

## TECHNICAL MEMORANDUM

**To:** Grant Evenson, Nevada Division of Environmental Protection  
**From:** Ranajit Sahu (BRC)  
**cc:** John J. Dodge, PG, CHG (CA) (DBS&A)  
**Date:** February 15, 2024  
**Subject:** Technical Memorandum – 2023 Monitoring Well Sampling Event  
BMI Common Areas (Eastside with Western Hook and Open Space parcels), Clark County, Nevada

### Introduction

BRC developed and submitted a Sampling and Analysis Plan (SAP) dated November 16, 2022 for Shallow Zone groundwater monitoring in the BRC Eastside Area and the adjacent Western Hook and Open Space parcels (Site). As approved by the State of Nevada Division of Environmental Protection (NDEP), field monitoring was completed in June, July, September, and October 2023. A supplementary technical memorandum dated August 22, 2023 was prepared to summarize the field status of wells that could not be accessed and selected replacement wells. The final list of wells is provided as Table 1 and well locations are shown on Figure 1.

### Water Level Data

Depth-to-water (DTW) measurements were completed by Converse Consultants, Inc. (Converse) in the selected wells prior to monitoring well sampling. Water level measurements were completed in 26 Layer 1 wells and 43 Layer 2 wells. Layer 1 wells are screened in the Shallow Zone Quaternary alluvium at the Site. Layer 2 wells are screened in the relatively low permeability Shallow Zone Upper Muddy Creek Formation (UMCf). Layer 2 wells may also be screened in the transitional Muddy Creek Formation (xMCF), or screened in Qal with over 1 foot of the screen also set in the UMCf and/or xMCF.

DTW in Layer 1 wells ranged from 2.91 to 64.74 feet below top-of-well casing (ft btoc). DTW in Layer 2 wells ranged from 7.18 to 74.74 ft btoc (Table 2). Groundwater elevations in Layer 1 wells ranged from approximately 1,429 to 1,724 feet above nominal mean sea level (ft MSL) (North American Vertical Datum of 1988 [NAVD88]). Groundwater elevations in Layer 2 wells ranged from approximately 1,481 to 1,764 ft MSL.

Figure 2 presents the groundwater elevation contours (groundwater flow map) for Layer 1 and Figure 3 presents the groundwater flow map for Layer 2. Groundwater elevations in the UMCf are largely greater than elevations in the Qal (upwards groundwater flow gradient).

Groundwater flow in the Qal is largely north-northeasterly across the Eastside area. Groundwater flow in the UMCf is oriented north-northwesterly in the southern Eastside area before flow changes to largely northerly (in the west-central and northern Eastside area) then north-northeasterly near the Las Vegas wash.

### **Analyte List**

Selected wells were sampled by Converse for the following parameters:

- Arsenic by EPA Method 200.8 LL
- Beta-Hexachlorocyclohexane (beta-BHC) by EPA Method 8081B
- Chloroform (volatile organic compounds) by EPA Method 8260B
- Radium 226+228 by EPA Methods 903.0/904.0

### **Analytical Results**

ERM, Inc. completed a data validation summary report (DVSR) dated January 23, 2024 (Attachment A) for the 2023 sampling event. As discussed in the DVSR, based on the evaluation of the dataset, some of the results were qualified as estimated, however, 100 percent of the data obtained during the field investigation are valid and acceptable for their intended use.

Detected arsenic concentrations ranged from 2.4 to 160 micrograms per liter ( $\mu\text{g/L}$ ) (Table 3). The highest concentrations in Qal wells (Layer 1) are located in the southeastern Eastside area extending north- northeast from well POU3 (120  $\mu\text{g/L}$ ) to well ES-39 (72  $\mu\text{g/L}$ ). Relatively elevated concentrations were also detected in wells to the north of the Eastside area (Figure 4). The highest concentrations in UMCf wells (Layer 2) are also located in the southeastern Eastside area and primarily in wells to the northeast and northwest. The 2023 data are broadly similar to previous results from earlier sampling events except for well DBMW-13 where arsenic was

previously detected at 1,800 µg/L (Figure 5). Arsenic was detected at a lower concentration of 44 µg/L in well DBMW-13 in the 2023 sampling event.

Beta-BHC was detected in well APX-2-P101 at 0.20 µg/L and in well PC-80 at 0.14 µg/L. Beta-BHC was not detected in the remaining 6 wells that were sampled (Table 4). Both PC-80 and APX-2-P101 are located in the Western Hook area (Figure 6).

Detected chloroform concentrations ranged from 3.7 to 1,200 µg/L (Table 5). The highest concentrations in Qal wells were detected in well POU3 (380 µg/L) and well MW-4 (150 µg/L). Both detections in the 2023 sampling event are lower than previous results in these wells. Chloroform was detected at 1,300 µg/L in well POU3 and at 520 µg/L in MW-4 in prior sampling events (Figure 7). The highest chloroform detections in Layer 2 (UMCf) wells were detected in well ES-4 (1,200 µg/L) near POU3 in the southwestern Eastside area. Other relatively elevated chloroform detections were reported in wells ES-32 (140 µg/L), DBMW-08R (160 µg/L), MCF-06CR (240 µg/L), and DBMW-11 (300 µg/L). The reported concentration in well DBMW-11 is lower than the previous result of 600 µg/L (Figure 8).

Radium 226+228 was detected in relatively elevated levels in Qal wells POD2-R (5.288 pCi/L) and in well MW-4 (6.24 pCi/L) (Table 6). Well POD2-R is located in the western Eastside area and well MW-4 is northeast of the Eastside area near the Las Vegas wash (Figure 9). Radium 226+228 was also detected in relatively elevated levels along the northern boundary of the Eastside area in Layer 2 wells DBMW-03 (4.754 pCi/L), MCF-06BR (4.02 pCi/L), MCF-06CR (5.14 pCi/L), and well DBMW-09 (2.038 pCi/L) (Figure 10). The reported Radium 226+228 levels are lower in the 2023 event for wells sampled previously except where 4.59 pCi/L was previously detected in well MW-4.

## Tables

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**Table 1. Well Sampling Summary  
2023 Groundwater Sampling Event**

Field Sampling Date	Monitoring Well	Field Sampling Event 2023				Sampling/Analysis Plan 2023				Explanation
		CHLOROFORM	ARSENIC	RA 226+228	BBHC	CHLOROFORM	ARSENIC	RA 226+228	BBHC	
7/13/2023	AA-08		X		X				X	
7/7/2023	AA-09	X	X	X		X	X	X		
7/12/2023	AA-11R	X				X				
7/11/2023	AA-13R	X	X			X	X			
7/7/2023	AA-20R	X	X	X		X	X	X		
7/13/2023	AA-21		X		X		X		X	
7/11/2023	AA-26	X				X				
7/10/2023	AA-27		X				X			
7/11/2023	AA-30	X				X				
7/12/2023	AA-UW1		X				X			
7/10/2023	AA-UW2		X				X			
7/11/2023	AA-UW4		X				X			
7/10/2023	AA-UW5		X				X			
7/6/2023	AA-UW6		X				X			
9/29/2023	APX-2-P101		X		X		X		X	
7/6/2023	BEC-6	X	X			X	X			
7/12/2023	DBMW-03	X	X	X		X	X	X		
7/12/2023	DBMW-04R	X	X			X	X			
7/12/2023	DBMW-05R		X				X			
7/6/2023	DBMW-08R	X	X	X		X	X	X		
7/5/2023	DBMW-09	X	X	X		X	X	X		
7/5/2023	DBMW-10	X	X			X	X	X		
9/29/2023	DBMW-10			X		X	X	X		
7/5/2023	DBMW-11	X	X	X		X	X	X		
7/6/2023	DBMW-13	X	X	X		X	X	X		
7/6/2023	DBMW-14		X	X			X	X		
7/6/2023	DBMW-15		X				X			
7/6/2023	DBMW-16R	X	X			X	X			
7/13/2023	DBMW-19		X		X		X		X	
7/11/2023	DBMW-20	X	X			X	X			
7/11/2023	DBMW-22	X	X			X	X			
7/10/2023	DM-1R	X	X			X	X			
7/10/2023	ES-3	X				X	X			
10/2/2023	ES-3		X			X	X			
7/7/2023	ES-30	X				X				
7/7/2023	ES-32	X				X				
9/29/2023	ES-39		X				X			
7/10/2023	ES-4	X				X	X			ES-4 buried/destroyed between dates. Sampled ES-3 for As instead.
7/7/2023	ES-5	X				X				
7/12/2023	MCF-01B	X	X			X	X			
10/2/2023	MCF-01B	X				X	X			Extra chloroform sample collected for lab MS/MSD.
7/11/2023	MCF-03B		X				X			
7/14/2023	MCF-06BR		X	X			X	X		
7/14/2023	MCF-06CR	X	X	X		X	X	X		
7/6/2023	MCF-12B	X	X			X	X			
7/7/2023	MCF-16C	X	X			X	X	X		
10/2/2023	MCF-16C			X		X	X	X		
7/11/2023	MW-4	X	X	X		X	X	X		
Not sampled	MW-5						X		X	No Access to MW-S. Well APX-2-P101 sampled instead.
9/29/2023	PC-62		X		X		X		X	
7/13/2023	PC-80		X		X		X		X	
7/7/2023	POD2-R		X	X			X	X		
7/10/2023	POD-8R	X	X		X		X	X	X	
7/10/2023	POU3	X	X			X	X			

