



# GROUNDWATER MONITORING DATA RELEASE

## 2013 SAMPLING EVENT

### LUCKEY FUSRAP SITE

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

**Building Strong®**

December 2013

#### Formerly Utilized Sites Remedial Action Program (FUSRAP)

FUSRAP was initiated in 1974 to identify, investigate and, if necessary, clean up or control sites throughout the United States that were contaminated as the result of activities conducted in support of the Nation's early atomic energy and weapons programs during the 1940s, 1950s, and 1960s. When implementing FUSRAP, the Corps of Engineers follows the investigation and response framework of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

#### Site Description

The Luckey Site is located at 21200 Luckey Road near the Village of Luckey, Ohio, 22 miles southeast of Toledo. The site is bordered by Luckey Road to the west, Gilbert Road to the south, abandoned railroad tracks to the east, and privately-owned farm fields to the north. The site is zoned industrial but is currently not being utilized. The Luckey Site covers approximately 40 acres and includes open areas as well as unused buildings, some of which are partially demolished. Several of these open areas were previously used to store byproducts from magnesium and beryllium processing.

#### Site History

In 1942 the Federal Government built a magnesium processing facility at the site, which was operated by National Lead for the Federal Government from 1942 to 1945. In 1949 Brush Beryllium Company (later Brush Wellman) began production of beryllium oxide, beryllium hydroxide, and beryllium pebbles at the site under contract to the Atomic Energy Commission (AEC). In late 1951 and early 1952, the AEC sent approximately 1,000 tons of radioactively contaminated scrap metal to the site in anticipation of resuming magnesium processing at the facility. The scrap metal, which contained radioactivity within guidelines at the time, was stored at the site and never used for its intended purpose. Records also indicate that beryllium scrap from other AEC operations was sent to the Luckey Site for reprocessing. Some of this scrap metal may have been contaminated with radioactivity.

Brush Beryllium Company operated the facility for the AEC until 1958 when beryllium production ceased. However, sintering and powder blending operations, established at the facility in 1957,

continued until 1962. In 1959, AEC contracted with Brush Beryllium Company to close the facility. Closing operations consisted of constructing a two-acre dike enclosed landfill on the northeast corner of the property. Sludge material from three on-site lagoons was moved to the landfill, which was reportedly capped, graded, and seeded. The General Services Administration sold the facility in 1961 and the site has had various owners since then.

## Scope

Annual groundwater monitoring is currently being performed to obtain additional information and to establish a baseline of groundwater data prior to implementing monitored natural attenuation of groundwater, as documented in the Groundwater Operable Unit Record of Decision (ROD). During August 6 through 9, 2013, twenty-four groundwater wells were sampled for beryllium, lead, isotopic uranium (uranium-234 [U-234], U-235, U-238) and total uranium (presented as elemental mass and the sum of three isotopes).

Hydrogeologic conditions and the nature and extent of groundwater contamination associated with the site are presented in the ROD. Groundwater occurs in three primary water-bearing zones: shallow, intermediate, and deep bedrock and is present under unconfined and semi-confined conditions. The horizontal flow of groundwater within these zones in the vicinity of the site is northerly and northwesterly. Constituents of concern (COCs) and associated U.S. Environmental Protection Agency (USEPA) Maximum Contaminant Levels (MCLs) for protection of drinking water include beryllium (4 micrograms per liter [ $\mu\text{g/L}$ ]), lead (15  $\mu\text{g/L}$ ), and total uranium (30  $\mu\text{g/L}$  or 27 picocuries per liter (pCi/L)). A contiguous plume of COC-contaminated groundwater is not present.

## Results and Interpretation

Figure 1 shows all groundwater monitoring wells associated with the Luckey Site; the wells that were sampled during the 2013 annual monitoring event are highlighted in yellow. Groundwater surface elevations were measured during this event and are presented in Table 1. These elevations were also plotted as groundwater contours, shown in Figures 2, 3, and 4 for the shallow, intermediate, and deep water bearing zones, respectively. The data indicate that groundwater flow within the shallow, intermediate, and deep water bearing zones was generally northerly during August 2013.

Analytical results for the 2013 annual monitoring event are highlighted in gray on Table 2. Analytical results above the USEPA MCLs include beryllium (MW-01(I), MW-02(S), MW- 22 R (I), MW-26(S), and PW(W)), lead (MW-21(I)), and total uranium (MW-21(I) and MW-24 A (S)) which are consistent with previous results. Note that MW-24 A (S) is a replacement well for the abandoned MW-24(S). All of the wells that contain constituents of concern (COCs) above the USEPA MCLs are located on-site. Exceedances of the MCL are not impacting human health, because the on-site wells are not utilized for drinking water. The sample from residential well GW-0002 did not contain COCs at concentrations above the MCLs. The data indicate that COC concentrations in groundwater are not increasing over time.

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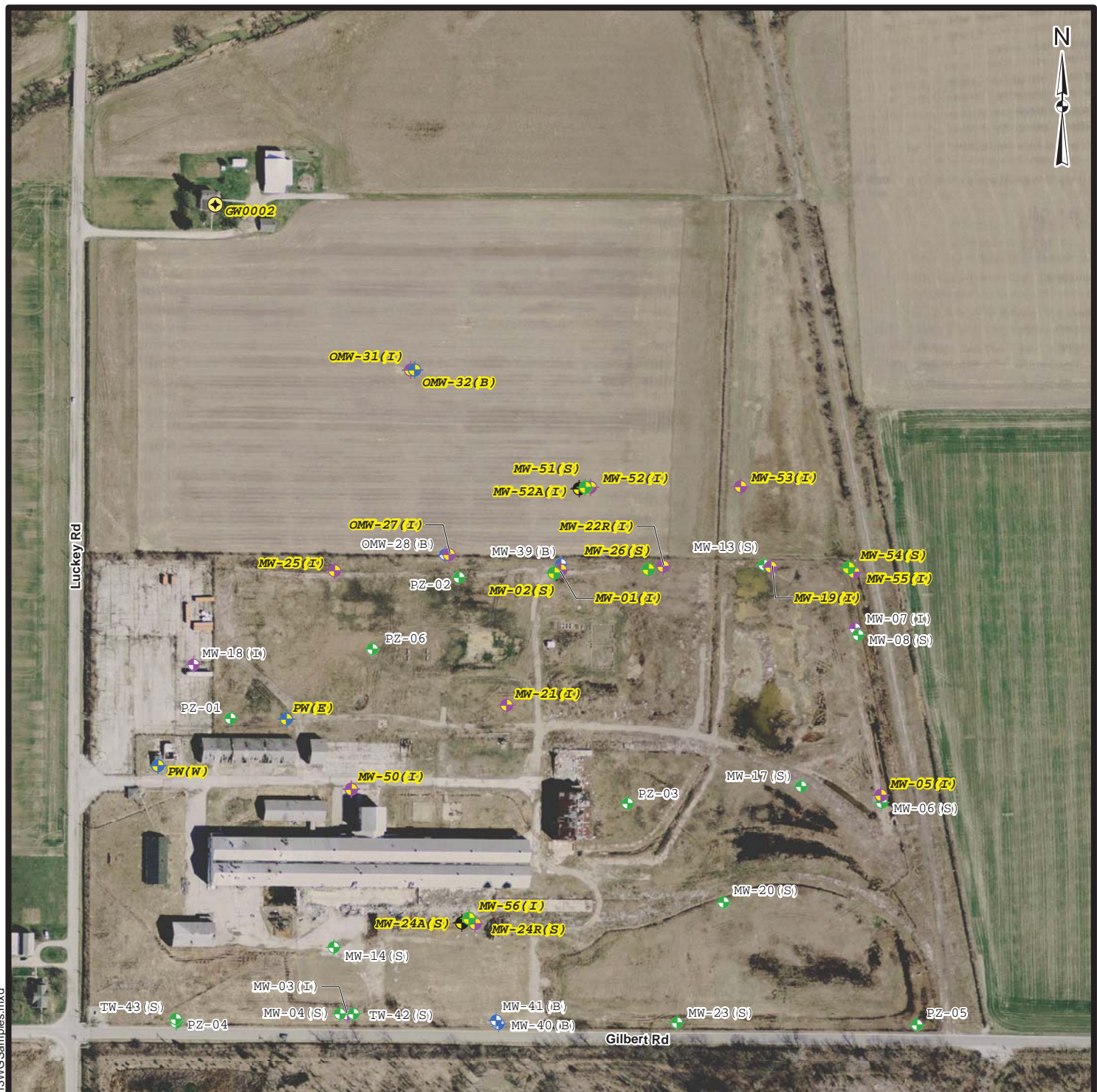
### U.S. ARMY CORPS OF ENGINEERS – BUFFALO DISTRICT FUSRAP TEAM

