.64	R	0.909 U	-0.00809 U	0 U	-0.0409 U	0	0	0 U
BKA53 (Filtered)	2003		0.00821 U	0.394 U	0.18 U	2.09	0.0706 U	2.65	4.74	0 U	
	2004	0.583	2.12 J	0.0579 U	0.286 U	0.0345 U	0.141 U	0.316 U	0.181 U	0	0.414
	2007	0.71 J	1.09	0.29 J	0.3 J	0.036 U	0.087 J	0.006 U	0.012 U	0.087	0.035567567568 U
BKG-MW0001	2003		0.272 U	0.206 U	0.000352 U	0.466 J	0.0634 U	0.326 J	0.792	1.31	
	2004	0.775 J	2.28	-0.159 U	0.511 U	0.229 U	0.344 U	0.083 U	0.203 U	0	0.797
	2007	0.67 J	1.11	0.28 J	0.181 U	0.034 U	0.55 J	0.032 U	0.4 J	0.95	1.1858585856 J
	2011	0.877	1.23 J	0.22 J	0.076 U	0.027 J	0.765	0.054	0.476	1.295	1.32
	2012	0.38 J	0.111 U	0.159 J	-0.036 U	0 U	0.748	0.059 U	0.59	1.338	1.27
	2015										2.04
	2016										2.28
BKG-MW0001 (Filtered)	2003		-0.0224 U	0.0995 U	0.0559 U	0.765 J	0.117 U	0.589 J	1.354	1.38	
	2004	0.776 J	1.57	0.112 U	0.47 U	0.238 U	0.295 U	0.0377 U	0.737	0.737	0.668
	2007	1.01	1.1	0.39 J	0.3 J	0.058 U	0.64 J	0.039 U	0.35 J	0.99	1.0373873874 J
	2011	0.685	1.58 J	0.146 U	0.246 J	0.008 U	0.564	0.021 J	0.469	1.054	1.49
	2012	0.288 J	0.805 J	0.088 U	-0.081 U	0 U	0.451 J	0.166 J	0.701	1.318	1.3
	2013										1.78
	2015										2.07
BKG-MW0002	2003		2.63	1.04 U	0.112 U	0.0944 U	0.0241 U	0.0463 U	0	0	0.245
	2004	0.832 J	1.49 U	-0.192 U	0.531 U	-0.0727 U	0.14 U	0.059 U	0.153 U	0	0 U
	2007	1.03	0.65	0.31 J	0.42 J	0.042 U	0.027 J	0.0033 U	0.016 U	0.027	0.047423423424 U
BKG-MW0002 (Filtered)	2003		-0.0728 U	0.124 U	0.00843 U	0.147 U	0.0125 U	0.0296 U	0	0	0 U
	2004		-0.0927 U	0.65 U	-0.381 U	-0.115 U	-0.0357 U	-0.0168 U	0	0	0 U
	2007	0.94 J	0.35 U	0.2 U	0.115 J	0.016 U	0.031 U	-0.007 U	0.104 J	0.104	0.30825225256 J
BKG-MW0003	2003		0.112 U	0.27 U	0.0867 U	2.7	0.381 J	2.63	5.711	6.84	
	2004	0.163 U	0.799 U	0.0715 U	0.315 U	-0.0145 U	1.97	0.212 U	1.98	3.95	4.34
	2007	0.23 J	0.56 U	0.181 J	0.124 J	0.042 U	2.35	0.14 U	2.1	4.45	6.2243243244
	2008	0.89	0.318 U	R	0.0819 U	-0.00751 U		0.167 U	1.7	3.77	5
	2009	0.127 U	2.69	0.3038 U	-0.00507 U	0.0168 U	0.0682 U	1.75	3.77	5.17	
BKG-MW0003 (Filtered)	2003		0.112 U	0.27 U	0.0867 U	2.7	0.381 J	2.63	5.711	6.84	
	2004	0.163 U	0.799 U	0.0715 U	0.315 U	-0.0145 U	1.97	0.212 U	1.98	3.95	4.34
	2007	0.23 J	0.56 U	0.181 J	0.124 J	0.042 U	2.35	0.14 U	2.1	4.45	6.2243243244
BKG-MW0004	2003		0.236 J	0.48 U	0.196 J	0.046 U	2.7	0 U	2.79	5.49	8.26945945956
	2004	0.325 U	1.47 U	0.227 U	0.256 U	0 U	0.451 U	0.0189 U	0.336 U	0	0.855
	2007	2.38	1.74	0.181 J	0.096 J	0.057 J	0.083 J	0.022 U	0.024 U	0.083	0.071135135136 U
BKG-MW0005	2003		0.0289 U	1.25 U	0.187 U	0.379 J	0.224 J	0.233 U	0.603	0.47	
	2004	0.202 U	1.65 U	0.0519 U	0.563 U	0.144 U	0.983	0.208 U	0.28 U	0.983	0.431
	2007	2.78	-0.0664 U	0.456 U	0.28 U	0.0766 U	-0.074 U	0.321 U	0	0	0 U
	2010	0.927	0.262 U	0.102 U	0.45	0.041 U	1.01	0.215	0.631	1.856	1.54
	2015										1.53
BKG-MW0005 (Filtered)	2003		0.0158 U	0.358 U	0.033 U	-0.0557 U	-0.0223 U	0.0794 U	0	0	0.282
	2004	0.223 U	0.721 J	0.0772 U	0.453 U	0.0354 U	-0.0307 U	0	0	0	0 U
	2007	2.29	1.58	0.208 J	0.099 J	0.011 U	0.1 J	0.041 J	0.086 J	0.227	0.254900900904 J
	2010	0.243 U	0 U	0.108 U	0 U	0.042 U	0.436 J	0.145 U	0.424	0.86	1.8
	2015										0.952
CDT-MW0001	2003		0.284 U	0.621 U	0.185 U	0.306 J	-0.0192 U	0.204 J	0.51	0.309	
	2004	3.17	2.57	0.655 U	0.519 U	0.0656 U	0.194 U	0.175 U	0.158 U	0	0 U
CDT-MW0001 (Filtered)	2003		0.343 U	0.303 U	0.124 U	0.153 U	-0.0187 U	0.172 J	0.172	0.292	
	2004		0.386	0.906 J	0.216 U	0.169 U	0.205 U	0.386 U	0	0	0 U
CDT-MW0002	2003		0.304 U	0.236 U	0.0815 U	0.13 U	0.0485 U	0.105 U	0	0	-0.0751 U
	2004	0.671 J	2.15	0.415 U	0.681 U	-0.0872 U	0.512 U	0.148 U	0.244 U	0	0 U
CDT-MW0002 (Filtered)	2003			0.389 U	0.605 U	0.137 U	0.00832 U	-0.0261 U	0.00849 U	0	-0.0194 U
	2004			-0.0285 U	0.975 J	0.0819 U	-0.15 U	0.51 U	0.188 U	0	0 U