Note:  
Blank cells = Well not specified for indicated parameter. Shaded cells =  
Parameter not sampled per plan (see Explanation).

**Table 2. Water Level Data  
2023 Groundwater Sampling Event**

No.	Well	Well Coordinates Nevada State Plane NAD83 Easting Northing		Top of Casing Elevation (NAVD88) (ft MSL)	Depth to Water (ft btoc)	Date	Groundwater Elevation (NAVD88) (ft MSL)
1	AA-08	827805.16500	26733275.04000	1581.19	2.91	6/29-7/5/23	1578.28
2	AA-09	831041.58700	26723441.40000	1696.23	39.61	6/29-7/5/23	1656.62
3	AA-11R	830397.21000	26725271.88000	1660.05	21.73	6/29-7/5/23	1638.32
4	AA-13R	833699.72000	26722643.14000	1724.69	46.82	6/29-7/5/23	1677.87
5	AA-20R	831962.23380	26728006.66260	1628.49	27.25	6/29-7/5/23	1601.24
6	AA-21	826148.08000	26734078.78300	1584.20	8.23	6/29-7/5/23	1575.97
7	AA-26	840176.49300	26733349.14900	1566.67	41.64	6/29-7/5/23	1525.03
8	AA-27	832471.34100	26719301.65500	1789.38	64.72	6/29-7/5/23	1724.66
9	AA-30	836125.91200	26733691.70000	1533.34	16.81	6/29-7/5/23	1516.53
10	AA-UW1	831427.20490	26719624.98827	1774.63	56.04	6/29-7/5/23	1718.59
11	AA-UW2	832819.53673	26718117.11023	1821.38	69.91	6/29-7/5/23	1751.47
12	AA-UW4	836558.84000	26720018.87000	1799.88	41.76	6/29-7/5/23	1758.12
13	AA-UW5	837992.01000	26722899.01000	1768.51	46.19	6/29-7/5/23	1722.32
14	AA-UW6	839440.23000	26725565.41000	1745.83	52.63	6/29-7/5/23	1693.20
15	BEC-6	835794.85800	26724104.56000	1725.52	7.18	6/29-7/5/23	1718.34
16	DBMW-10	836936.45689	26727919.92490	1663.96	54.85	6/29-7/5/23	1609.11
17	DBMW-11	837574.54829	26727982.28370	1667.46	35.57	6/29-7/5/23	1631.89
18	DBMW-13	838573.32304	26727948.66160	1678.79	45.53	6/29-7/5/23	1633.26
19	DBMW-14	838999.37000	26728032.25000	1684.96	34.73	6/29-7/5/23	1650.23
20	DBMW-15	839456.96000	26728062.10000	1693.20	37.97	6/29-7/5/23	1655.23
21	DBMW-16-R	840470.69000	26728600.38000	1694.14	74.74	6/29-7/5/23	1619.40
22	DBMW-19	831488.73700	26731383.22900	1583.40	26.04	6/29-7/5/23	1557.36
23	DBMW-22	839140.74100	26733030.51700	1535.61	26.87	6/29-7/5/23	1508.74
24	DBMW-3	831032.81000	26728150.17900	1625.86	23.23	6/29-7/5/23	1602.63
25	DBMW-4-R	832250.36000	26729703.59000	1605.81	15.28	6/29-7/5/23	1590.53
26	DBMW-5-R	833452.86000	26729761.40000	1609.65	28.95	6/29-7/5/23	1580.70
27	DBMW-8-R	835406.87000	26729164.92000	1632.05	48.07	6/29-7/5/23	1583.98
28	DBMW-9	836220.90103	26727794.48610	1659.92	54.48	6/29-7/5/23	1605.44
29	DM-1R	832738.40000	26722143.85000	1727.21	40.04	6/29-7/5/23	1687.17
30	ES-3	830702.56000	26721654.03000	1724.66	37.80	6/29-7/5/23	1686.86
31	ES-30	831683.05000	26725401.87000	1667.45	52.72	6/29-7/5/23	1614.73
32	ES-32	832493.20000	26723507.75000	1697.91	49.20	6/29-7/5/23	1648.71
33	ES-4	831228.81000	26721583.57000	1728.79	41.69	6/29-7/5/23	1687.10
34	ES-5	831093.61000	26723491.09000	1692.31	37.23	6/29-7/5/23	1655.08
35	MCF-03B	836813.17000	26721066.60100	1785.72	41.47	6/29-7/5/23	1744.25
36	MCF-06BR	834930.92000	26729107.46000	1633.18	55.31	7/14/23	1577.87
37	MCF-06CR	834945.84000	26729109.48000	1633.12	57.89	7/14/23	1575.23
38	MCF-12B	840058.24000	26727374.14000	1714.88	54.75	6/29-7/5/23	1660.13
39	MCF-16C	835846.37900	26726030.17800	1691.98	47.98	6/29-7/5/23	1644.00
40	MW-4	836666.49000	26733446.64000	1526.35	21.98	7/11/23	1504.37
41	PC-80	829823.55000	26733250.66000	1573.45	16.24	6/29-7/5/23	1557.21
42	POD2-R	831955.50000	26724825.40000	1673.40	61.74	6/29-7/5/23	1611.66
43	POD-8R	833528.22000	26724725.11000	1691.16	57.91	6/29-7/5/23	1633.25
44	AA-07	837100.42300	26729559.52200	1612.63	38.58	6/29-7/5/23	1574.05
45	AA-14R	833545.05000	26724140.82000	1701.05	57.78	6/29-7/5/23	1643.27
46	AA-15	831753.69600	26726004.23100	1658.13	42.43	6/29-7/5/23	1615.70
47	AA-18	836690.87000	26727656.38300	1669.00	47.76	6/29-7/5/23	1621.24
48	AA-19	832521.43500	26727447.09700	1642.32	43.41	6/29-7/5/23	1598.91
49	AA-22	833425.58700	26731586.01200	1581.53	29.40	6/29-7/5/23	1552.13
50	AA-UW3	835097.85824	26718183.94289	1831.60	66.63	6/29-7/5/23	1764.97
51	BEC-10	835778.55800	26727623.50000	1657.39	49.39	6/29-7/5/23	1608.00
52	BEC-4	830699.32900	26723946.72000	1681.34	28.94	6/29-7/5/23	1652.40
53	COH-1A	832839.10000	26734355.00000	1549.43	23.56	7/11/23	1525.87
54	DBMW-1	830469.54900	26727999.28800	1626.46	29.36	6/29-7/5/23	1597.10
55	DBMW-17R	840719.96000	26728124.74000	1712.38	52.23	6/29-7/5/23	1660.15
56	DBMW-18R	840605.10000	26727761.27000	1717.15	50.46	6/29-7/5/23	1666.69
57	DBMW-6R	834409.61000	26729027.76000	1632.63	50.37	6/29-7/5/23	1582.26
58	HMW-08	833956.43895	26733456.68772	1545.31	15.72	7/11/23	1529.59
59	HMW-09	833045.86663	26733362.31783	1543.63	11.04	7/11/23	1532.59
60	MCF-01B	830888.59400	26720256.83100	1756.28	50.98	6/29-7/5/23	1705.30
61	MW-13	838307.11000	26734739.94000	1529.86	34.70	7/11/23	1495.16
62	PC-108	828526.51000	26731913.27000	1587.97	8.45	6/29-7/5/23	1579.52
63	POD-7	832881.20000	26724196.90000	1690.92	53.46	6/29-7/5/23	1637.46
64	WMW5.58SS	835065.42700	26734651.39900	1438.22	8.68	6/29-7/5/23	1429.54
65	MW-03 (CoH)	840597.93500	26733454.62800	1513.08	31.92	7/11/23	1481.16
66	HMWWT-6	837455.79219	26722112.82262	1774.04	41.62	6/29-7/5/23	1732.42
67	POU2-R	834507.79000	26723382.08000	1725.55	55.87	6/29-7/5/23	1669.68
68	AA-01	830921.12100	26720238.47300	1757.13	Dry <49	6/29-7/5/23	Dry <1708.13
69	BEC-9	833049.52100	26727221.50000	1617.74	Dry <59	6/29-7/5/23	Dry <1558.74