1776 NIAGARA STREET, BUFFALO, N.Y. 14207





Phone: 800-833-6390 (Option 4)

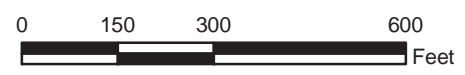
Email: [fusrap@usace.army.mil](mailto:fusrap@usace.army.mil)


Website: <http://www.lrb.usace.army.mil/Missions/HTRW/FUSRAP/LuckeySite.aspx>



**Legend**

-  Multiple Zone Monitoring Well (Installed 2012)
-  Residential Well
-  Shallow Monitoring Well
-  Intermediate Monitoring Well
-  Deep Monitoring Well
-  Monitoring Well Sampled in 2013



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**2013 MONITORING PROGRAM  
 GROUNDWATER SAMPLE LOCATIONS**

Name: 131202\_2013WGSamples.mxd  
 Drawn By: H5TDESPM  
 Date Saved: 02 Dec 2013  
 Time Saved: 1:42:26 PM

**LUCKEY FUSRAP SITE  
 LUCKEY, OHIO**

**FIGURE 1**

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**Legend**

- Monitoring Well Location
  - Groundwater Potentiometric Surface (ft amsl)
  - Groundwater Flow Direction
- MW-23(S), 645.04  
 Location ID      Groundwater Elevation (ft amsl)



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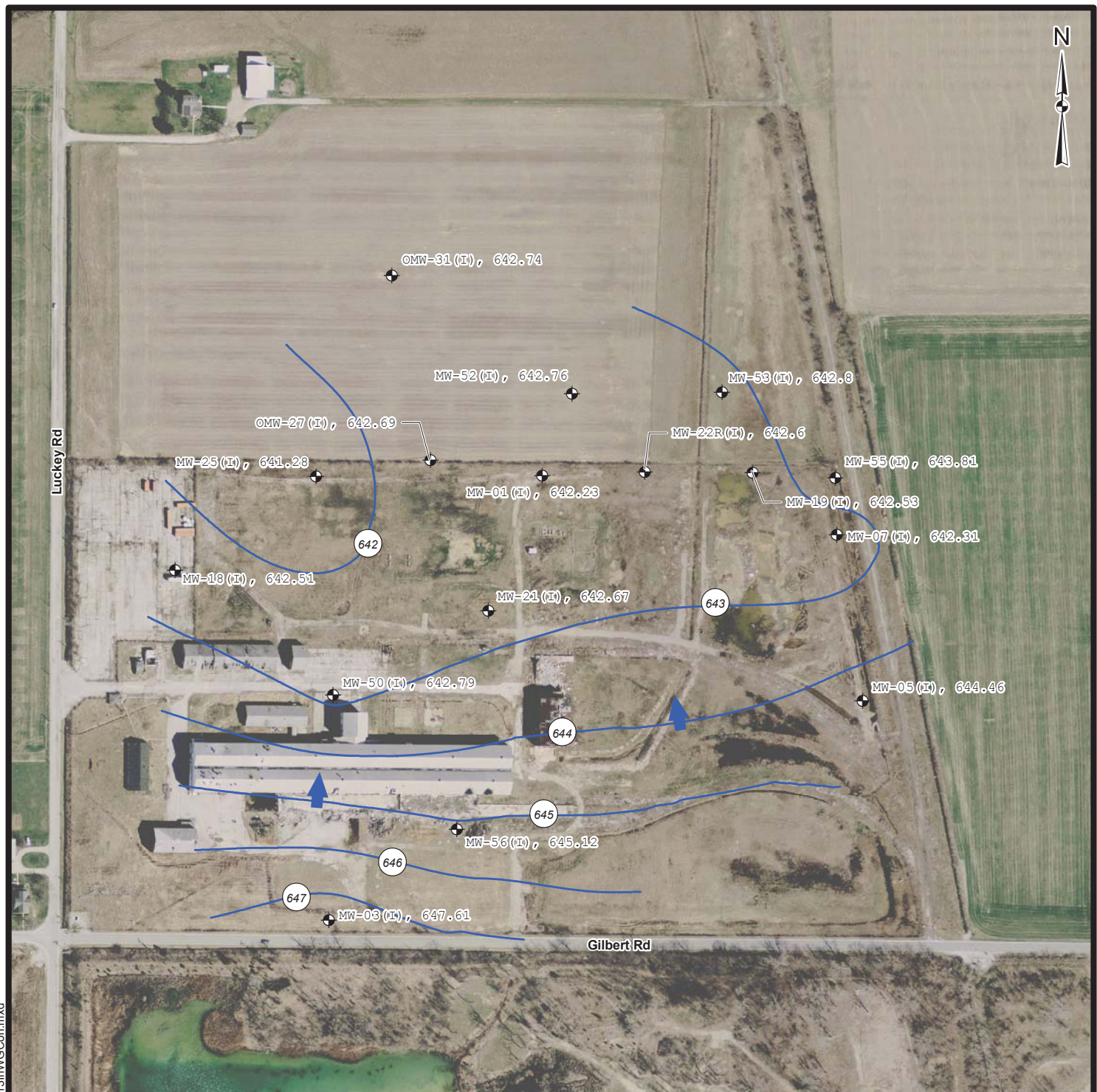
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 FOR THE SHALLOW WATER BEARING ZONE - AUGUST 2013**