Notes:

pCi/L = picocuries per liter

μg/L = micrograms per liter

MCL = Maximum Containment Level

U = Not Detected above the detection limit

= Recent Sampling Event

**Table 2: Harshaw FUSRAP Site**  
Analytical Results for Groundwater Samples

Well	Year	RADIUM-226	RADIUM-228	THORIUM-228	THORIUM-230	THORIUM-232	URANIUM-234	URANIUM-235	URANIUM-238	TOTAL URANIUM	TOTAL URANIUM
Units		pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	ug/L
USEPA MCLs		5	5	15	15	15				27	30
DM1	2003		7.38 U		125			16.4 U	75.8 U	0	0 U
DM1	2003			0.112 U	0.166 U	-0.0114 U	-0.156 U	-0.0996 U	0.0132 U	0	0 U
DM1 (Filtered)	2003			0.125 U	0.284 U	0.0725 U	0.771	0.0109 U	0.578 J	1.349	0 U
DM10	2003		0.326 U		13			1.34 U	153 U	0	0.125 U
DM11	2003		12 U		13.3 J			10.7 U	-38 U	0	-0.0392 U
DM11	2004	0.334 U	0.575 U	-0.506 U	0.0294 U	-0.783 U	1.44	0.526 U	0.709	2.149	0.262
DM11	2011	0.855 J	0.885 J	0.117 U	0.322 J	0.062 J	0.348	0.026 J	0.4	0.774	0.199 J
DM11	2012	0.463 J	0.898	0.11 J	-0.042 U	0 U	0.595	0.151	0.482	1.228	0.976
DM11	2013										32.5
DM11	2015										0.177 J
DM11 (Filtered)	2004			0.304 U	1.64 J	0.114 U	0.982	0.591	0.813	2.386	1.89
DM11 (Filtered)	2011	0.09 U	0.806 J	0.091 U	0.065 U	0.112 J	-0.042 U	0 U	-0.001 U	0	0.02 U
DM11 (Filtered)	2012	0.104 U	1.04	0.267	0.02 U	0.01 U	0.459	0.038 U	0.496	0.955	0.754
DM12	2003		14.2 U		17.1			7.02 U	0 U	0	0.224
DM12	2003			0.258 U	0.145 U	0.0583 U	0.263 J	0.0533 U	0.176 U	0.263	0 U
DM12 (Filtered)	2003			0.188 U	0.138 U	-0.0125 U	0.214 U	0.116 U	0.0889 U	0	0 U
DM14	2003		7.86 U		24.5			5.5 U	60 U	0	3.56
DM14	2003			0.69 J	1.09 U	0.744 J	5.2	1.49	4.98	11.67	3.04
DM14	2009	0.254 U	1.05 U	0.901	0.567	0.421		0.547	7.72	15.207	17.2
DM14	2010	0.172 U	0 U	0.403	0.516	0.325 J	3.81	0.316	3.02	7.146	7.58
DM14	2011	0.262 J	1.55	0.974 J	0.439 U	0.366	2.43	0.045 U	1.75	4.18	2.08
DM14	2012	0.233 U	1.37	1.77 J	0.24 U	0.12 U	3.59	0.32 U	3.31	6.9	7.41
DM14	2013										2.53
DM14	2015										1.24
DM14 (Filtered)	2003			0.816 U	1.05 U	0.157 U	5.65	0.951 J	5.69 J	12.291	3.2
DM14 (Filtered)	2010	0.103 U	0.583	0.278	0.254 U	0.099 U	2.85	0.502	2.57	5.922	4.99
DM14 (Filtered)	2011	0.244 U	2.05	0.777 U	0.366 U	0.131 J	1.96	0.276 JB	1.18	3.416	1.27
DM14 (Filtered)	2012	0 U	1.18	2.05	0.296 U	0.336 J	1.01 U	0.289 U	2.17	2.17	4.97
DM14 (Filtered)	2013										2.22
DM14 (Filtered)	2015										1.12
DM15	2003		1.4 U		19.1			5.31 U	-14.2 U	0	20.5
DM15	2004	0.914	1.33	0.218 U	1.76 J	0.327 U	10	2.18	9.52	21.7	29.8
DM15	2007	1.05	0.36 U	0.28 J	0.3 J	0.046 U	9.4	0.43 J	8.7	18.53	25.7864864868
DM15	2008	1.72	0.987	R	0.082 U	0.0169 U		0.0873 U	11.1	23.8	34.6
DM15	2009	0.52 U	0.436 U	-0.0129 U	-0.0159 U	-0.0000495 U		0.707	10.4	21.407	28.1
DM15	2010	0.298	0.091 U	0 U	0.77	0.25 J	19.7	0.283	19	38.983	49.8
DM15	2011	0.876	1.07 J	0.334 J	-0.002 U	0.024 U	15.1	1.03	16	32.13	42.2
DM15	2012	0 U	0.789 J	0.067 U	0.031 J	0.023 U	11.4	0.794	10.2	22.394	29
DM15	2013										27.1
DM15	2015										30.8
DM15 (Filtered)	2004	0.803	1.14 U	-0.0507 U	0.522 U	-0.026 U	10.2	2.66	9.42	22.28	41.1
DM15 (Filtered)	2007	0.96 J	0.33 U	0.43 J	0.139 U	0.021 U	8	0.57 J	7.1	15.67	21.0441441444
DM15 (Filtered)	2010	0.281	0 U	0.089 U	0.437	0.546	20	0.712	20.9	41.612	47.8
DM15 (Filtered)	2011	-0.057 U	0.419 U	0.138 U	0.179 U	-0.005 U	14.1	0.786	13.5	28.386	41.7
DM15 (Filtered)	2012	0.89	1.4	-0.09 U	-0.066 U	-0.035 U	8.5	0.292	8.96	17.752	25.4
DM15 (Filtered)	2013										26.3
DM15 (Filtered)	2015										31
DM2	2003		11 U		26.3				12 U	0 U	0 U
DM22R	2003		1.2 U		78.4				-4.38 U	18.1 U	0 U
DM22R	2003			-0.181 U	0.287 U	-0.0331 U	1.1	0.433 J	0.0759 U	1.533	0 U
DM22R (Filtered)	2003			-0.0936 U	0.197 U	0.000211 U	0.672 J	0.536 U	0.0356 U	0.672	0 U
DM23R	2003		1.14 U		45.7				15.4 U	68.2 U	0 U
DM23R	2004	0.911	2.5	0.333 U	0.0532 U	0 U	0.506 U	0.103 U	0.469 U	0	1.38
DM23R	2009	0.774	1.94 U	0.108	0.0111 U	-0.00483 U		0.032 U	1.19	2.44	2.78
DM23R	2010	1.43	0.209 U	0.192	0.304 U	0.111 U	0.843 J	0 U	0.468	1.311	2.53
DM23R	2011	0.789	1.49 J	0.176 U	0.146 U	0.006 U	0.611	0.107 J	0.535	1.253	1.77
DM23R	2012	0.384 J	1.54	0.253 J	0.028 U	-0.013 U	0.764	0.042 U	0.867	1.631	2.39
DM23R	2013										0.842
DM23R	2015										1.07
DM23R (Filtered)	2004	0.896	1.95	0.432 U	1.82 J	0.14 U	0.649	0.466	0.554	1.669	1.88
DM23R (Filtered)	2010	0.832	0.84	0.702	0.331	0.798	0.629 J	0 U	0.826	1.455	2.98
DM23R (Filtered)	2011	0.298 J	1.56 J	0.26 J	0.035 U	0.019 U	0.478	-0.02 U	0.505	0.983	1.74
DM23R (Filtered)	2012	0.587	0.732 J	0.133 J	-0.044 U	-0.019 U	1.15	0.041 U	0.919	2.069	2.98
DM23R (Filtered)	2013										0.847
DM23R (Filtered)	2015										0.964
DM25R	2003		5.65 U		7.39 U				-0.178 U	59.5 U	0 U
DM25R	2003				0.398 U	0.184 U	0.053 U	0.0196 U	-0.0506 U	0.132 U	0 U
DM25R	2004	1.01	0.895 U	0.207 U	1.41 U	0.0941 U	0.557	-0.0871 U	0.0649 U	0.557	-0.0235 U
DM25R (Filtered)	2003				0.233 U	0.461 U	0.0738 U	0.24 U	0.101 U	0.119 U	0 U
DM25R (Filtered)	2004	0.936	1.45 U	-0.244 U	0.728 U	0.087 U	0.166 U	0.126 U	0.0259 U	0	0.0904 U
DM26	2003		6.27 U		28				6.67 U	7.49 U	0 U
DM26	2004	1.14 J	1.1 U	0.243 U	0.602 U	0.098 U	0.504	0.367 U	0.227 U	0.504	0.11 U
DM26	2011	0.956	1.28 J	0.076	0.18 J	-0.005	0.05	-0.008	0.032	0.074	0.044
DM26	2012	0.92	1.29	0.188 J	-0.037 U	-0.007 U	-0.035 U	0.035 U	0.02 U	0	0.105 U
DM26	2013										0.097 J
DM26	2015										0.137 U
DM26 (Filtered)	2004				0.141 U	0.711 U	0.126 U	0.191 U	0.0503 U	0.0326 U	0 U
DM26 (Filtered)	2011	0.771	1.85 J	0.08	0.212 J	0.015	0.03	0.022 U	0.065	0.095	0.013
DM26 (Filtered)	2012	1.15	0.909	0.114 J	-0.053 U	-0.019 U	-0.035 U	-0.017 U	-0.004 U	0	0.171 U
DM26 (Filtered)	2013										0.086 U
DM26 (Filtered)	2015										0.106 J