ft btoc = feet below top of casing.  
 ft MSL = feet above nominal sea level.  
 NAVD88 = North American Vertical Datum of 1988.  
 NAD83 = North American Datum of 1988.

**Table 3. Analytical Results of Groundwater Sampling  
Arsenic**

Well	Result
DBMW-15	160
DBMW-14	150
AA-UW6	150
DBMW-05R	140
AA-UW1	130
AA-UW1 DUP GW-20230712	130
POU3	120
DBMW-03	120
PC-80	100
AA-09	94
AA-21	87
AA-UW4	85
DBMW-04R	83
MCF-12B	74
POD2-R	74
MW-4	72
ES-39	72
ES-39 DUP GW-20230929	72
MCF-01B	68
DBMW-09	67
DBMW-08R	66
AA-20R	65
POD-8R	62
DBMW-19	60
PC-62	57
MCF-03B	55
DBMW-10	52
DBMW-22	52
AA-UW2	49
DBMW-20	49
DBMW-20 DUP GW-20230711	49
APX-2--P101	49
DBMW-16R	48
AA-27	46
DBMW-13	44
DBMW-13 DUP GW-20230706	42
DM-1R	39
ES-3	36
AA-13R	35
MCF-06CR	30
AA-UW5	24
AA-UW5 DUP GW-20230710	23
DBMW-11	23
MCF-06BR	13
BEC-6	8.2
AA-08	2.9
AA-08 DUP GW-20230713	2.7
MCF-16C	2.4
Equipment Blanks	
EB-20230712	0.84
EB-20230713	1.2
EB-20231002	ND<0.50

Notes:

Values in micrograms per liter (ug/L)

Analyses by EPA Method 200.8 LL

ND = Not detected at indicated reporting limit



**Table 4. Analytical Results of Groundwater Sampling  
beta-BHC**

Well	Result
APX-2--P101	0.20
PC-80	0.14
POD-8R	ND<0.10
PC-62	ND<0.093
DBMW-19	ND<0.10
AA-08	ND<0.10
AA-21 DUP GW-20230713	ND<0.10
AA-21	ND<0.10
Equipment Blanks	
EB-20230712	ND<0.10
EB-20230713	ND<0.10
EB-20231002	ND<0.10

Notes:

Values in micrograms per liter (ug/L)

Analyses by EPA Method 8081B.

ND = Not detected at indicated reporting limit

**Table 5. Analytical Results of Groundwater Sampling  
Chloroform**

Well	Result
ES-4	1200
POU3	380
DBMW-11	300
MCF-06CR	240
DBMW-08R	160
MW-4	150
ES-32	140
DM-1R	95
DBMW-04R	82
DBMW-03	63
DBMW-09	62
AA-09	55
DBMW-13 DUP GW-20230706	51
DBMW-13	48
AA-11R	49
ES-30	46
AA-20R	37 J
ES-5	29 J
DBMW-20 DUP GW-20230711	19
DBMW-20	12
DBMW-10	15
DBMW-22	17
MCF-01B	9.8 J
MCF-12B	9.4
POD-8R	7.5
AA-13R	3.7
AA-26	ND<2.0
AA-30	ND<2.0
BEC-6	ND<2.0
DBMW-16R	ND<2.0
ES-3	ND<2.0
MCF-16C	ND<2.0
Field Blanks	
FB-20230712	4.5
FB-20230707	7.6
FB-20230929	ND<2.0
FB-20231002	ND<2.0
Equipment Blanks	
EB-20230712	ND<2.0
EB-20230713	ND<2.0
EB-20231002	ND<2.0
Trip Blanks	
TB-20230705	ND<2.0
TB-20230706	ND<2.0
TB-20230707	ND<2.0
TB-20230710	ND<2.0
TB-20230711	ND<2.0
TB-20230712	ND<2.0
TB-20230713	ND<2.0
TB-20230714	ND<2.0
TB-20230929	ND<2.0
TB-20231002	ND<2.0

Notes:

Values in micrograms per liter (ug/L)

Analyses by EPA Method 8260B

ND = Not detected at indicated reporting limit

J = Estimated value due to equipment blank detection

**Table 6. Analytical Results of Groundwater Sampling  
Radium 226+228**

Well Sample	Analyte	Result (Ra 226+228)	Result	Reporting Limit
MW-4	Radium-226		4.56	1.00
MW-4	Radium-228	6.24	1.68	1.00
POD2-R	Radium-226		5.03	1.00
POD2-R	Radium-228	5.288	0.258 U	1.00
MCF-06CR	Radium-226		2.91	1.00
MCF-06CR	Radium-228	5.14	2.23	1.00
DBMW-03	Radium-226		3.78	1.00
DBMW-03	Radium-228	4.754	0.974	1.00
MCF-06BR	Radium-226		2.97	1.00
MCF-06BR	Radium-228	4.02	1.05 U	1.00
DBMW-09	Radium-226		1.39	1.00
DBMW-09	Radium-228	2.038	0.648 U	1.00
DBMW-13	Radium-226		0.771	1.00
DBMW-13	Radium-228	1.421	0.65 U	1.00
DBMW-13 DUP GW-20230706	Radium-226		0.812	1.00
DBMW-13 DUP GW-20230706	Radium-228	1.992	1.18	1.00
MCF-16C	Radium-226		0.143 U	1.00
MCF-16C	Radium-228	0.889	0.746	1.00
AA-09	Radium-226		0.585	1.00
AA-09	Radium-228	0.863	0.278 U	1.00
DBMW-14	Radium-226		0.476	1.00
DBMW-14	Radium-228	0.812	0.336 U	1.00
DBMW-08R	Radium-226		0.844	1.00
DBMW-08R	Radium-228	0.8082	-0.0358 U	1.00
DBMW-11	Radium-226		0.372	1.00
DBMW-11	Radium-228	0.728	0.356 U	1.00
DBMW-10	Radium-226		0.212 U	1.00
DBMW-10	Radium-228	0.714	0.502 U	1.00
AA-20R	Radium-226		0.452	1.00
AA-20R	Radium-228	0.68	0.228 U	1.00
Equipment Blanks				
EB-20230712	Radium-228		0.154 U	1.00
EB-20230712	Radium-226	0.1776	0.0236 U	1.00
EB-20230713	Radium-228		0.595	1.00
EB-20230713	Radium-226	0.6263	0.0313 U	1.00
EB-20231002	Radium-228		0.896	1.00
EB-20231002	Radium-226	0.9253	0.0293 U	1.00

Notes:

Values in picoCuries per liter (pCi/L)