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**LUCKEY FUSRAP SITE  
 LUCKEY, OHIO**

**FIGURE 2**

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**Legend**

- Monitoring Well Location
- Groundwater Potentiometric Surface (ft amsl)
- Groundwater Flow Direction

MW-56(I), 645.12

Location ID      Groundwater Elevation (ft amsl)



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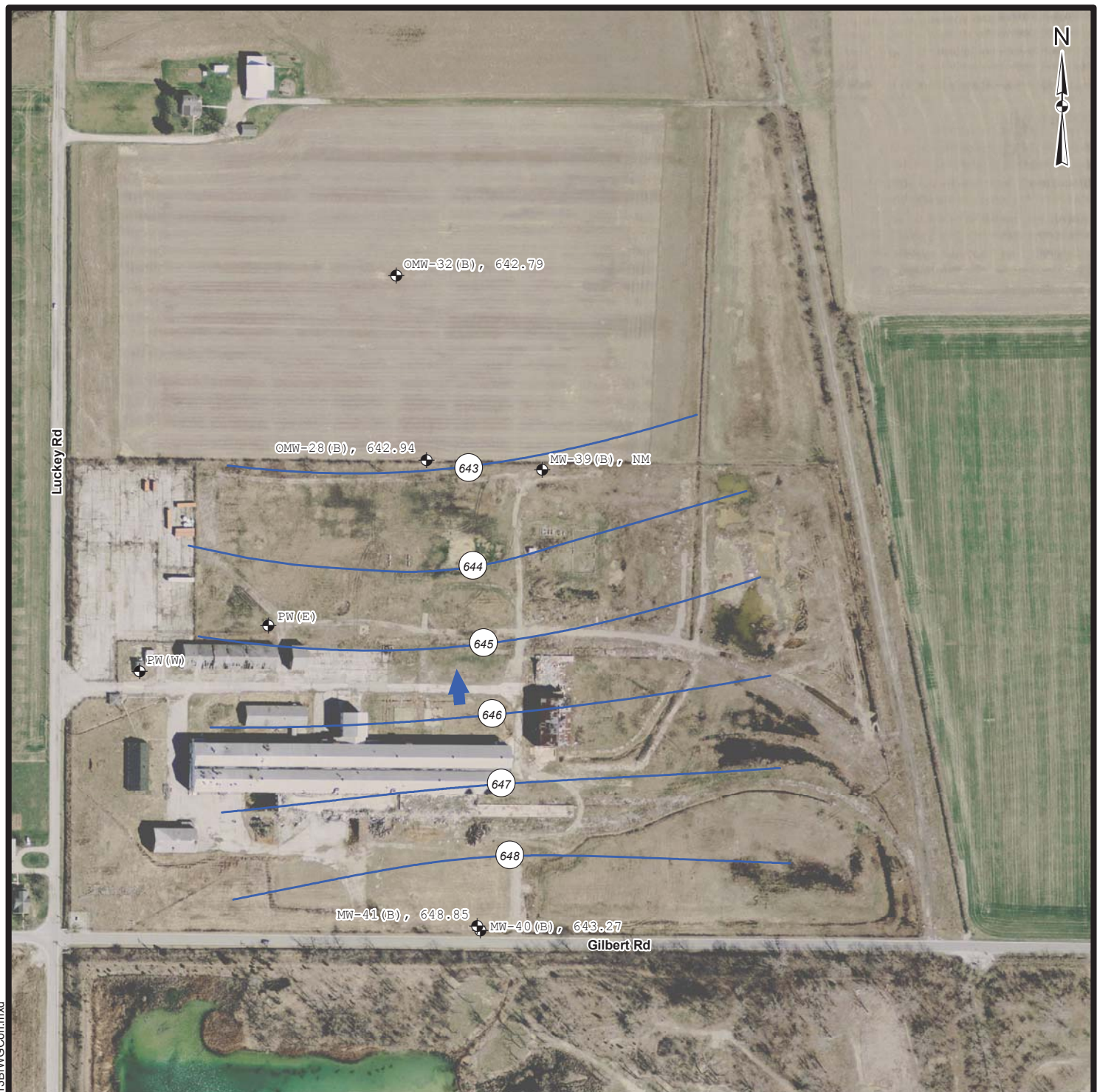
**GROUNDWATER POTENTIOMETRIC SURFACE MAP  
FOR THE INTERMEDIATE WATER BEARING ZONE - AUGUST 2013**

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**LUCKEY FUSRAP SITE  
LUCKEY, OHIO**

**FIGURE 3**

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**Legend**

-  Monitoring Well Location
-  Groundwater Potentiometric Surface (ft amsl)
-  Groundwater Flow Direction

MW-41(B), 648.85  
 Location ID      Groundwater Elevation (ft amsl)



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**GROUNDWATER POTENTIOMETRIC SURFACE MAP  
 FOR THE DEEP WATER BEARING ZONE - AUGUST 2013**

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**LUCKEY FUSRAP SITE  
 LUCKEY, OHIO**

**FIGURE 4**

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**TABLE 1**  
**Luckey FUSRAP Site**  
**Groundwater Elevations**  
**August 6, 2013**