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Analytical Results for Groundwater Samples

Well	Year	RADIUM-226	RADIUM-228	THORIUM-228	THORIUM-230	THORIUM-232	URANIUM-234	URANIUM-235	URANIUM-238	TOTAL URANIUM	TOTAL URANIUM
Units		pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	ug/L
USEPA MCLs		5	5	15	15	15				27	30
DM27R	2003		8.64 U		0 U			-6.31 U	27.8 U	0	15.9
	2003			0.154 U	0.863 U	0.0465 U	8.05	0.83	7.75	16.63	23.3
	2004	0.367 U	1.03	0.192 U	0.906	0.39 U	13.4 J	1.61 J	15.4 J	30.41	40.5
DM27R (Filtered)	2003		0.0555 U	0.593 U	0.152 U	6.05	0.639	5.6	12.289	25.8	
	2004		0.0787 U	0.85	0.331 U	17.2 J	0.969 J	16.4 J	34.569	39.5	
DM28R	2003		0.18 U		6.03 U			7.57 U	-48.7 U	0	0.559
	2003		-0.134 U	0.264 U	0.0478 U	0.048 U	0.0184 U	0.0537 U	0	0 U	
	2004	0.148 U	0.746 U	0.413 U	1.12 U	-0.0388 U	0.166 U	0.268 U	0.126 U	0	-0.0459 U
	2007	0.22 J	0.27 U	0.234 U	0.096 U	0.041 U	0 U	0.024 U	0.038 U	0	0.112630630632 U
DM28R (Filtered)	2003		0.12 U	0.045 U	0.0438 U	0.18 U	-0.0522 U	0.031 U	0	0 U	
	2004	0.286 U	3.27 J	0.334 U	1.25 U	0.0275 U	0.332 U	0.0941 U	0.249 U	0	0.147 U
	2007	0.31 J	0.27 U	0.27 U	0.219 J	0.016 U	0.03 U	-0.0003 U	0	-0.000889189189 U	
DM29R	2003		5.46 U		12.6 J			1.02 U	106 U	0	0.484
	2004	1.12	1.93	0.216 U	1.02 U	0.229 U	0.263 U	0.131 U	0.138 U	0	0.656
	2008	1.01	2.75	R	-0.00302 U	0.0239 U	0.0943 U	0.175 U	0.388	0 U	
DM29R (Filtered)	2004		0.32 U	0.756 U	0.269 U	0.581 U	0.301 U	0.236 U	0	0.262 U	
DM30R	2003		12.4 U		11.4 J			2.19 U	0 U	0	0.127 U
	2003		7.69 U		26.7			-5.07 U	127 U	0	0.189 U
	2004	0.66	1.27 U	0.0842 U	0.82 U	0.139 U	0.305 U	0.0545 U	0.154 U	0	0.0999 U
DM30R (Filtered)	2003			0.0204 U	0.119 U	0.0196 U	0.238 J	0.0617 U	0.0619 U	0.238	-0.122 U
	2004			0.287 U	0.814 U	0.0794 U	0.356 U	-0.0914 U	0.356 U	0	0.0629 U
DM4	2003		2.81 U		43.7			2.53 U	14.8 U	0	0 U
DMS	2003		0.218 U		24.6			6.23 U	167 U	0	0.341
	2003			0.0625 U	0.567 J	0.2 U	0.353 J	0.0427 U	0.203 J	0.556	0.228
DM5 (Filtered)	2003		0.434 U	0.368 U	0.0549 U	0.226 J	0.0293 U	0.0489 U	0.226	-0.062 U	
	2003		3.51 U	31.7				10.2 U	0 U	0	0.293
DM9	2004	0.734	3.02	0.373 U	0.0875 U	-0.026 U	0.783	-0.0136 U	0.384 U	0.783	0.26
	2011	0.0592 U	0.89 J	0.13 U	0.228 J	0.087 J	1.33	0.08 J	0.821	2.231	2.98
	2012	0.305	0.168 U	0.06 U	-0.035 U	-0.013 U	1.21	0.073 U	0.811	2.021	1.96
	2013										3.16
	2015										2.62
DM9 (Filtered)	2017										3.2
	2004	0.483	2.91	0.574 U	1.21 J	0.483	0.321 U	0.306 U	0.318	0.318	0.335
	2011	0.47 J	1.14	0.184 U	0.038 U	0.054 J	1.24	0.139	1.11	2.489	2.92
	2012	0.0509 U	0.358 J	0.168	-0.027 U	-0.007 U	1.18	0.082 U	1.04	2.22	2.32
	2013										3.29
	2015										2.58
ERM47	2003		10.1 U		27.5			-11.3 U	155 U	0	0.037 U
	2003			0.487 U	0.938 J	0.0752 U	0.094 U	-0.0135 U	0.0537 U	0	-0.0933 U
	2008	1.25	1.46	0.906 J	0.179 U	-0.0361 U		-0.0159 U	0.127	0.127	0 U
	2003			0.138 U	0.0327 U	0.0378 U	0.205 U	-0.00818 U	0.0517 U	0	0 U
	2014										3321
G-1 NE-TP (Filtered)	2014										3962
G-1 NW BAY (Filtered)	2014										277
G-1 SE-TP	2014										299
G-1 S-TP (Filtered)	2014										589
G-1 SW BAY (Filtered)	2014										0.457 B
G-1 W-TP	2014										16
G-1 O1	2015										13
	2015										14
	2015										17
G-1 O1 (Filtered)	2015										13
	2015										14
	2015										22
G-1 O2	2015										11
	2015										11
	2016										22.8
G-1 O2 (Filtered)	2015										16
	2015										12
	2015										11
	2016										14.1
G-1 O3	2015										12000
	2015										11000
	2015										13000
	2016										7841
G-1 O3 (Filtered)	2015										3728
	2015										12000
	2015										11000
	2015										13000
	2016										7472
G-1 O4	2015										3933
	2015										12000
	2015										360
	2015										300
	2016										832
G-1 O4 (Filtered)	2015										470
	2015										330
	2015										310
	2016										799
G-1 O5	2015										11
	2015										8.7
	2015										490
	2017										4.36

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Analytical Results for Groundwater Samples