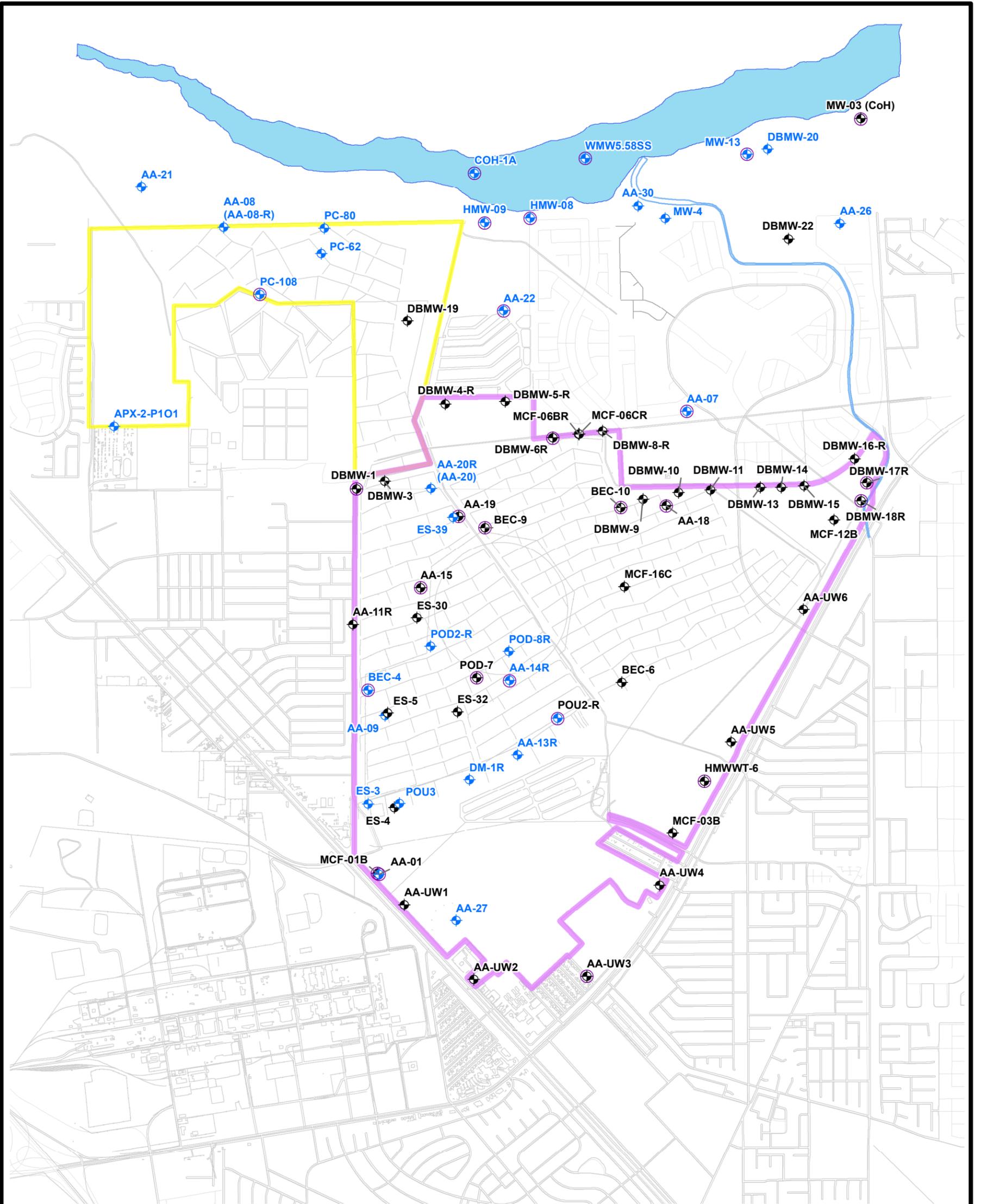
Analyses by EPA Methods 903.0/904.0

U = Not detected at indicated reporting limit

Numerical values summed if analyte not detected

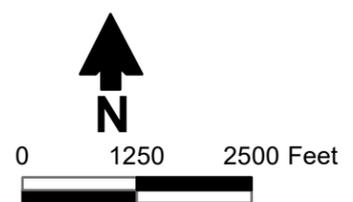
## Figures

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**Explanation**

<b>Sampled well</b>	<b>Water levels only well</b>	Eastside Hook area
Layer 1 well	Layer 1 well	Eastside Main area
Layer 2 well	Layer 2 well	Las Vegas Wash

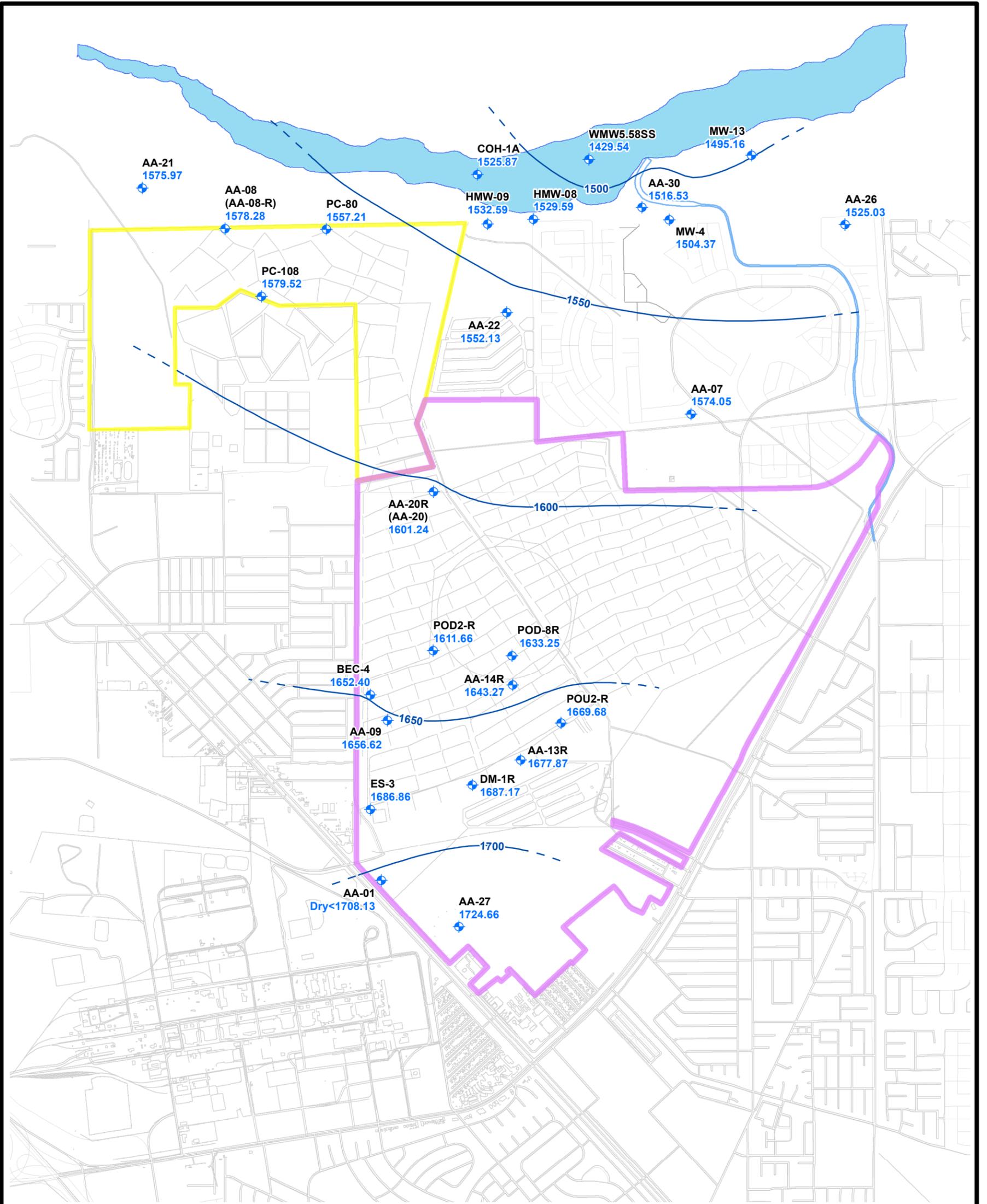


Notes:  
 1. Data posted for Shallow Zone Quaternary alluvium (Qal) wells and Shallow Zone Upper Muddy Creek Formation (UMCf) wells, transitional Muddy Creek Formation (xMCF) wells, and Quaternary alluvium (Qal) wells with UMCf/xMcf.  
 2. Layer 1 = Shallow Zone Qal wells  
 3. Layer 2 = Shallow Zone UMCf, xMCF, and Qal/UMCf/xMCF wells