Location ID	Geologic Zone Code	Depth to Water (ft)	Measuring Point Elevation (ft amsl)	Groundwater Elevation (ft amsl)
MW-01(I)	IN	8.29	650.52	642.23
MW-02(S)	SH	8.43	650.27	641.84
MW-03(I)	IN	4.05	651.66	647.61
MW-04(S)	SH	4.13	651.53	647.4
MW-05(I)	IN	8.80	653.26	644.46
MW-06(S)	SH	9.89	652.49	642.6
MW-07(I)	IN	7.90	650.21	642.31
MW-08(S)	SH	9.65	650.77	641.12
MW-13(S)	SH	9.60	651.03	641.43
MW-14(S)	SH	5.25	649.05	643.8
MW-17(S)	SH	8.12	652.23	644.11
MW-18(I)	IN	5.03	647.54	642.51
MW-19(I)	IN	8.50	651.03	642.53
MW-20(S)	SH	9.97	653.71	643.74
MW-21(I)	IN	8.78	651.45	642.67
MW-22R(I)	IN	7.38	649.98	642.6
MW-23(S)	SH	7.54	652.58	645.04
MW-24A(S)	HY	8.70	NA	NA
MW-24R(S)	SH	9.67	653.81	644.14
MW-25(I)	IN	8.03	649.31	641.28
MW-26(S)	SH	8.60	650.44	641.84
MW-39(B)	BR	NM	650.28	NA
MW-40(B)	BR	7.00	650.27	643.27
MW-41(B)	BR	4.15	653	648.85
MW-50(I)	IN	10.13	652.92	642.79
MW-51(S)	SH	7.18	650.09	642.91
MW-52(I)	IN	7.45	650.21	642.76
MW-52A(I)	HY	7.06	NA	NA
MW-53(I)	IN	6.89	649.69	642.8
MW-54(S)	SH	7.42	650.27	642.85
MW-55(I)	IN	6.38	650.19	643.81
MW-56(I)	IN	8.26	653.38	645.12
OMW-27(I)	IN	7.28	649.97	642.69
OMW-28(B)	BR	7.05	649.99	642.94
OMW-31(I)	IN	5.94	648.68	642.74
OMW-32(B)	BR	5.95	648.74	642.79
PW(E)	BR	5.50	NA	NA
PW(W)	BR	0.13	NA	NA
PZ-01	SH	8.53	651.1	642.57
PZ-02	SH	NM	650.48	NA
PZ-03	SH	8.36	652.7	644.34
PZ-04	SH	4.56	651.06	646.5
PZ-05	SH	4.97	652.84	647.87
PZ-06	SH	NM	648.96	NA
TW-42(S)	SH	4.22	651.97	647.75
TW-43(S)	SH	6.29	651.73	645.44

Notes:

amsl      Above Mean Sea Level  
 NM        Not Measured  
 NA        Not Available  
 ft         Foot (Feet)

Geologic Zone Codes:

SH        Shallow Water Bearing Zone Well  
 IN        Intermediate Water Bearing Zone Well  
 BR        Deep Water Bearing Zone Well  
 HY        Multiple Zone Monitoring Well

**TABLE 2**  
**Luckey FUSRAP Site**  
**Groundwater Analytical Results**  
**2002 - 2013**

Well	Year	Beryllium	Lead	Total Uranium (KPA) <sup>2</sup>	Uranium-234	Uranium-235	Uranium-238	Total Uranium (Alpha Spec) <sup>2</sup>
Units		ug/L	ug/L	ug/L	pCi/L	pCi/L	pCi/L	pCi/L
<i>USEPA MCL</i>		<i>4</i>	<i>15</i>	<i>30</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>27<sup>1</sup></i>
GW0002	2002	0 U	2 U	0.18	0.33	0 U	0.08 U	0.33
	2004	0.158 U	1.72 U	0.371	1.35	-0.129 U	0.229 U	1.35
	2005	0.13 U	0.8 J	0.0443 U	0.229 J	0 U	0.079 J	0.308
	2006	0.088 U	0.6 J	0.85 J	0.11 J	0.028 U	0.018 U	0.11
	2007	0.51 U	2.4 U		0.147	0.025 U	0.068 J	0.215
	2008	1 U	2.5 U	0.35 U	0.389	0.124 U	0.2	0.589
	2009	0.17 J	0.96	0.087826058 U	0.2855 J	0.06223 U	0.08338 U	0.2855
	2010	0.056 U	0.58	1 U	0.862 J	0.25	0.227	1.339
	2011	0.1 U	1.2	0.146 J	0.149	0.064 J	0.11	0.323
	2012	0.25 U	0.38 J	0.191 J	0.085 J	0.003 U	-0.001 U	0.085
2013	0.36 J	0.48 J	0.202	0.122 J	0.023 U	0.125 J	0.247	
GW0002 (Filtered)	2002	0 U	2 U					
	2004	0.158 U	1.72 U					
	2005	0.13 U	1 J					
	2006	0.088 U	0.49 U					
	2007	0.51 U	2.4 U					
	2008	1 U	3.8 B					
	2009	0.076 J	0.14 J					
	2010	0.056 U	0.094 J					
	2011	0.1 U	0.12 J	0.153 J	0.161	0.007 U	0.033 J	0.194
	2012	0.25 U	0.24 U	0.205 J	-0.069 U	0.015 U	-0.001 U	0
2013	0.25 U	0.24 U	0.215	0.135 J	0.001 U	0.063 J	0.198	
MW-01(l)	2002	<b>34</b>	2 U	3.19	1.57	0.16 J	0.78	2.51
	2004	<b>31.1</b>	1.72 U	3.16	1.88	0.403 U	1.64	3.52
	2005	<b>41.2</b>	2.8 U	3.32	1.35	0.056 J	0.96	2.366
	2006	<b>31.8</b>	0.49 U	2.85	1.45 J	0 U	0.94 J	2.39
	2007	<b>32.5</b>	4.8 U		1.41	0.091 J	0.79	2.291
	2008	<b>31.1</b>	2.5 U	2.63	1.74	0.0627 U	0.862	2.602
	2009	<b>39</b>	0.57	2.388093317	1.153	0.3413 J	0.9823	2.4766
	2010	<b>25</b>	0.74	2.91	2.46	0.402	1.08	3.942
	2011	<b>28</b>	0.45	2.99	1.27	0.104	0.951	2.325
	2013	<b>35</b>	2.3	2.9	1.36	0.096 J	1.05	2.506
MW-01(l) (Filtered)	2002	<b>11</b>	3					
	2004	<b>32.7</b>	1.72 U					
	2005	<b>33.8</b>	0.57 U					
	2006	<b>33.2</b>	0.62 J					
	2007	<b>30.9</b>	4.8 U					
	2008	<b>31.5</b>	2.5 U					
	2009	<b>34</b>	0.46					
	2010	<b>20</b>	0.35 J					
	2011	<b>28</b>	0.36 J	2.88	1.13	0.114 J	0.738	1.982
	2013	<b>29</b>	0.41 J	2.87	1.52	0 U	0.898	2.418