Well	Year	RADIUM-226	RADIUM-228	THORIUM-228	THORIUM-230	THORIUM-232	URANIUM-234	URANIUM-235	URANIUM-238	TOTAL URANIUM	TOTAL URANIUM
Units		pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	ug/L
USEPA MCLs		5	5	15	15	15				27	30
G-1-05 (Filtered)	2015										11
	2015										65
	2015										190
	2017										3.88
G-1-06	2015										0.29 J
	2015										0.56
	2015										0.638
G-1-06 (Filtered)	2015										0.51
	2015										0.36
	2015										0.609
G-1-07	2015										13
	2015										12
	2015										3.86
G-1-07 (Filtered)	2015										11
	2015										3.71
G-1-08	2015										51
	2015										48
	2015										46 J
	2016										48
G-1-08 (Filtered)	2015										48
	2015										46
	2015										46
	2016										51.7
G-1-09	2015										5.2
	2015										4.7
	2015										2.35
G-1-09 (Filtered)	2015										13
	2015										4.7
	2015										2.35
G-1-10	2015										0.9
	2015										0.84
	2015										0.436 J
G-1-10 (Filtered)	2015										3.8
	2015										0.9
	2015										0.448 J
G-1-11	2015										3.6
	2015										14
	2015										1.02
G-1-11 (Filtered)	2015										3.1
	2015										1.4
	2015										1.12
G-1-12	2015										120
	2015										44
	2015										45
G-1-12 (Filtered)	2017										21.1 J
	2015										73
	2015										44
	2015										46
G-1-13	2017										22.8
	2015										0.82
	2015										0.22
G-1-13 (Filtered)	2015										0.325 J
	2015										0.89
	2015										0.046 U
G-1-14	2015										0.293 J
	2015										210
	2015										220
G-1-14 (Filtered)	2015										120
	2015										190
	2015										210
G-1-15	2015										160
	2015										0.2
	2015										0.145 J
G-1-15 (Filtered)	2015										0.2
	2015										1 J
	2015										0.107 J
G-1-16	2015										11
	2015										12
	2015										13.098
	2016										11.8
G-1-16 (Filtered)	2017										11.9
	2015										11
	2015										12
	2015										11.505
	2016										12.2
G-1-17	2017										12.5
	2015										12
	2015										330
	2015										6.6
	2016										6.41
G-1-17	2017										6.89

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Well	Year	RADIUM-226	RADIUM-228	THORIUM-228	THORIUM-230	THORIUM-232	URANIUM-234	URANIUM-235	URANIUM-238	TOTAL URANIUM	TOTAL URANIUM
Units		pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	ug/L
USEPA MCLs		5	5	15	15	15				27	30
G-1-17 (Filtered)	2015										11
	2015										420
	2015										6
	2016										6.58
	2017										5.61
	2015										7
G-1-18	2015										16
	2015										10
G-1-18 (Filtered)	2015										15
	2015										16
	2015										10
GEO-01	2016										38.5
GEO-01 (Filtered)	2016										36.4
GEO-02	2016										7.21
GEO-02 (Filtered)	2016										5.67
GEO-07	2016										5.63
GEO-07 (Filtered)	2016										5.67
IA03-TP0001	2004	0.742	1.65	0.453 U	0.589 U	0.0457 U	0.193 UJ	0.0319 UJ	0.0859 UJ	0	1.26
	2015										4.5
	2015										1.4
	2015										3.9
IA03-TP0001 (Filtered)	2004			0.0949 U	0.457 U	0.0809 U	0.256 UJ	0.0505 UJ	0.391 UJ	0	0.305
	2015										4.5
	2015										1.1
	2015										5.2 J
IA03-TW0001	2003										5.32
	2008	0.44 U	0.909	1.03 J	0.262	0.332		0.0321 U	0.676	1.399	2.53
	2009	0.413 U	2.5	0.391	0.242	0.301		0.0685	0.814	1.7505	1.93
	2010	0 U	0 U	0.152 U	0.356 U	0.194 U	1.44	0.059 U	0.44	1.88	1.88
IA03-TW0001 (Filtered)	2011	0.168 U	1.16	0.365 J	0.153 J	0.036 J	0.398	0.015 U	0.196	0.594	0.758
	2003										8.4
	2010	0.15 U	0 U	0.192	0.619	0.116 U	1.32	0.244	0.862	2.426	2.18
	2011	0.127 U	0.821 J	0.186 U	0.113 J	0.061 J	0.245	-0.01 U	0.194	0.439	0.701
IA03-TW0002	2003										38.9
	2004										27
IA03-TW0002 (Filtered)	2003										31.2
	2013										8.43
IA03-TW0002R	2015										6.4
	2015										9
	2015										5.3
IA03-TW0002R (Filtered)	2015										6.1
	2015										29
	2015										5.4
IA03-TW0003	2003										0 U
IA03-TW0003 (Filtered)	2003										0 U
IA03-TW0004	2003										0.225
	2004	1.16	2.19	0.0214 U	0.511 U	0.00446 U	0.547 U	-0.0444 U	0.655	0.655	0.577
	2008	1.05	1.53	R	0.122 U	0.0251 U		0.0351 U	0.157	0.47	0 U
IA03-TW0004 (Filtered)	2003										0.23
IA03-TW0004R	2004			0.38 U	0.819 U	0.105 U	0.459 U	0.469 U	0.286 U	0	0.54
	2015										0.046 U
	2015										0.046 U
IA03-TW0004R (Filtered)	2015										4.9 J
	2015										0.046 U
	2015										0.046 U
IA03-TW0005	2003										4130
	2004			-0.028 U	0.792	0.372 U	349 J	25 J	353 J	727	1170
	2007										6839
	2014										4070
IA03-TW0005 (Filtered)	2003										1370
	2004										6324
IA03-TW0005R	2015										3400
	2015										5300
	2015										6600
	2016										5480
	2017										4047
IA03-TW0005R (Filtered)	2015										3500
	2015										5100
	2015										6800
	2016										5803
	2017										4092
IA03-TW0006	2004										184000
	2004		55.7 U	17400	67 U	74100	4000	78100	156200	231485.5855884	
	2007										
	2014										33180
IA03-TW0006 (Filtered)	2014										22250
IA03-TW0006R	2015										220000
	2015										240000
	2015										140000
	2016										122500
	2017										61030

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**Table 2: Harshaw FUSRAP Site**  
**Analytical Results for Groundwater Samples**