BMI Common Areas (Eastside)  
Henderson, Nevada

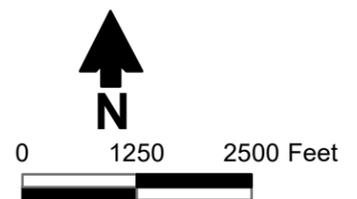
**FIGURE 1**  
Well Location Map  
Layer 1 and 2

Prepared by: DBS&A	Date 1/29/2024	J:\Projects\BRC\GIS\MXD\Dot_maps\Fig1_Well_Location
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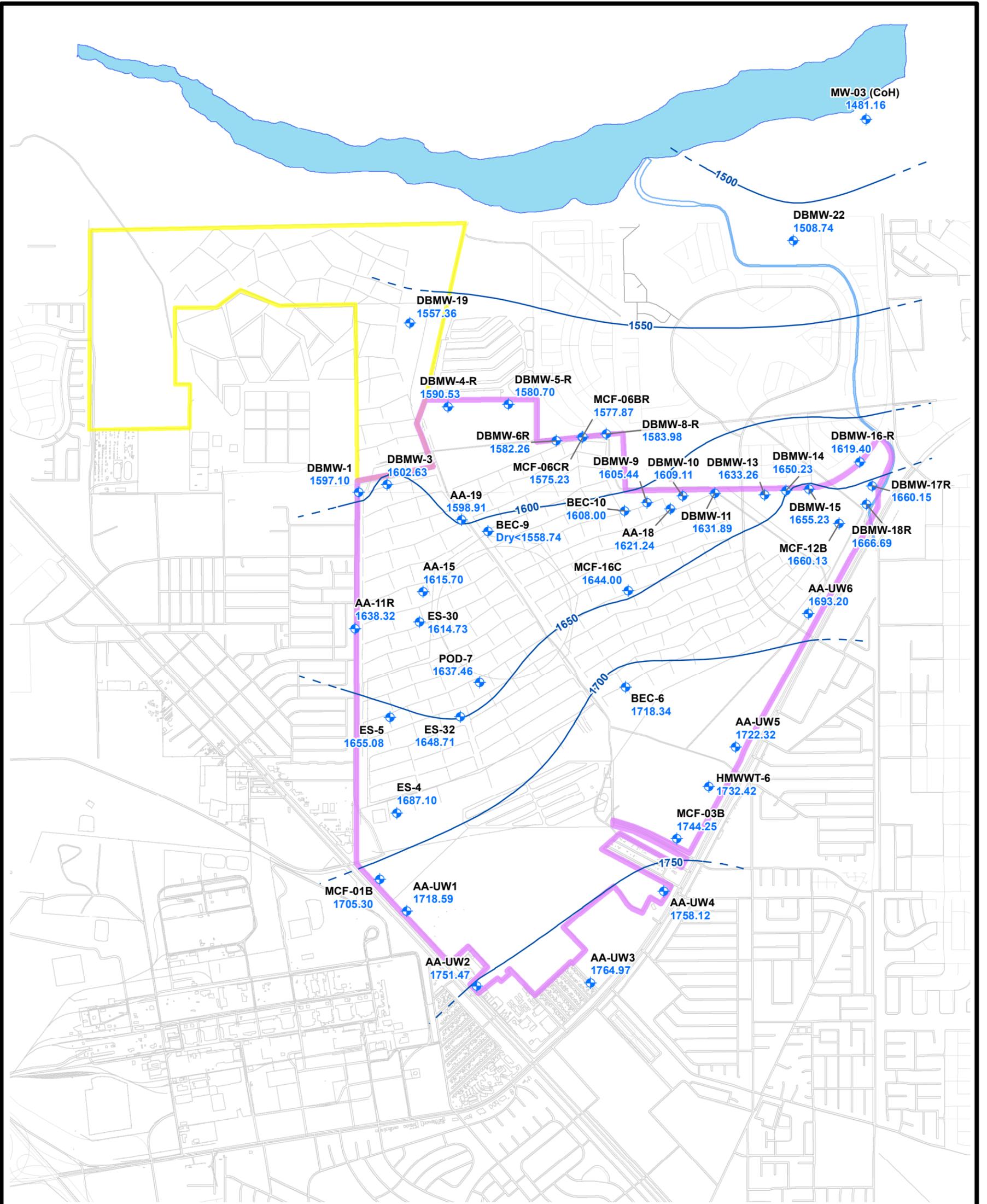
**Explanation**

- ◆ Layer 1 groundwater well
- ~ Contour
- - - Contour (inferred)
- ▭ Eastside Main area
- ▭ Eastside Hook area
- ▭ Las Vegas Wash



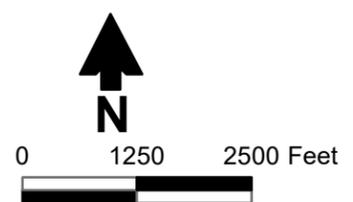
- Notes:
1. Data from 2023 sampling event (feet above mean sea level)
  2. Data posted for Shallow Zone Quaternary alluvium (Qal) wells
  3. Layer 1 = Shallow Zone Qal wells

BMI Common Areas (Eastside) Henderson, Nevada		
<b>FIGURE 2</b> Groundwater Elevation Layer 1		
Prepared by: <b>DBS&amp;A</b>	Date: 1/25/2024	J:\Projects\BRC\GIS\MXD\Dot_maps\ Fig2_GWE_Layer1_extent



**Explanation**

- ◆ Layer 2 groundwater well
- ~ Contour
- Contour (inferred)
- ▭ Eastside Main area
- ▭ Eastside Hook area
- ▭ Las Vegas Wash



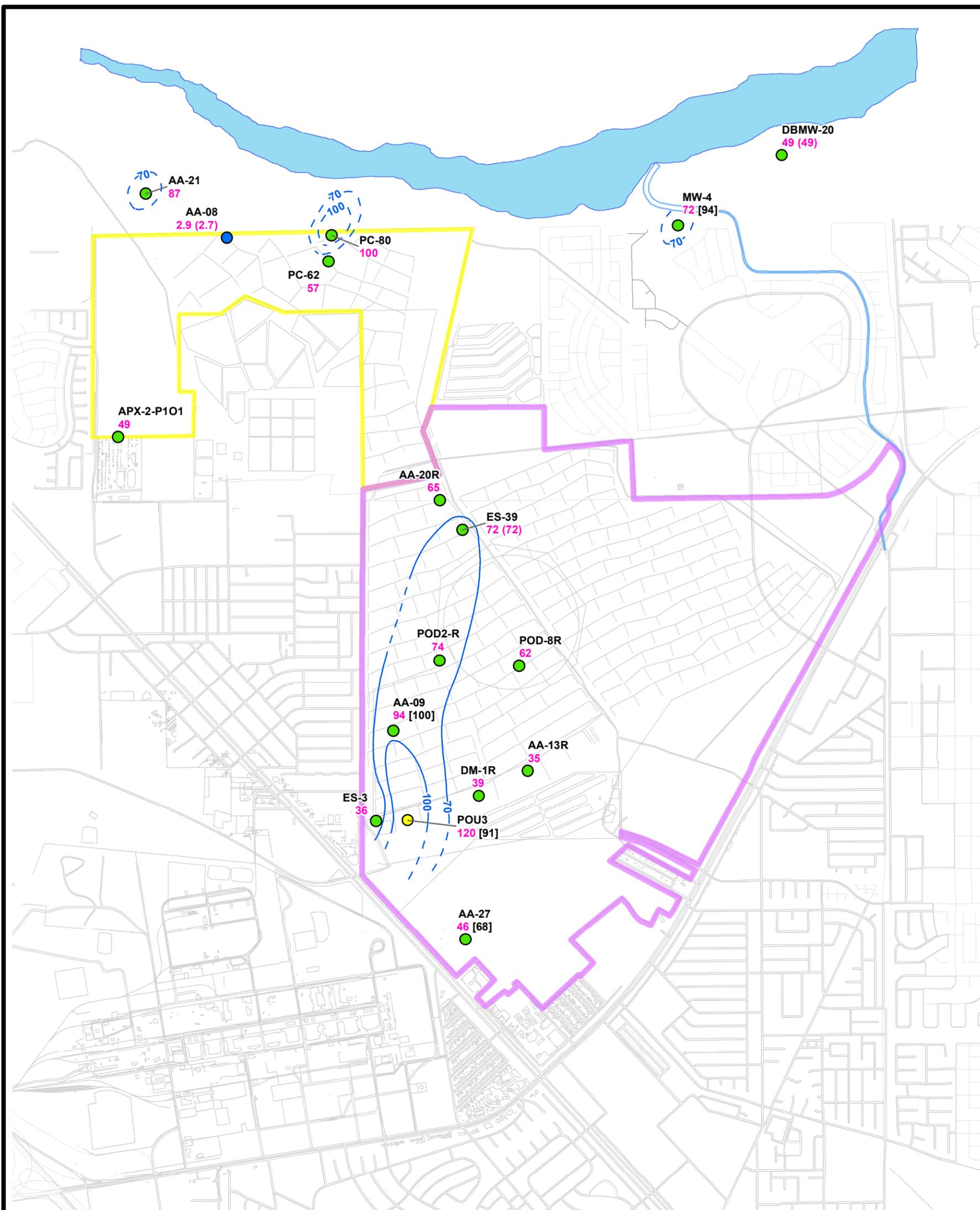
BMI Common Areas (Eastside)  
Henderson, Nevada