**TABLE 2**  
**Luckey FUSRAP Site**  
**Groundwater Analytical Results**  
**2002 - 2013**

Well	Year	Beryllium	Lead	Total Uranium (KPA) <sup>2</sup>	Uranium-234	Uranium-235	Uranium-238	Total Uranium (Alpha Spec) <sup>2</sup>
Units		ug/L	ug/L	ug/L	pCi/L	pCi/L	pCi/L	pCi/L
<i>USEPA MCL</i>		4	15	30	-	-	-	27 <sup>1</sup>
MW-02(S)	2002	60	6	6.97	2.37	0.18 U	1.88	4.25
	2004	77.8	1.7 J	6.24	2.89	0.834 U	3.14	6.03
	2005	44.2	1.5 J	5.23	2.33	0.133 J	2	4.463
	2006	14.8	1.8	4.13	1.69 J	0.16 J	1.58 J	3.43
	2007	14.2	4.8 U		1.85	0.099 J	1.51	3.459
	2008	13.2	2.5 U	3.93	1.63	0.183	1.52	3.333
	2009	14	1.3	3.640698617	2.172	0.1561 J	1.475	3.8031
	2010	11	1.3	4.17	2.35	0.482	1.72	4.552
	2011	13	1.1	4.36	1.38	0.095 J	1.23	2.705
2013	15	1.1	4.07	1.58	0.057 J	1.06	2.697	
MW-02(S) (Filtered)	2002	62	2 U					
	2004	79.6	1.72 U					
	2005	43	2.3 J					
	2006	13.7	1.4					
	2007	13.2	4.8 U					
	2008	12.4	2.5 U					
	2009	22	1.3					
	2010	3.1	0.72					
	2011	14	0.87	4.2	1.82	0.017 U	1.34	3.16
2013	13	0.72 J	3.9	1.45	0.135 J	1.17	2.755	
MW-05(I)	2002	0 U	4	3.58	1.36	0.05 U	0.96	2.32
	2004	0.158 U	1.72 U	2.79	1.97	0.157 U	0.938 U	1.97
	2005	0.13 U	2.6 J	3.23	1.37	0.07 J	1.06	2.5
	2006	0.088 U	1.5	3.82	1.54 J	0.18 J	1.02 J	2.74
	2007	1 U	4.8 U		1.17	0.05 U	0.89	2.06
	2008	1 U	3.5 B	2.96	1.77	0.198	1.32	3.288
	2009	0.056 U	3.3	2.769953989	1.67	0.1322 U	1.318	2.988
	2010	0.52	3.3	3.36	1.44 J	0 J	1.02	2.46
	2011	0.21 J	3.4	3.16	1.36	0.067	0.963	2.39
2013	0.25 U	4.3	3.33	1.27	0.095 J	1.01	2.375	
MW-05(I) (Filtered)	2002	0 U	4					
	2004	0.158 U	1.72 U					
	2005	0.13 U	3.4					
	2006	0.088 U	1.2					
	2007	0.51 U	2.4 U					
	2008	1 U	3.4 B					
	2009	0.028 U	2.7					
	2010	0.084 J	2.6					
	2011	0.16 J	1.9	3	1.16	0.053 J	1.08	2.293
2013	0.25 U	2.9	3.26	1.19	0.107 J	0.958	2.255	
MW-07(I)	2002	0 U	2 U	2.48	1.44	0.2 U	0.68	2.12
	2004	0.158 U	1.72 U	2.47	1.62	-0.188 U	1.08 U	1.62
	2005	0.13 U	0.57 U	2.53	0.93	0.056 J	0.62	1.606
	2006	0.088 U	0.49 U	2.73	0.87 J	0.042 U	0.75 J	1.62
	2007	1 U	4.8 U		1.15	0.083 J	1.07	2.303
	2008	1 U	2.5 U	2.36	1.4	0.195	0.617	2.212
	2009	0.056 U	0.067 J	2.170582051	1.651 J	0.0627 U	0.8518 J	2.5028
MW-07(I) (Filtered)	2002	0 U	2 U					
	2004	0.158 U	1.72 U					
	2005	0.13 U	0.57 U					
	2006	0.088 U	0.49 U					
	2007	1 U	4.8 U					
	2008	1 U	2.5 U					
2009	0.028 U	0.21						

**TABLE 2**  
**Luckey FUSRAP Site**  
**Groundwater Analytical Results**  
**2002 - 2013**

Well	Year	Beryllium	Lead	Total Uranium (KPA) <sup>2</sup>	Uranium-234	Uranium-235	Uranium-238	Total Uranium (Alpha Spec) <sup>2</sup>
Units		ug/L	ug/L	ug/L	pCi/L	pCi/L	pCi/L	pCi/L
<i>USEPA MCL</i>		<i>4</i>	<i>15</i>	<i>30</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>27<sup>1</sup></i>
MW-19(I)	2002	0 U	2 U	0.43	0.43	0.04 U	0.1 U	0.43
	2004	2.8 J	1.72 U	0.554	1.67	0.374 U	0.887 U	1.67
	2005	3.1 J	0.57 U	0.492 J	0.204 J	0.005 U	0.244 J	0.448
	2006	2.8	0.49 U	0.473 U	0.39 J	-0.017 U	0.16 J	0.55
	2007	2.2 J	4.8 U		R	R	0.68	
	2008	2.9 B	2.5 U	0.685 U	0.261	0.0645 U	0.196 U	0.261
	2009	3.9	0.25 J	0.549872804 U	0.5061 J	0.04648 U	0.278 U	0.5061
	2010	3	0.55	1 U	0.338 J	0.209 J	0.288	0.835
2011	3.2	0.54	0.559	0.308	0.026 U	0.158	0.466	
2013	3.7	3.2	0.532	0.146 J	0.063 J	0.144 J	0.353	
MW-19(I) (Filtered)	2002	0 U	2 U					
	2004	6	1.72 U					
	2005	2.9 J	0.57 U					
	2006	3.5	0.49 U					
	2007	2.1 J	4.8 U					
	2008	2.4 B	2.5 U					
	2009	4.6	0.16 J					
	2010	2.2	0.25 J					
2011	4.3	0.34 J	0.813	0.367	0.117	0.376	0.86	
2013	2.3	3.1	0.507	0.066 U	0.081 J	0.381	0.462	
MW-21(I)	2002	0 U	34	27.6	8.64	0.76	7.97	17.37
	2004	0.158 U	32.5	13.57	4.77	1.13	5.21	11.11
	2005	0.63 U	25.5	14.9	3.89	0.141	3.49	7.521
	2006	0.088 U	32.7	35	6.8	0.16 J	6	12.96
	2007	1 U	27.1		9.5	0.5	9.1	19.1
	2008	1 U	39.6	37.7	15.7	1.03	14.4	31.13
	2009	0.056 U	84					
	2009			34.1098	16.06	0.92	15.48	32.46
	2010	2.6	62	44.4	15.8	1.04	16	32.84
	2011	0.5 U	38	37.7	16.4	0.78	16.3	33.48
2013	0.25 U	66	34.7	11.6	0.559	10.9	23.059	
MW-21(I) (Filtered)	2002	0 U	29					
	2004	0.158 U	37.5					
	2005	0.63 U	25.7					
	2006	0.088 U	31.7					
	2007	1 U	25.7					
	2008	1 U	32.9					
	2009	0.028 U	58					
	2010	0.28 U	53					
	2011	0.5 U	36	37.2	16.9	1.12	16.4	34.42
2013	0.25 U	54	41	13.1	0.699	13.9	27.699	
MW-22(I)	2008	1 U	2.5 U	1.11	0.292	0.0601 U	0.34	0.632
	2009	0.056 U	1.3	0.77131016 U	0.7425	0.05566 U	0.4054	1.1479
MW-22(I) (Filtered)	2008	1 U	3.1 B					
	2009	0.088 J	1.7					
MW-22R(I)	2013	75	2.2	5.07	1.87	0.057 J	1.64	3.567
MW-22R(I) (Filtered)	2013	71	1.7	5.02	1.56	0.054 U	1.37	2.93
MW-23(S)	2008	1 U	2.5 U	4.44	2.27	0.131 U	1.95	4.22
	2009	0.1 J	0.6	2.64155335	1.706	0.3803 J	1.347	3.4333
MW-23(S) (Filtered)	2008	1 U	4.8 B					
	2009	0.034 J	1.1					