Well	Year	RADIUM-226	RADIUM-228	THORIUM-228	THORIUM-230	THORIUM-232	URANIUM-234	URANIUM-235	URANIUM-238	TOTAL URANIUM	TOTAL URANIUM
Units		pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	ug/L
USEPA MCLs		5	5	15	15	15				27	30
IA03-TW0006R (Filtered)	2015										240000
	2015										250000
	2015										160000
	2016										117300
	2017										62200
IA04-TP0001	2004	0.34 J	1.39 U	0.175 U	0.265 U	0.0486 U	4.8	0.419 U	4.8	9.6	10.2
	2008	0.582	1.73	R	0.0147 U	0.0591 U		0.233	3.31	6.713	7.16
	2009	0.285 U	1.89 U	0.0107 U	0.0304	0.00442 U		0.143	3.23	6.903	14.8
	2010	0.17 U	0 U	0.127 U	0.126 U	0.275	2.36	0.406	1.81	4.576	5.41
	2011	0.382 J	1.16 J	1.01 J	0.076 U	0.459	13.2	0.842	12.3	26.342	26
	2012	-0.105 U	0.399 J	0.119 J	-0.042 U	0.007 U	2.87	0.121	2.45	5.441	7.13
	2013										6.74
	2015										12.8
	2016										18.7
IA04-TP0001 (Filtered)	2004			0.39 U	0.894 J	0.202 U	5.49	1.82	2.89	10.2	10.1
	2010	0.105 U	0 U	0.149	0.656	0.156	2.39	0.207 U	1.7	4.09	5.01
	2011	0 U	1.22 J	0.189 U	0.037 U	0.003 U	1.37	0.029 J	0.902	2.301	2.9
	2012	0.41 J	0.0812 U	0.099 J	-0.031 U	0.011 U	2.6	0.148	2.24	4.988	6.27
	2013										5.65
	2015										12.5
	2016										17.2
IA04-TP0002	2004	1.09 J	1.37 U	0.346	0.26 U	0.181	0.5 U	0.344 U	0.427 U	0	0.419
	2011	0.311 J	1.13 J	0.115 U	0.075 U	-0.017 U	0.521	0.031 J	0.28	0.832	0.449
	2012	0.451 J	-2.48 U	0.332	-0.011 U	0.026 U	0.178 J	0.138	-0.054 U	0.316	0.208 U
	2013										0.445
	2015										0.335 J
IA04-TP0002 (Filtered)	2004			-0.18 U	0.765 U	0.229	0.572 U	0.294 U	-0.0225 U	0	0.544
	2011	0.334 J	1.9 J	0.024 U	0.107 U	0.018 U	0.324	0.031 J	0.392	0.747	0.361 J
	2012	0.255 J	1.12	0.113 J	-0.02 U	-0.009 U	0.154 J	0.03 U	0.068 U	0.154	0.247 U
	2013										0.347
	2015										0.309 J
IA04-TP0003	2004	1.37	2.49	0.286 U	0.441 U	0.0000000181 U	0.0745 U	0.12 U	-0.0186 U	0	0 U
	2007	1.6	1.62	0.41 J	0.212 U	0.07 U	0.014 U	0.007 U	0.017 U	0	0.050387387388 U
IA04-TP0003 (Filtered)	2004			0.124 U	1.02 J	0.174	0.533 U	0.285 U	0.115 U	0	0 U
	2007	1.42	1.33	0.167 U	0.2 U	0.06 U	0.042 U	0.007 U	0.023 U	0	0.068171171172 U
IA04-TP0004	2004	0.695	1.62 U	0.643 U	0.93 U	0.0888 U	0.226 U	0.111 U	0.174 U	0	0.791 J
	2007	0.41 J	0.04 U	0.37 J	0.158 J	0.036 U	0.36 J	-0.006 U	0.27 U	0.36	0.80027027028 U
	2008	0.615	0.581 U	R	0.0615 U	0.0823		0.0752 U	0.175	0.472	0 U
	2009	1.2	3.51	1.1	0.522	0.667		0.171	3.51	7.851	14
	2010	0.24	0 U	0.169	0 U	R	1.34	0.071 U	0.726	2.066	2.35
IA04-TP0004 (filtered)	2004			0.907	0.34 U	0.431 U	0.335 U	-0.0147 U	0.132 U	0	0.548 J
	2007	0.32 J	0.25 U	0.28 J	0.26 J	0.048 U	0.28 J	0.053 U	0.23 J	0.51	0.68171171172 J
	2010	0.429	0 U	0.039 U	0.257 U	0.071 U	1.52 J	0.077 U	0.727	2.247	2.01
IA04-TP0005	2004	0.422	1.46	0.682	1.49 J	0.0764 U	0.292 U	0.152 U	0.0617 U	0	1.27
	2008	0.75	0.875	R	0.0874 U	-0.00738 U		0.0675 U	0.0284 U	0	0 U
IA04-TP0005 (Filtered)	2004			0.312 U	1.76 J	0.201 U	-0.177 U	0.149 U	0.0249 U	0	0.146 U
IA04-TW0001	2003										0 U
IA04-TW0001 (Filtered)	2003										0.0732 U
IA04-TW0002	2003										0 U
IA04-TW0002 (Filtered)	2003										0 U
IA04-TW0003	2003										96.4
IA04-TW0003 (Filtered)	2003										75.8
IA04-TW0004	2003										9.89
	2004	0.693	1.49	0.119 U	1.03 U	-0.021 U	1.86	0.669	1.78	4.309	4.81
	2007	0.49 J	1.23	0.26 U	0.27 J	0.059 J	6.05	0.24 J	6.08	12.37	18.02090090112
	2008	0.671	0.96	R	-0.0598 U	0.0554 U		0.22 U	4.52	7.78	11.1
	2011	0.465 J	1.46 J	0.324 J	0.142 U	0.054	2.6	0.067 J	2.67	5.337	4.86
	2012	0.255 J	0.79 J	0.134 J	0.237	-0.009 U	8.13	0.325	7.56	16.015	18.1
	2013										12
	2015										2.94
	2016										5.7
IA04-TW0004 (Filtered)	2003										8.95
	2004			0.0976 U	1.34 U	-0.0562 U	2.97	0.426 U	2.51	5.48	5.47
	2007	0.67 J	1.62	0.33 J	0.145 J	0.02 U	5.82	0.35 J	6.01	12.18	17.81342342364
	2011	0.529	1.38 J	0.235 J	0.101 U	0.016 U	1.62	0 U	2.07	3.69	3.55
	2012	0 U	1.17	0.127 J	-0.011 U	-0.003 U	5.67	0.407	6.34	12.417	14.8
	2013										13.2
	2015										2.83
	2016										6.85
IA04-TW0005	2003										0 U
IA04-TW0005 (Filtered)	2003										0 U
IA04-TW0006	2003										0 U
IA04-TW0006 (Filtered)	2003										0.0234 U
IA05-TW0001	2003										0.117 U
	2007	1.19	2.35	0.267 J	0.067 U	0.043 U	0.067 J	0.007 U	0.052 J	0.119	0.154126126128 J
IA05-TW0001 (Filtered)	2003										0 U
	2007	1.33	2.01	0.249 U	0.095 U	0 U	0.044 U	-0.005 U	0.018 U	0	0.053351351352 U

Notes:  
 pCi/L = picocuries per liter  
 ug/L = micrograms per liter  
 MCL = Maximum Containment Level