**FIGURE 3**  
Groundwater Elevation  
Layer 2




Prepared by: <b>DBS&amp;A</b>	Date: 1/26/2024	J:\Projects\BRC\GIS\MXD\Dot_maps\Fig3_GWE_Layer2_extent
----------------------------------	--------------------	---

- Notes:
1. Data from 2023 sampling event (feet above mean sea level)
  2. Data posted for Shallow Zone Upper Muddy Creek Formation (UMCF) wells, transitional Muddy Creek Formation (xMCF) wells, and Quaternary alluvium (Qal) wells with UMCF/xMCF.
  3. Layer 2 = Shallow Zone UMCF, xMCF, and Qal/UMCF/xMCF wells



**Explanation**

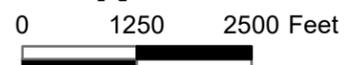
**Layer 1 result**

- ≤ 10
- 10.01 - 100
- > 100

- Contour
- Contour (inferred)

- Eastside Main area
- Eastside Hook area
- Las Vegas Wash

- DBMW-13 = Well name
- 48 = Result (micrograms per liter)
- (51) = Duplicate
- [98] = Previous sampling event result



**Notes:**

1. Data from 2023 sampling event
2. Data posted for Shallow Zone Quaternary alluvium (Qal) wells
3. Layer 1 = Shallow Zone Qal wells
4. µg/L = micrograms per liter
5. Nevada Department of Environmental Protection (NDEP) Basic Comparison Level (BCL) for Arsenic, inorganic: 10.0 µg/L (residential water)
6. Historical data posted in brackets [ ]
7. Historical data downloaded from Neptune BMI database for 2015, 2018, 2019 sampling events.
8. Source: <https://ndep.nv.gov/resources/risk-assessment-and-toxicology-basic-comparison-levels>

BMI Common Areas (Eastside)  
Henderson, Nevada

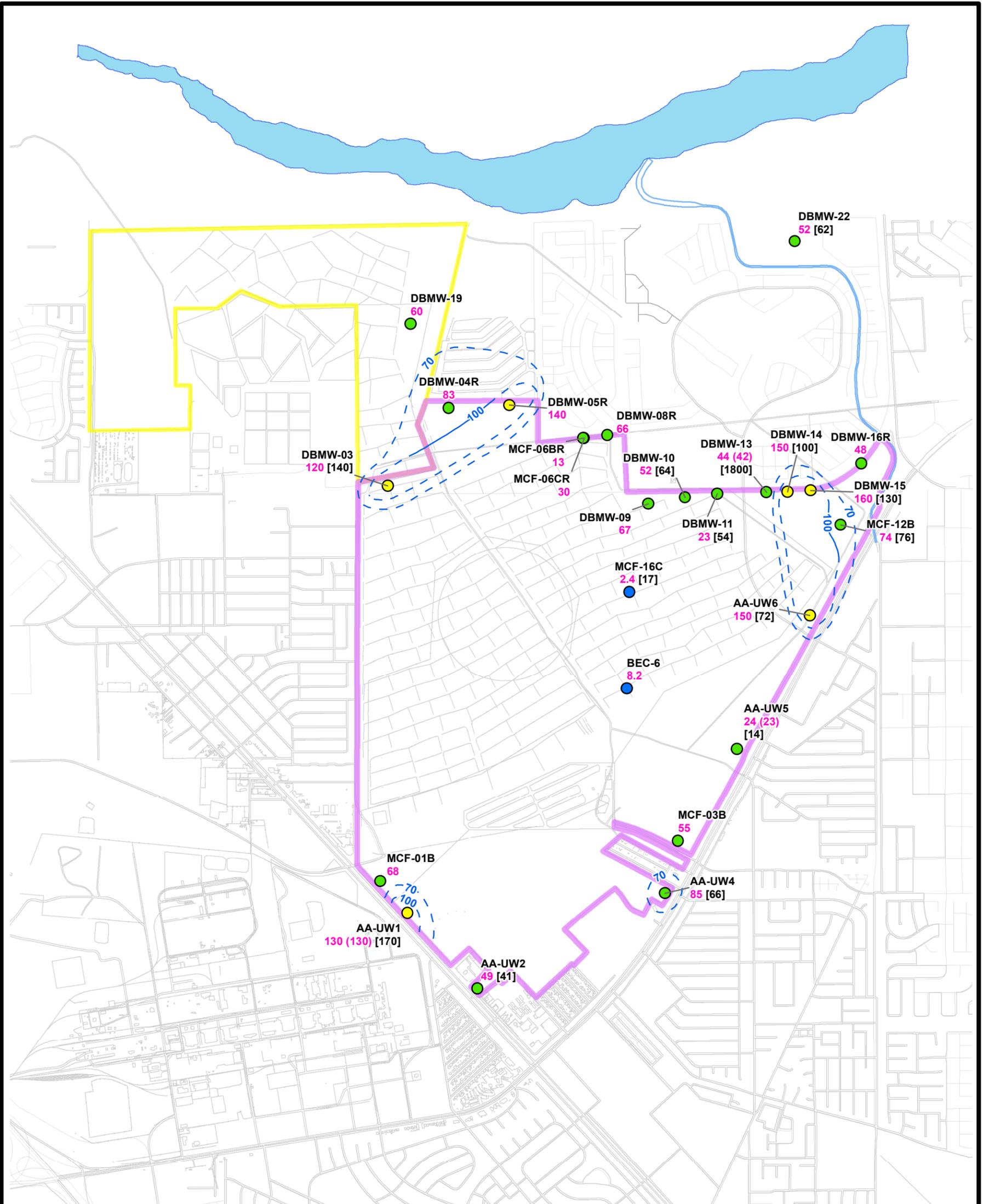
**FIGURE 4**  
**Arsenic Map**  
**Layer 1**



Prepared by:  
DBS&A

Date  
1/25/2024

J:\Projects\BRC\GIS\MXD\Dot\_maps\  
Fig4\_Arsenic\_Layer1



**Explanation**

**Layer 2 result**

- ≤ 10
- 10.01 - 100
- > 100

- Contour
- Contour (inferred)

- Eastside Main area
- Eastside Hook area
- Las Vegas Wash

- DBMW-13 = Well name
- 48 = Result (micrograms per liter)
- (51) = Duplicate
- [98] = Previous sampling event result