**TABLE 2**  
**Luckey FUSRAP Site**  
**Groundwater Analytical Results**  
**2002 - 2013**

Well	Year	Beryllium	Lead	Total Uranium (KPA) <sup>2</sup>	Uranium-234	Uranium-235	Uranium-238	Total Uranium (Alpha Spec) <sup>2</sup>
		ug/L	ug/L	ug/L	pCi/L	pCi/L	pCi/L	pCi/L
<i>USEPA MCL</i>		<i>4</i>	<i>15</i>	<i>30</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>27<sup>1</sup></i>
MW-24(S) <sup>3</sup>	2002	0 U	13	<b>333</b>	99.8	12.8 J	100	<b>212.6</b>
	2004	0.158 U	9.4	<b>273</b>	89	5.19	91.4	<b>185.59</b>
	2005	0.63 U	2.8 U	<b>161</b>	52.7	2.78	54.5	<b>109.98</b>
	2006	0.38 J	6.8	<b>184</b>	59.7	3.29 J	57.6	<b>120.59</b>
	2007	0.51 U	6.1 J		63	2.5	71	<b>136.5</b>
	2008	1 U	4.3 B	<b>163</b>	52.1	4.17	52.5	<b>108.77</b>
	2009	0.79	5.9	<b>196.6400645</b>	57.55	3.545	56.87	<b>117.965</b>
MW-24(S) <sup>3</sup> (Filtered)	2002	0 U	12					
	2004	0.66 U	9.5					
	2005	0.63 U	4.2 J					
	2006	0.17 J	6.1					
	2007	0.51 U	7.1 J					
	2008	1 U	9.8 B					
	2009	0.61	6.7					
MW-24A(S) <sup>3</sup>	2013	0.5 U	2.5	<b>130</b>	41.2	2	39.1	<b>82.3</b>
MW-24A(S) <sup>3</sup> (Filtered)	2013	0.25 U	2.6	<b>129</b>	42.8	1.91	42.1	<b>86.81</b>
MW-24R(S)	2010	0.88 J	2.4	21.3	10.4	0.515	7.47	18.385
	2011	0.1 U	2.3	0.987	8.21	0.549	6.99	15.749
	2013	0.25 U	1.4	15.1	6.38	0.305	4.98	11.665
MW-24R(S) (Filtered)	2010	0.28 U	3					
	2011	0.1 U	1.1	6.83	7.54	0.401	6.61	14.551
	2013	0.25 U	0.68 J	15.5	6.36	0.528	5.18	12.068
MW-25(I)	2008	1 U	2.5 U	1.28	0.725	0.105 U	0.509	1.234
	2009	0.2 J	0.59					
	2009			0.697516 U	0.8134	0.08093 U	0.3313	1.1447
	2010	0.056 J	0.42	3.3	2.72	0.301	1.24	4.261
	2011	0.1 U	0.53	2.68	0.971	0.04 J	0.878	1.889
	2013	1.2	0.47 J	2.32	0.827	0.023 U	0.628	1.455
MW-25(I) (Filtered)	2008	1 U	5.9 B					
	2009	0.21	0.11 J					
	2010	0.056 U	0.072 J					
	2011	0.1 U	0.32 J	2.64	1.1	0.134	0.828	2.062
	2013	1.4	0.24 U	2.29	0.986	0.086 J	0.625	1.697
MW-26(S)	2002	<b>119</b>	10	13.8	4.88	0.12 U	3.13	8.01
	2008	<b>8.9</b>	5 B	6.72	2.56	0.054 U	2.23	4.79
	2009	<b>15</b>	5.3	9.525560991	4.143	0.522	3.616	8.281
	2010	<b>9.2</b>	2.1	8.18	3.27	0.351	2.73	6.351
	2011	<b>20</b>	1.8	7.77	2.99	0.199	2.73	5.919
	2013	<b>12</b>	0.86 J	5.72	2.09	0.107 J	1.82	4.017
MW-26(S) (Filtered)	2002	<b>103</b>	2 U					
	2008	<b>9.1</b>	2.5 U					
	2009	<b>18</b>	6.2					
	2010	<b>8.4</b>	1.2					
	2011	<b>22</b>	1.9	8.55	3.31	0.232	2.67	6.212
	2013	<b>13</b>	0.76 J	6.07	2.27	0.018 U	1.69	3.96