U = Not Detected above the detection limit  
 = Recent Sampling Event

**Table 2: Harshaw FUSRAP Site**  
Analytical Results for Groundwater Samples

Well	Year	RADIUM-226	RADIUM-228	THORIUM-228	THORIUM-230	THORIUM-232	URANIUM-234	URANIUM-235	URANIUM-238	TOTAL URANIUM	TOTAL URANIUM
Units		pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	ug/L
USEPA MCLs		5	5	15	15	15				27	30
IA10-MW0001	2003		0.201 U	0.459 U	0.0175 U	8.7	1.39	8.24	18.33	29.3	
	2004	0.974	1.72	0.182 U	0.662 U	0.0886 U	1.95 J	0.413 UJ	2 J	3.95	6.63
	2007	0.46 J	0.43 U	0.234 J	0.097 J	0.049 J	5.5	0.19 J	4.47	10.16	13.24891891908
	2008	0.751	1.32	R	0.25	0.0318 U		0.55	5.87	13.58	21.2
	2009	0.427	0.764 U	0.00751 U	-0.0011 U	-0.0135 U		0.497	9.52	19.297	25.4
	2010	0.358	0 U	0.108 U	0 U	0.118 U	10.9	0.342	12	23.242	28.7
	2011	0.352	1.36 J	0.176	0.072 U	0.028	10.9	0.475	10.8	22.175	32.2
	2012	0.769	0.249 U	0.103 J	-0.034 U	0 U	9.45	0.528	8.88	18.858	28.2
	2013										25.3
	2015										38.7
	2016										27.7
	2017										41.8
IA10-MW0001 (Filtered)	2003		-0.348 U	0.332 U	0.139 U	8.89	0.969	10.3	20.159	27.4	
	2004		0.0668 U	0.61	-0.0333 U	3 J	0.423 UJ	2.57 J	5.57	7.01	
	2007	0.55 J	0.29 U	0.229 J	0.049 U	0.009 U	5.4	0.15 U	5.9	11.3	17.4873873876
	2010	0.168 U	0 U	0.029 U	0 U	0.104 U	10.9	0.131 U	10.2	21.1	31.8
	2011	0.411	0.752	0.194	0.116	0.052	11.2	0.576	11	22.776	33.9
	2012	1.32	0.387 J	0.063 U	-0.011 U	0.008 J	10	0.636	9.43	20.066	30.6
	2013										25.5
	2015										40.1
	2016										32.9
	2017										40.4
IA10-MW0002	2003		0.239 U	0.208 U	0.0796 U	0.0861 U	0.0744 U	0.0935 U	0	0.289	
	2004	1.25	1.37 U	-0.108 U	0.703 U	0.0739 U	0.535 U	0.566	0.104 U	0.566	0.794
	2007	1.29	0.49 J	0.24 J	0.182 J	0.002 U	0.084 J	0 U	0.039 U	0.084	0.115594594596 U
	2008	1.2	1.21	R	0.0416	0.0359 U		-0.0159 U	0.0408 U	0	0 U
	2009	0.187 U	3.9	0.142	0.0342	0.00882 U		-0.00817 U	0.033 U	0	-0.000852 U
	2010	2.39	0.439	0.639	1.06	0.35 J	1.41	0.122 U	0.456	1.866	1.02
	2015										12.2
	2016										7.27
	2017										14.3
IA10-MW0002 (Filtered)	2003		0.0313 U	0.218 U	0.0271 U	0.0513 U	0.0113 U	0.0305 U	0	0.166 U	
	2004	0.642	2.64	-0.228 U	0.851 U	0.253 U	0.385 U	0.335 U	0.123 U	0	0.724
	2007	0.79 J	1.51	0.202 J	0.274 J	0.028 U	0.074 J	0 U	0.08 J	0.154	0.23711711712 J
	2010	0.343	0 U	0.064 U	0.895	0.292 J	1.25	0.1 U	0.369 U	1.25	1.31
	2015										13.7
	2016										5.04
	2017										8.12
IA10-MW0003	2003		0.0466 U	0.424 U	0.0357 U	3.69	0.308 J	1.31	5.308	6.26	
	2004		0.289 U	0.849	0.103 U	1.19 J	-0.0258 UJ	0.462 UJ	1.19	11.6	
	2015										3.8
	2016										3.15
IA10-MW0003 (Filtered)	2003		0.0631 U	0.0797 U	0.0496 U	2.73	0.405 J	1.91	5.045	5.46	
	2015										3.53
	2016										2.4
	2017										
IA10-MW0004	2003		0.227 U	0.281 U	0.0734 U	5.1	0.0381 U	3.86	8.96	9.46	
	2004	0.085 U	1.17 U	0.14 U	0.367 U	0.00277 U	2.38	0.46 U	1.32	3.7	5.77
	2007	0.21 J	0.57 U	0.194 U	0.099 U	0.021 U	2.45	0.053 U	2.34	4.79	6.93567567576
	2008	0.908	0.884	R	-0.00299 U	-0.0319 U		0.23 U	2.11	5.69	6.26
	2009	0.569 U	3.05	0.0516 U	0.0262 U	0.0215 U		0.0624	2.05	4.5724	6.21
	2010	0.338 U	0.053 U	0.054 U	0.425	0.079 U	3.56	0.448	2.61	6.618	6.39
	2011	0.222 J	0.495 J	0.315 J	0.073 U	0.007 U	2.56	0.141	1.73	4.431	6.79
	2012	0.521	0.259 U	0.053 U	-0.049 U	0 U	3.25	0.098 J	2.26	5.608	5.84
	2013										6.34
	2015										5.43
	2016										5.77
	2017										
IA10-MW0004 (Filtered)	2003		-0.0654 U	0.167 U	0.000436 U	4.34	0.621 U	2.77	7.11	9.03	
	2004		0.178 U	0.873 U	0.0965 U	2.86	0.744 U	2.02	4.88	7.02	
	2007	0.191 J	-0.66 U	0.209 U	0.125 U	0.042 U	2.38	0.04 U	1.88	4.26	5.57225225232
	2010	0.114 U	0 U	0.066 U	0.139 U	0.098 U	3.15	0.208	2.04	5.398	6.33
	2011	0.0667 U	0.631 J	0.133 U	0.116 U	0.033	2.75	0.064 J	1.88	4.694	6.15
	2012	0.107 U	0.956	0.023 U	-0.027 U	0 U	2.96	0.163 J	1.99	5.113	4.7
	2013										4.89
	2015										5.66
	2016										6.48
IA10-MW0005	2008										
	2009	0.984	2.25 U	0.205	0.284	0.281		0.505	8.14	18.485	17.3
	2010	0.104 U	0 U	0.052 U	0.264 U	0.11 U	6.01	0.178	5	11.188	14.8
	2011	0.249 U	1.15	0.256 J	0.317 J	0.131	7.05	0.458	5.57	13.078	15.3
	2012	0 U	0.758 J	0.271 J	-0.032 U	-0.008 U	4.92	0.154	3.66	8.734	11.6
	2013										11.5
	2015										8.53
IA10-MW0005 (Filtered)	2010	0.183 U	0 U	0 U	0.18 U	0.204 U	5.87	0.151 U	4.87	10.74	16
	2011	0.833 J	0.655 J	0.177 U	0.091 J	0.03 J	7.42	0.165	6.34	13.925	17.2
	2012	0.296 J	1.02	-0.073 U	0.11 J	-0.035 U	4.12	0.252	3.6	7.972	11
	2013										11.1
	2015										8.45

Notes:

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= Recent Sampling Event

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Units		pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	ug/L	
USEPA MCLs		5	5	15	15	15				27	30	
IA10-MW0007	2008	0.486	1.46	0.344 U	0.176 U	0.0448 U		0.535	4.47	12.935	13.24891891908	
	2009	0.373 U	1.89 U	0.00341 U	0.0464	-0.0162 U		0.311	8.09	18.271	21.3	
	2010	0 U	0 U	0.066 U	0.145 U	R	8.33	0.234	7.57	16.134	20.3	
	2011	0.224 J	0.67 U	0.094 U	0.075 U	0.03 U	10.7	0.704	8.49	19.894	25.3	
	2012	0.526 J	0.144 U	0.691	-0.045 U	0 U	8.13	0.36 J	6.52	15.01	19.7	
	2013										19.8	
	2015										18.1	
	2016										15	
	2017										14.3	
IA10-MW0007 (Filtered)	2008	0.966	0.827	0.0196 U	R	-0.0433 U		0.467	4.19	11.477	12.41900900916	
	2010	0.124 U	0 U	0.151 U	0.09 U	0.102 U	7.32	0.241 U	5.77	13.09	17.3	
	2011	0.348 J	1.18 J	0.282 J	0.13 U	0.015 U	11	0.539	9.02	20.559	22.9	
	2012	0.25	0.1 U	0.572	0.047 U	0 U	8.34	0.495 J	5.01	13.845	15	
	2013										19.8	
	2015										3.26 J	
	2016										14.7	
	2017										29.4	
IA10-MW0008	2008	0.722	1.04 U	0.137 U	0.329 U	0.0553 U		0.0494 U	1.83	3.85	5.42405405412	
	2009	0.605	1.99 U	0.00268 U	0.065	-0.00934 U		0.192	2.64	5.372	9.53	
	2010	0 U	0 U	0.312	0 U	0.134	7.53	0.293	8.46	16.283	21.7	
	2011	0 U	0.519 J	0.149 U	0.067 U	0.007 U	11.6	0.564	10.7	22.864	23.4	
	2012	-0.049 U	1.67	0.044 U	-0.028 U	0.013 U	6.29	0.279	5.8	12.369	11	
	2013										11	
	2015										24.3	
	2016										30	
	2017										20.6	
IA10-MW0008 (Filtered)	2008	0.464	R	0.196 U	0.103 U	0.125 U		0.285 U	2.27	4.31	6.72819819828	
	2010	0.151 U	0 U	0 U	0 U	0.096 U	9.39	0.368	8.2	17.958	21	
	2011	0.0576 U	1.1	0.272 J	0.128 J	-0.005 U	10.4	0.955	11.1	22.455	21.4	
	2012	0.343 J	0.866 J	-0.115 U	-0.044 U	-0.026 U	6.35	0.401	5.66	12.411	13.9	
	2013										9.16	
	2015										24.9	
	2016										28.5	
	2017										16.1	
	IA10-MW0009	2008	1.14	2.16	0.438 U	0.0766 U	-0.0315 U		-0.0505 U	0.313	0.313	0.927720720732
	IA10-MW0009 (Filtered)	2008	0.685	0.673	0.375 U	-0.0584 U	-0.000922 U		-0.0421 U	0.0539 U	0	0.1597576576596 U
IA10-MW0010	2008	1.24	2.46	0.458 U	0.146 U	0.0781 U		0.155 U	0.11 U	0	0.32603603603604 U	
	IA10-MW0010 (Filtered)	2008	0.818	R	-0.226 U	0.0601 U	0.0386 U		0.0684 U	0.042 U	0	0.1244864684688 U
	IA10-MW0011	2008	R	2.61	0.124 U	0.184 U	-0.0157 U		0 U	0 U	0.236	0 U
	IA10-MW0011 (Filtered)	2008	0.759	3.45 J	0.124 U	0.282 U	-0.00398 U		0.0425 U	0.0185 U	0	0.0548333333334 U
	IA10-MW0012	2008	R	2.8	R	R	0.0348 U		0 U	0.0787 U	0	0.2322639639668 U
	IA10-MW0012 (Filtered)	2008	0.926	1.71 U	0.172 U	0.0926 U	-0.017 U		0.088 U	0.0219 U	0	0.0649010810116 U
	IA10-MW0013	2008	2.25 J	2.78	0.438 U	0.144 U	0.103 U		0.0189 U	0.0568 U	0	0.168353153152 U
	IA10-MW0013 (Filtered)	2008	2.31	0.442 U	0.196 U	R	0.0545 U		0 U	0.316 U	0.532	0.936612612624 U
	IA10-MW0014	2008	0.153 U	1.52	-0.0144 U	R	0.0964 U		0.0475 U	0.089 U	0.496	0.26379279796 U
	IA10-MW0014 (Filtered)	2008	0.848	3.36	0.101	0.0326	0.00971 U		0.0138 U	0.153	0.299	0.222 U
IA10-MW0014	2010	0.255 U	1	0.114 U	0.217 U	0.366 J	0.004 U	0.242	0.111 U	0.242	1.03	
	2011	1.35	2.64 J	0.191 U	0.121 U	0.004 U	0.081 J	0.033 J	0.031 U	0.114	0.185 J	
	2012	0.749	2.8	1.05	0.02 U	0.056 U	0.134 U	0 U	0.147 J	0.147	0.111 U	
	2013										0.207 J	
	2015										0.152 J	
	2016										0.049 U	
	IA10-MW0014 (Filtered)	2008	1.21	R	0.218 U	R	0.0571 U		0.221 U	2.23	3.87	6.60963963972
	IA10-MW0014 (Filtered) (Filtered)	2009	1.14	2.87	0.0396 U	0.0401	-0.00483 U		0.00405 U	0.121	0.306	0.222 U
	IA10-MW0015	2008	0.695	1.43	0.029 U	0 U	0.088	0.096 U	0 U	0.256 U	0	1.11
	IA10-MW0015 (Filtered)	2008	0.588 J	3.63 J	0.191 U	0.102 U	0.019 U	0.046 U	-0.003 U	0.074 J	0.074	0.169 J
IA10-MW0016	2008	0.923	2.3	0.211 J	-0.06 U	-0.034 U	-0.07 U	0 U	0.169	0.169	0.13 U	
	2010										0.173 J	
	2011										0.243 J	
	2012										0.049 U	
	IA10-MW0015	2008	1.11	2.5	0.0214 U	0.053 U	-0.0361 U		0.168 U	0.582	1.471	1.725027027048
	IA10-MW0015 (Filtered)	2008	0.996	1.78	-0.198 U	0.0835 U	0.0337 U		-0.0809 U	0.909	2.029	2.694243243276
	IA10-MW0016	2008	0.388 U	1.12 U	0.253 U	0.403 U	0.309 U		-0.0199 U	0.269	0.269	0.797306305316
	IA10-MW0016 (Filtered)	2008	0.6 U	R	R	0.0453 U		0.116 U	0.427	0.427	1.265612612628	
IA10-MW0017	2008	R	0.934 U	R	-0.0357 U	-0.00339 U		0.172 U	5.84	12.72	17.309549549476	
	2009	0.428	2.73 U	0.0425 U	0.0171 U	0.0282 U		0.215	3.48	7.855	14.7	
	2010	0.376	1.34	0.087 U	0.02 U	0.037 U	0.83 J	0 U	0.978	1.808	2.04	
	2011	0.343 J	2.06 J	0.232 J	0.055 U	0 U	1.43	0.169	1.41	3.009	0.96	
	2012	0.0515 U	1.54	0.532	-0.039 U	0.019 U	6.01	0.174 U	4.81	10.82	7.38	
	2013										7.32	
	2015										0.661	
IA10-MW0017 (Filtered)	2008	0.466 U	3.32 J	-0.00548 U	0.132 U	0.0334 U		0.138 U	4.3	10.38	12.74504504502	
	2009	0.817	3.34	0.0248	0.00347 U	-0.0177 U		0.22	3.24	7.13	13.3	
	2010	0.503	1.36	0 U	0.372	0.129 U	1.07 J	0.091 U	0.805	1.875	1.8	
	2011	0.175 U	2.04 J	0.235 J	0.116 U	0.038 U	1.32	0.059 J	1.05	2.429	0.968	
	2012	0.168 U	1.73	0.294 J	0.019 U	-0.016 U	5.64	0.146 U	4.94	10.58	8.38	
	2013										6.13	
	2015										0.642	

Notes:

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**Table 2: Harshaw FUSRAP Site**  
**Analytical Results for Groundwater Samples**