**Notes:**

1. Data from 2023 sampling event
2. Data posted for Shallow Zone Upper Muddy Creek Formation (UMCf) wells, transitional Muddy Creek Formation (xMCF) wells, and Quaternary alluvium (Qal) wells with UMCf/xMCF.
3. Layer 2 = Shallow Zone UMCf, xMCF, and Qal/UMCf/xMCF wells.
4. µg/L = micrograms per liter
5. Nevada Department of Environmental Protection (NDEP) Basic Comparison Level (BCL) for Arsenic, inorganic: 10.0 µg/L (residential water)
6. Historical data posted in brackets [ ]
7. Historical data downloaded from Neptune BMI database for 2015, 2018, 2019 sampling events.
8. Source: <https://ndep.nv.gov/resources/risk-assessment-and-toxicology-basic-comparison-levels>

BMI Common Areas (Eastside)  
Henderson, Nevada

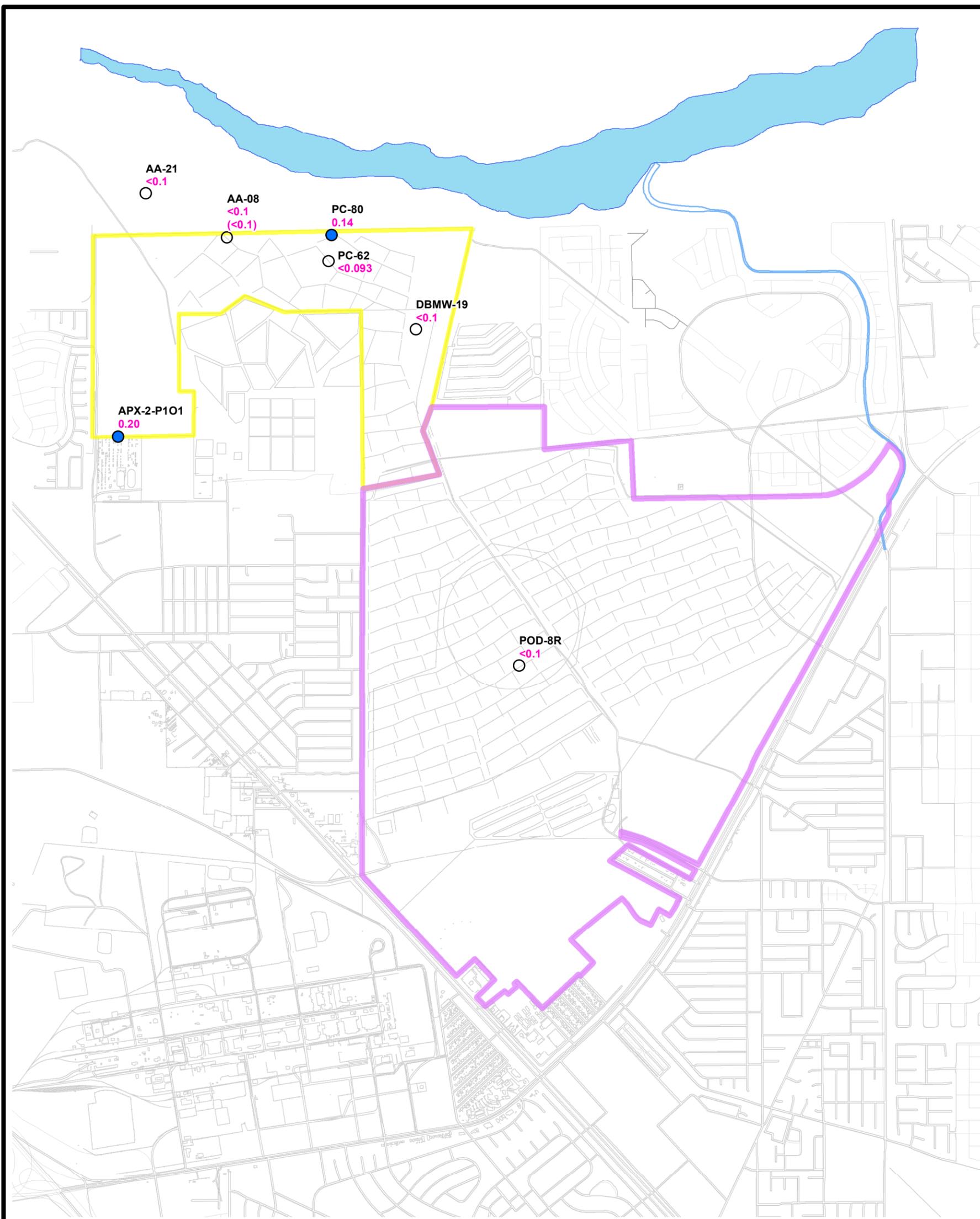
**FIGURE 5**  
Arsenic Map  
Layer 2



Prepared by:  
DBS&A

Date  
1/29/2024

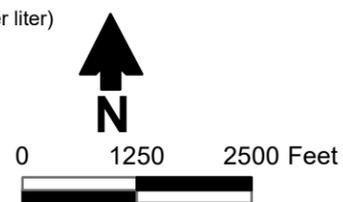
J:\Projects\BRC\GIS\MXDs\Dot\_maps\  
Fig5\_Arsenic\_Layer2



**Explanation**

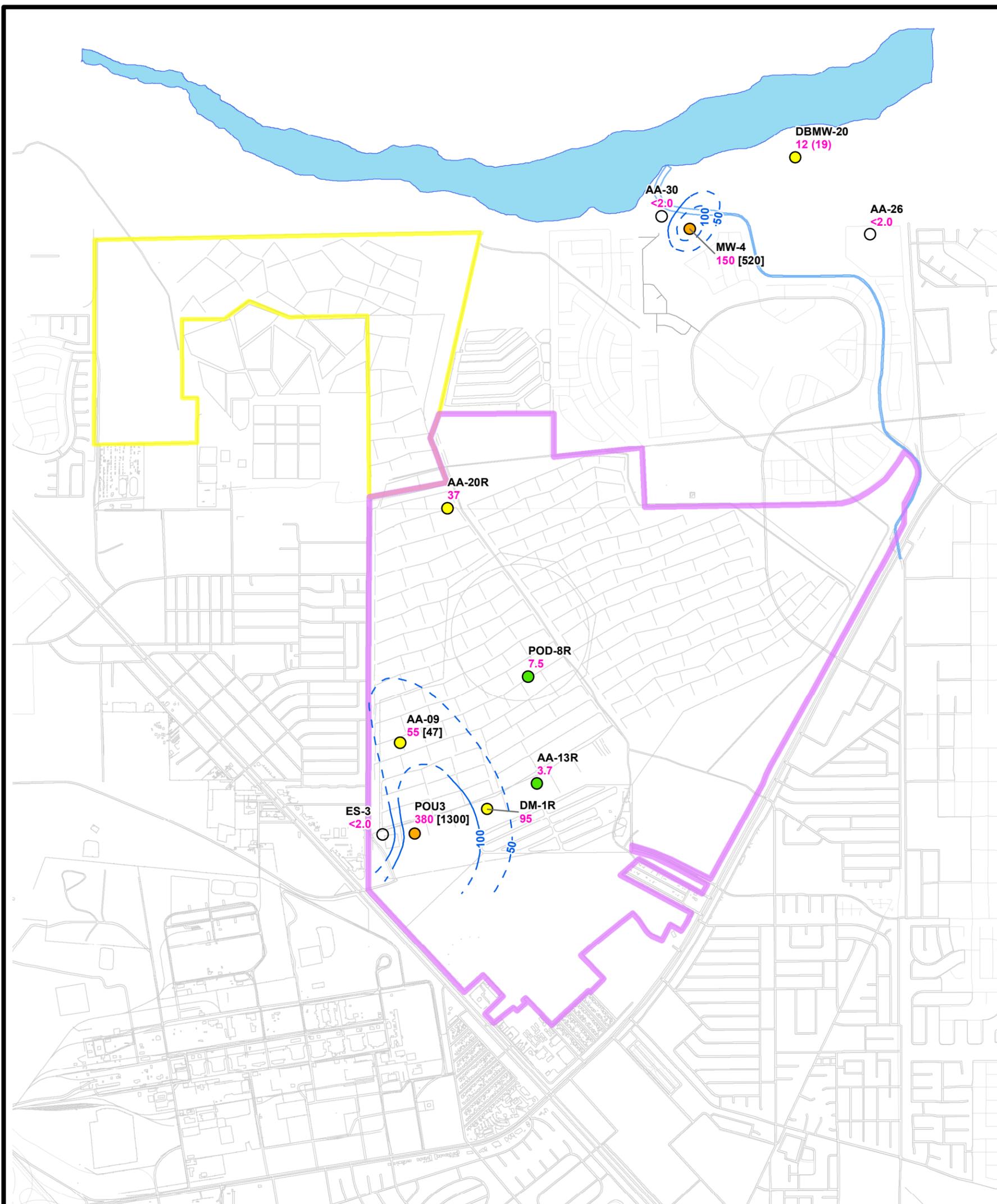
- Layer 1 result**
- ND
  - ≤ 1
  - Eastside Main area
  - Eastside Hook area
  - Las Vegas Wash