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Well	Year	Beryllium	Lead	Total Uranium (KPA) <sup>2</sup>	Uranium-234	Uranium-235	Uranium-238	Total Uranium (Alpha Spec) <sup>2</sup>
Units		ug/L	ug/L	ug/L	pCi/L	pCi/L	pCi/L	pCi/L
USEPA MCL		4	15	30	-	-	-	27 <sup>1</sup>
MW-40(B)	2002	0 U	4	1.03	0.67	0.04 U	0.33 J	1
	2004	0.158 U	1.72 U	1.1	0.826 U	0.132 U	0.958 U	0
	2005	0.13 U	0.57 U	0.484 J	0.48 J	0.031 J	0.234 J	0.745
	2006	0.088 U	0.49 U	0.366 U	0.4 J	0.025 U	0.18 J	0.58
	2007	1 U	4.8 U		0.46	-0.01 U	0.153	0.613
MW-40(B) (Filtered)	2002	0 U	3					
	2004	0.158 U	3.1 J					
	2005	0.13 U	0.57 U					
	2006	0.088 U	0.49 J					
	2007	1 U	4.8 U					
MW-50(I)	2010	0.082 J	0.72	2.17	1.05 J	0.331	0.705 J	2.086
	2011	0.1 U	1.6	1.16	0.687	0.045 J	0.417	1.149
	2013	0.25 U	0.25 J	1.17	0.411	0.022 U	0.465	0.876
MW-50(I) (Filtered)	2010	0.06 J	0.15 J					
	2011	0.1 U	0.62	1.16	0.509	0.016 U	0.461	0.97
	2013	0.25 U	0.24 U	1.06	0.39	0.018 U	0.316	0.706
MW-51(S)	2010	0.35 U	1.4 J		0.7	0.03 U	0.52	1.22
	2011	0.1 U	0.13 J	4.73	2.33	0.031 J	1.79	4.151
	2012	0.25 U	0.24 U	9.36	4.04	0.152	2.53	6.722
	2013	0.25 U	0.24 U	9.32	3.47	0.179	2.47	6.119
MW-51(S) (Filtered)	2010	0.35 U	0.17 U		0.45	0.009 U	0.218	0.668
	2011	0.1 U	0.15 J	0.94	0.511	0.067 J	0.315	0.893
	2012	0.25 U	0.24 U	7.53	3.51	0.073 J	2.98	6.563
	2013	0.25 U	0.24 U	8.37	3.79	0.137	2.94	6.867
MW-52(I)	2010	0.35 U	6.8		2.48	0.125 J	1.86	4.465
	2011	0.37 J	0.74	2.76	1.61	0.026 U	0.972	2.582
	2012	0.25 U	0.5 J	2.76	1.28	0.008 U	0.87	2.15
	2013	0.25 U	0.76 J	2.6	1.16	0.043 U	0.862	2.022
MW-52(I) (Filtered)	2010	0.35 U	7.3		3.16	0.233	3.59	6.983
	2011	0.1 U	0.4	2.68	1.65	0.111 J	1.1	2.861
	2012	0.25 U	0.35 J	2.69	1.37	0.124 J	1.07	2.564
	2013	0.25 U	0.46 J	2.66	1.39	0.039 J	0.516	1.945
MW-52A(I)	2012	0.64 J	11	15.2	5.05	0.431	4.5	9.981
	2013	0.75 J	10	15.4	5.62	0.19	5.35	11.16
MW-52A(I) (Filtered)	2012	0.67 J	10	15.4	5.81	0.327	5.04	11.177
	2013	0.8 J	9.4	16	5.07	0.436	4.86	10.366
MW-53(I)	2010	0.056 U	0.17 J	1 U	0.764 J	0.168 J	0.323	1.255
	2011	0.1 U	0.87	0.408	0.291	-0.008 U	0.138	0.429
	2012	0.25 U	0.66 J	0.432	0.23	0.017 U	0.115	0.345
	2013	3.7	8.7	0.458	0.134 J	-0.009 U	0.138 J	0.272
MW-53(I) (Filtered)	2010	0.056 U	0.07 J					
	2011	0.1 U	0.096 U	0.404	0.307	0.046 J	0.102	0.455
	2012	0.25 U	0.24 U	0.398	0.225	0.026 J	0.132	0.383
	2013	3.4	0.24 U	0.451	0.301	0.034 J	0.001 U	0.335
MW-54(S)	2010	0.11 J	0.21 J	4.98	2.42	0.06 J	1.6	4.08
	2011	0.1 U	0.096 U	7	4.73	0.15 J	3.02	7.9
	2012	0.25 U	0.24 U	4.39	2.19	0.024 J	1.63	3.844
	2013	0.25 U	0.77 J	5.21	2.24	0.062 J	1.2	3.502
MW-54(S) (Filtered)	2010	0.056 U	0.072 J					
	2011	0.1 U	0.096 U	8.14	4.16	0.198	3.14	7.498
	2012	0.25 U	0.24 U	4.57	2.39	0.143	1.91	4.443
	2013	0.25 U	0.24 U	4.42	2.65	0.125	1.32	4.095

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**2002 - 2013**

Well	Year	Beryllium	Lead	Total Uranium (KPA) <sup>2</sup>	Uranium-234	Uranium-235	Uranium-238	Total Uranium (Alpha Spec) <sup>2</sup>
Units		ug/L	ug/L	ug/L	pCi/L	pCi/L	pCi/L	pCi/L
<i>USEPA MCL</i>		4	15	30	-	-	-	27 <sup>1</sup>
MW-55(l)	2010	0.056 U	0.06 J	1 U	0.508 J	0.051 J	0.275	0.834
	2011	0.1 U	0.096 U	0.684	0.205 J	0.005 U	0.16 J	0.365
	2012	0.25 U	0.24 U	0.437	0.12 J	-0.015 U	0.11	0.23
	2013	0.25 U	1	0.442	0.283 J	0.127 J	0.162 J	0.572
MW-55(l) (Filtered)	2010	0.056 U	0.064 J					
	2011	0.1 U	0.096 U	0.391	0.243 J	0.107 J	0.139	0.489
	2012	0.25 U	0.24 U	0.436	0.167 J	0 U	0.138	0.305
	2013	0.25 U	0.24 U	0.438	0.46	-0.028 U	0.192 J	0.652
MW-56(l)	2010	0.25 J	0.48	3.45	1.29 J	0.101 J	1.51	2.901
	2011	0.62	0.12 J	1.35	0.682	0.067	0.439	1.188
	2013	0.25 U	0.24 U	1.23	0.544	0.077 J	0.245	0.866
MW-56(l) (Filtered)	2010	0.08 J	0.3 J					
	2011	0.1 U	0.16 J	1.54	0.531	0.074 J	0.358	0.963
	2013	0.25 U	0.24 U	0.812	0.257	0.141	0.281	0.679
OMW-27(l)	2008	1 U	2.5 U	1.89	2.16	0.357	0.852	3.369
	2009	0.056 U	0.73	1.412636879	1.422	0.05232 U	0.7632	2.1852
	2010	0.056 U	1.2	2.09	2	0.426	1.02	3.446
	2011	0.1 U	1.2	1.88	1.19	0.06 J	0.45	1.7
	2012	0.25 U	0.32 J	2.02	0.791	0.065 J	0.643	1.499
	2013	0.25 U	0.9 J	2.03	1.37	0.067 J	0.573	2.01
OMW-27(l) (Filtered)	2008	1 U	2.5 U					
	2009	0.028 U	0.54					
	2010	0.056 U	0.55					
	2011	0.1 U	0.49	1.73	1.18	0.085 J	0.67	1.935
	2012	0.25 U	0.24 U	1.98	1.52	-0.003 U	0.463	1.983
2013	0.25 U	1.1	2.06	1.05	0.049 J	0.586	1.685	
OMW-29(l)	2002	0 U	2 U	0.21	0.14 U	-0.01 U	0.1 U	0
	2004	0.158 U	1.72 U	0.299	0.295 U	-0.0935 U	-0.0932 U	0
	2005	0.13 U	0.57 U	4.45	2.11	0.063 J	1.5	3.673
	2006	0.088 U	0.49 U	2.5	1.35 J	0.021 U	0.72 J	2.07
	2007	0.51 U	2.4 U		1.01	0.018 U	0.57	1.58
OMW-29(l) (Filtered)	2002	0 U	2 U					
	2004	0.158 U	1.72 U					
	2005	0.13 U	0.57 U					
	2006	0.088 U	0.89 J					
	2007	0.51 U	2.4 U					