Well	Year	RADIUM-226	RADIUM-228	THORIUM-228	THORIUM-230	THORIUM-232	URANIUM-234	URANIUM-235	URANIUM-238	TOTAL URANIUM	TOTAL URANIUM
Units		pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	ug/L
USEPA MCLs		5	5	15	15	15				27	30
IA10-MW0018	2008	R	2.12	0.0645 U	0.188 U	0.0492 U		0.138 U	2.35	4.87	6.9653153154
	2009	-0.0626 U	1.59	0.0128 U	0.00954 U	0.000257 U		0.0743 U	1.85	3.95	5.15
	2010	0.164 U	0.121 U	0.085 U	0.536	0.078 U	2.98	0.371	2.77	6.121	7.42
	2011	0.23 J	1.12 J	0.082 U	0.095 U	0.048 J	5.17	0.185 J	4.61	9.965	11.2
	2012	0.384 J	0.291 U	0.394	0.003 U	-0.009 U	5.31	0.164 U	4.42	9.73	9.45
	2013										10.8
	2015										11.6
	2016										10.1
IA10-MW0018 (Filtered)	2008	0.434 U	4.7 J	0.177 U	0.342 U	-0.0419 U		0.423	1.35	4.033	4.0013513514
	2009	0.516 U	3.73	0.0421 U	0.0399 U	-0.0118 U		0.118	1.84	4.098	6.49
	2010	0.365	0 U	0.021 U	0.483	0.206	3.12	0.155 U	2.57	5.69	7.59
	2011	0.0539 U	0.8 U	0.095 U	0.097 U	0.021 U	5.67	0.369	5.06	11.099	14.6
	2012	0.0497 U	0.708 J	0.493	0.016 U	0.036 U	5.27	0.275 U	4.48	9.75	9.51
	2013										9.93
	2015										10.4
	2016										11.9
IA10-MW0019	2008	R	1.42	4.45	R	0.0221 U		0.349	1.64	4.589	4.86090090096
IA10-MW0019 (Filtered)	2008	0.57 U	R	-0.0168 U	0.197 U	-0.00339 U		0.0268 U	1.61	3.76	4.77198138204
MH-61471-L	2015										487
MH-61471-ML	2015										3.19
RMW35	2003		7.58 U		34.5			9.01 U	71.4 U	0	1.85
	2004	0.791	2.2 J	0.367 U	1.11 U	-0.015 U	0.648 U	0.245 U	0.789	0.789	2.39
	2007	0.64 J	0.68	0.26 J	0.073 U	0.038 U	0.39 J	0.06 U	0.53 J	0.92	1.57090090092 J
	2017										0.587 J
RMW35 (Filtered)	2004			0.46 U	1.28 U	-0.0749 U	1.14	0.0589 U	0.37 U	1.14	1.75
	2007	0.69 J	1.53	0.41 J	0.069 U	0.005 U	0.56 J	0.004 U	0.49 J	1.05	1.45234234236 J
	2017										0.387 J
RMW38	2003		1.49 U		13.8			11.9 U	0 U	0	38.2
	2003			0.418 U	0.417 U	0.0292 U	26.2	1.23	24.8	52.23	82.3
	2004	1.65	2.13 J	0.14 U	0.622 U	0.0641 U	18.8	2.27	17	38.07	51.5
	2007	0.38 J	0.7 U	0.23 U	0.33 J	0.02 U	1.49	0.046 U	1.7	3.19	5.0387387388
	2008	0.336 U	0.915	0.36 U	0.0565 U	0.0848 U		0.0244 U	1.35	3.14	4.39
	2009	0.573	1.51 U	-0.0238 U	0.0196 U	-0.00991 U		0.0438	1.02	2.1938	2.66
	2010	0 U	0 U	0.3	0.225 U	0.211 J	1.68	0.39	1.27	3.34	3.71
	2011	0.213 U	0.517 J	0.193 JB	0.087 J	-0.018 U	3.95	0.205	4.25	8.405	11.5
	2012	0.348 J	0.275 U	0.029 U	0.002 U	-0.019 U	3.42	0.189	3.1	6.709	8.47
	2013										110
	2015										61.7
	2016										57.1
	2017										141
RMW38 (Filtered)	2003			0.0175 U	0.201 U	0.0234 U	27.1	3.17	24.7	54.97	74.2
	2004	1.82	1.02 U	0.0829 U	1.05 J	0.00000000624 U	13.4	1.05	10.7	25.15	32.6
	2007	0.33 J	0.71 U	0.22 U	0.236 J	0.008 U	1.77	0.032 U	1.64	3.41	4.86090090096
	2010	0.105 U	0 U	0.189	0.228 U	0.325 J	1.87	0.278 U	1.43	3.3	3.58
	2011	0.372 J	1.03	0.169 U	0.088 J	-0.009 U	3.23	0.152	3.06	6.442	8.92
	2012	0 U	4.52	0.01 U	0.081 J	0.045 U	2.97	0.083 J	2.6	5.653	8.35
	2013										102
	2015										60.1
	2016										56
	2017										138
RMW39	2003		7.26 U		28.1			-1.39 U	0 U	0	4.24
	2012	0.448	0.223 J	0.286 U	-0.06 U	0.023 J	3.75	0.279	3.34	7.369	10.1
	2013										24.9
	2015										168
	2016										25
	2017										127
RMW39 (Filtered)	2012	0.176	0.245 J	-0.053 U	-0.022 U	-0.007 U	2.73	0.133 J	3.4	6.263	9.93
	2013										24.1
	2015										160
	2016										23.6
	2017										115
RW01	2011	0.132	0.772	0.244	0.159 U	0.022	62.7	3.67	63.3	129.67	198
RW01 (Filtered)	2011	0	0.671	0.158 U	0.056	0.014	59.9	3.18	61	124.08	188
RW02	2011	0.784	0.976 J	0.315 J	0.173 U	0.004	15.4	0.719	14.2	30.319	41.1
RW02 (Filtered)	2011	0.382	1.14 J	0.194 U	0.059 U	0.095	13.2	0.724	12.7	26.624	40.8
RW03	2011	0.249 U	1.05	0.078	0.173 J	0.067 J	5.02	0.139	5.18	10.339	13.2
RW03 (Filtered)	2011	0.239 U	0.294	0.2 J	0.197 J	0.033	4.93	0.176	4.52	9.626	12.6
RW04	2011	0.239	0.688	0.122 U	0	-0.031	42.8	2.54	41.3	86.64	126
RW04 (Filtered)	2011	-0.181	0.803	0.196 U	0.193 J	0.024	39.3	2.11	40.1	81.51	126
RW05	2011	0.319	0.951 J	0.213 J	0.204 J	0.006	1.74	0.08	1.57	3.39	2.67
RW05 (Filtered)	2011	0.309	1.45 J	0.193 U	0.112 U	0.045	1.48	0.078	1.16	2.718	2.16
RW06	2011	0.814	2.66	0.117 U	0.215 J	0.003	0.026	0.023	0.052	0.101	0.051
RW06 (Filtered)	2011	0.76	2.25	0.128 U	0.183 J	-0.016	0.008	0.021	0.024 U	0.029	0.109
RW07	2011	1.85	1.59 J	0.183 U	0.068	-0.016	0.081 U	0.066	0.094	0.16	0.196
RW07 (Filtered)	2011	0.886	0.431	0.121	0.127 U	0.053	0.031	-0.009	0.035	0.057	0.186
RW08	2011	0.414	0.942 J	0.132 U	0.069 U	0	0.425 J	0.033	0.297	0.755	0.692
RW08 (Filtered)	2011	0	1.03 J	0.122 U	0.111 U	0.086	0.118	-0.059	0.244	0.303	0.509
SP-1	2017										41.5
SP-2	2017										258
TP-01	2015										57.3
TP-01 (Filtered)	2015										39.9
TP-02	2015										611
TP-02 (Filtered)	2015										601

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Units		pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	ug/L
USEPA MCLs		5	5	15	15	15				27	30
TP-04	2015										0.401
TP-04 (Filtered)	2015										0.184 J
TP-05	2015										1463
TP-05 (Filtered)	2015										850
TWP01	2015										0.354
TWP01 (Filtered)	2015										0.144 J
TWP02	2015										0.171 J
TWP02 (Filtered)	2015										0.136 J
TWP03	2015										0.504
TWP03 (Filtered)	2015										0.332
TWP04	2015										0.569
TWP04 (Filtered)	2015										0.158 J
TWP05	2015										0.674
TWP05 (Filtered)	2015										0.223
TWP06	2015										0.367
TWP06 (Filtered)	2015										0.163 J
TWP07	2015										0.21
TWP07 (Filtered)	2015										0.173 J
TWP08	2015										0.832
TWP08 (Filtered)	2015										0.303
TWP09	2015										0.608
TWP09 (Filtered)	2015										0.379
TWP10	2015										1.21
TWP10 (Filtered)	2015										1.28
TWP11	2015										6.68
TWP11	2016										0.963
TWP11 (Filtered)	2015										4.28
TWP11 (Filtered)	2016										0.842
TWP12	2015										2.52
TWP12 (Filtered)	2015										0.25
TWP13	2015										0.22
TWP13 (Filtered)	2015										0.128 J

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