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Well	Year	Beryllium	Lead	Total Uranium (KPA) <sup>2</sup>	Uranium-234	Uranium-235	Uranium-238	Total Uranium (Alpha Spec) <sup>2</sup>
Units		ug/L	ug/L	ug/L	pCi/L	pCi/L	pCi/L	pCi/L
<i>USEPA MCL</i>		4	15	30	-	-	-	27 <sup>1</sup>
OMW-31(I)	2002	0 U	2 U	0.67	0.3 J	0.05 U	0.27 J	0.57
	2004	0.158 U	1.72 U	0.982	0.639 U	-0.386 U	-0.843 U	0
	2005	0.13 U	0.57 U	1.42	0.66	0.027 U	0.55	1.21
	2006	0.088 U	0.49 U	1.81 J	0.99 J	0 U	0.56 J	1.55
	2007	1 U	4.8 U		0.36	0 U	0.211	0.571
	2008	1 U	2.5 U	0.525 U	0.564	0.096 U	0.615	1.179
	2009	0.056 U	0.27 J	0.469310912 U	0.3599	0.2537 U	0.2048 U	0.3599
	2010	0.056 U	0.66	1 U	0.839 J	0.135 J	0.176 J	1.15
	2011	0.1 U	1.2	1.25	0.359	0.019 U	0.205	0.564
	2012	0.25 U	0.3 J	0.423	0.301	0.016 U	0.077	0.378
2013	0.25 U	0.24 U	0.335	0.253	0 U	0.127 J	0.38	
OMW-31(I) (Filtered)	2002	0 U	2 U					
	2004	0.158 U	1.72 U					
	2005	0.13 U	0.57 U					
	2006	0.088 U	0.49 U					
	2007	1 U	4.8 U					
	2008	1 U	2.5 U					
	2009	0.035 J	0.35					
	2010	0.056 U	0.22 J					
	2011	0.1 U	0.25 J	0.59	0.344	0.022 J	0.164	0.53
	2012	0.25 U	0.24 U	0.517	0.306	0.025 J	0.21	0.541
2013	0.25 U	0.24 U	0.392	0.124 J	0.095 J	0.146 J	0.365	
OMW-32(B)	2008	1 U	2.5 U	0.258 U	0.498	0.123 U	0.0379 U	0.498
	2009	0.056 U	0.13 J	0.01589197 U	0.2288 U	0.05856 U	0.1042 U	0
	2010	0.056 U	0.18 J	1 U	0.346 J	0.109 J	0.22 J	0.675
	2011	0.36 J	0.57	0.178 J	0.228	0.041 J	0.122	0.391
	2012	0.25 U	0.48 J	0.145 J	0.094 J	0.023 J	0.023 U	0.117
	2013	0.25 U	0.29 J	0.089 J	0.032 U	0.033 J	0.019 U	0.033
OMW-32(B) (Filtered)	2008	1 U	2.5 U					
	2009	0.028 U	0.28					
	2010	0.056 U	0.18 J					
	2011	0.1 U	0.18 J	0.085 J	0.1 J	-0.017 U	0.065 J	0.165
	2012	0.25 U	0.24 U	0.146 J	0.075 J	0 U	-0.022 U	0.075
	2013	0.25 U	0.25 J	0.086 J	0.04 J	0.026 U	0.106 J	0.146
OMW-35(I)	2002	0 U	2 U	0.72	0.35 J	0.06 U	0.3 J	0.65
	2004	0.158 U	1.72 U	0.763	0.87 U	0.158 U	0.435 U	0
	2005	0.13 U	0.57 U	0.528 J	0.4 J	0.007 U	0.194 J	0.594
	2006	0.088 U	1.6	1.91 J	0.96 J	0.03 U	0.64 J	1.6
	2007	1 U	4.8 U		1.17	0.069 J	1.05	2.289
	2013	0.25 U	0.24 U	0.335	0.253	0 U	0.127 J	0.38
OMW-35(I) (Filtered)	2002	0 U	2 U					
	2004	0.158 U	1.72 U					
	2005	0.13 U	0.57 U					
	2006	0.088 U	1.5					
	2007	1 U	4.8 U					

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**2002 - 2013**

Well	Year	Beryllium	Lead	Total Uranium (KPA) <sup>2</sup>	Uranium-234	Uranium-235	Uranium-238	Total Uranium (Alpha Spec) <sup>2</sup>
Units		ug/L	ug/L	ug/L	pCi/L	pCi/L	pCi/L	pCi/L
<i>USEPA MCL</i>		4	15	30	-	-	-	27 <sup>1</sup>
PW(E)	2002	0 U	2 U	0.52	0.19 U	0.02 U	0.16 U	0
	2004	0.158 U	1.72 U	0.502	1.08 U	0.00855 U	0.324 U	0
	2008	1 U	26.2	0.249 U	0.143 U	0.113 U	0.414	0.414
	2009	0.17 J	26	0.103337473 U	0.2074 U	0.1702 U	0.09449 U	0
	2010	0.098 J	16	1 U	0.637 J	0 J	0.356	0.993
	2011	0.1 U	0.54	0.157 J	0.094 J	0.067	0.041 J	0.202
	2013	0.25 U	6.9	0.273	0.057 J	-0.007 U	0.092 J	0.149
PW(E) (Filtered)	2002	0 U	2 U					
	2004	0.158 U	3.2 J					
	2008	1 U	4 B					
	2009	0.028 J	0.56					
	2010	0.056 U	0.18 J					
	2011	0.1 U	0.12 J	0.332	0.088 J	0.036 J	0.005 U	0.124
	2013	0.25 U	0.24 U	0.266	0.12 J	0.06 J	0.098 J	0.278
PW(W)	2004	4.1 J	1.72 U	8.04	0.894 U	-0.0292 U	1.96	1.96
	2008	11.3	2.5 U	4.14	2.14	0.123 U	2.09	4.23
	2009	13	2.2	3.739558979	2.032	0.3298 J	1.846	4.2078
	2010	7.5	1.3	3.73	3.15	0.735	1.69	5.575
	2011	6.8	0.91	3.64	1.38	0.193	1.16	2.733
	2013	7.5	1.2	2.9	0.755	0.075 J	0.917	1.747
PW(W) (Filtered)	2004	4.4 J	6.5					
	2008	11	2.5 U					
	2009	18	1.6					
	2010	8.7	0.85					
	2011	6.6	0.71	3.58	1.4	0.112	1.25	2.762
	2013	7.1	0.42 J	2.89	0.955	0.048 J	1.02	2.023

Notes:

- U Undetected above quantitation limit.
- R Result was rejected because of quality issues.
- J Result is estimated.
- B Constituent also detected in laboratory blank.
- blank cells Not Analyzed
- bold entries** Result exceeds USEPA Maximum Contaminant Levels (MCL) for protection of drinking water.
- µg/L micrograms per liter
- pCi/L pico Curies per liter
- 1 This MCL refers to the sum of Uranium Isotopes (MCL=27pCi/L or 30 µg/L)
- 2 Kinetic Phosphorescence Analysis (KPA) and Alpha Spec are the analytical methods used to measure Total Uranium and Uranium Isotopes, respectively.
- 3 MW-24(S) has been abandoned and was replaced by newly installed MW-24A(S).