- DBMW-13 = Well name
- 48 = Result (micrograms per liter)
- (51) = Duplicate
- [98] = Previous sampling event result



- Notes:**
1. Data from 2023 sampling event
  2. Data posted for Shallow Zone Quaternary alluvium (Qal) wells
  3. Layer 1 = Shallow Zone Qal wells
  4. µg/L = micrograms per liter
  5. Nevada Department of Environmental Protection (NDEP) Basic Comparison Level (BCL) for Hexachlorocyclohexane, beta (bBHC): 2.00 µg/L (residential water)
  6. Historical data posted in brackets [ ]
  7. Historical data downloaded from Neptune BMI database for 2015, 2018, 2019 sampling events.
  8. Source: <https://ndep.nv.gov/resources/risk-assessment-and-toxicology-basic-comparison-levels>

<b>BMI Common Areas (Eastside)</b> Henderson, Nevada		
<b>FIGURE 6</b> <b>Beta-BHC Map</b> <b>Layer 1</b>		 
Prepared by: <b>DBS&amp;A</b>	Date 1/25/2024	J:\Projects\BRC\GIS\MXDs\Dot_maps\ Fig6_bBHC_Layer1



**Explanation**

**Layer 1 result**

- ND
- ≤ 1
- 1.01 - 10
- 10.01 - 100
- 100.01 - 500
- 500.01 - 1000
- > 1000

— Contour

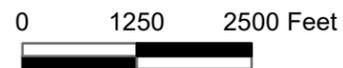
- - - Contour (inferred)

▭ Eastside Main area

▭ Eastside Hook area

▭ Las Vegas Wash

DBMW-13 = Well name  
 48 = Result (micrograms per liter)  
 (51) = Duplicate  
 [98] = Previous sampling event result



**Notes:**

1. Data from 2023 sampling event
2. Data posted for Shallow Zone Quaternary alluvium (Qal) wells
3. Layer 1 = Shallow Zone Qal wells
4. µg/L = micrograms per liter
5. Nevada Department of Environmental Protection (NDEP) Basic Comparison Level (BCL) for Chloroform: 70.0 µg/L (residential water)
6. Historical data posted in brackets [ ]
7. Historical data downloaded from Neptune BMI database for 2015, 2018, 2019 sampling events.
8. Source: <https://ndep.nv.gov/resources/risk-assessment-and-toxicology-basic-comparison-levels>

BMI Common Areas (Eastside)  
 Henderson, Nevada

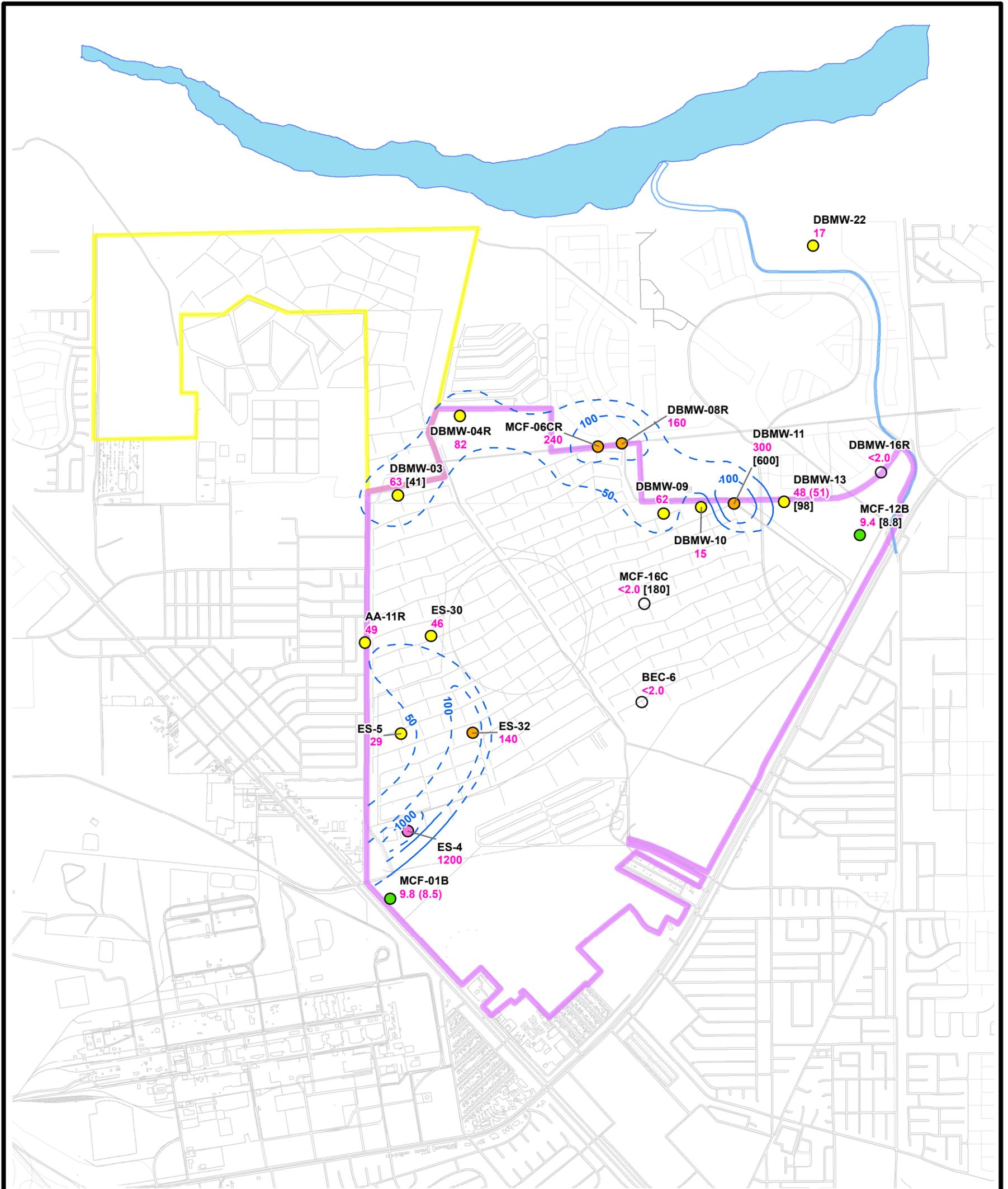
**FIGURE 7**  
**Chloroform Map**  
**Layer 1**



Prepared by:  
**DBS&A**

Date  
 1/29/2024

J:\Projects\BRC\GIS\MXDs\Dot\_maps\  
 Fig7\_Chloroform\_Layer1



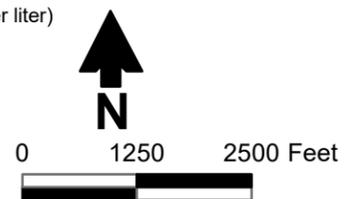
**Explanation**

**Layer 2 result**

- ND
- ≤ 1
- 1.01 - 10
- 10.01 - 100
- 100.01 - 500
- 500.01 - 1000
- > 1000

- Contour
- - - Contour (inferred)
- ▭ Eastside Main area
- ▭ Eastside Hook area
- ▭ Las Vegas Wash

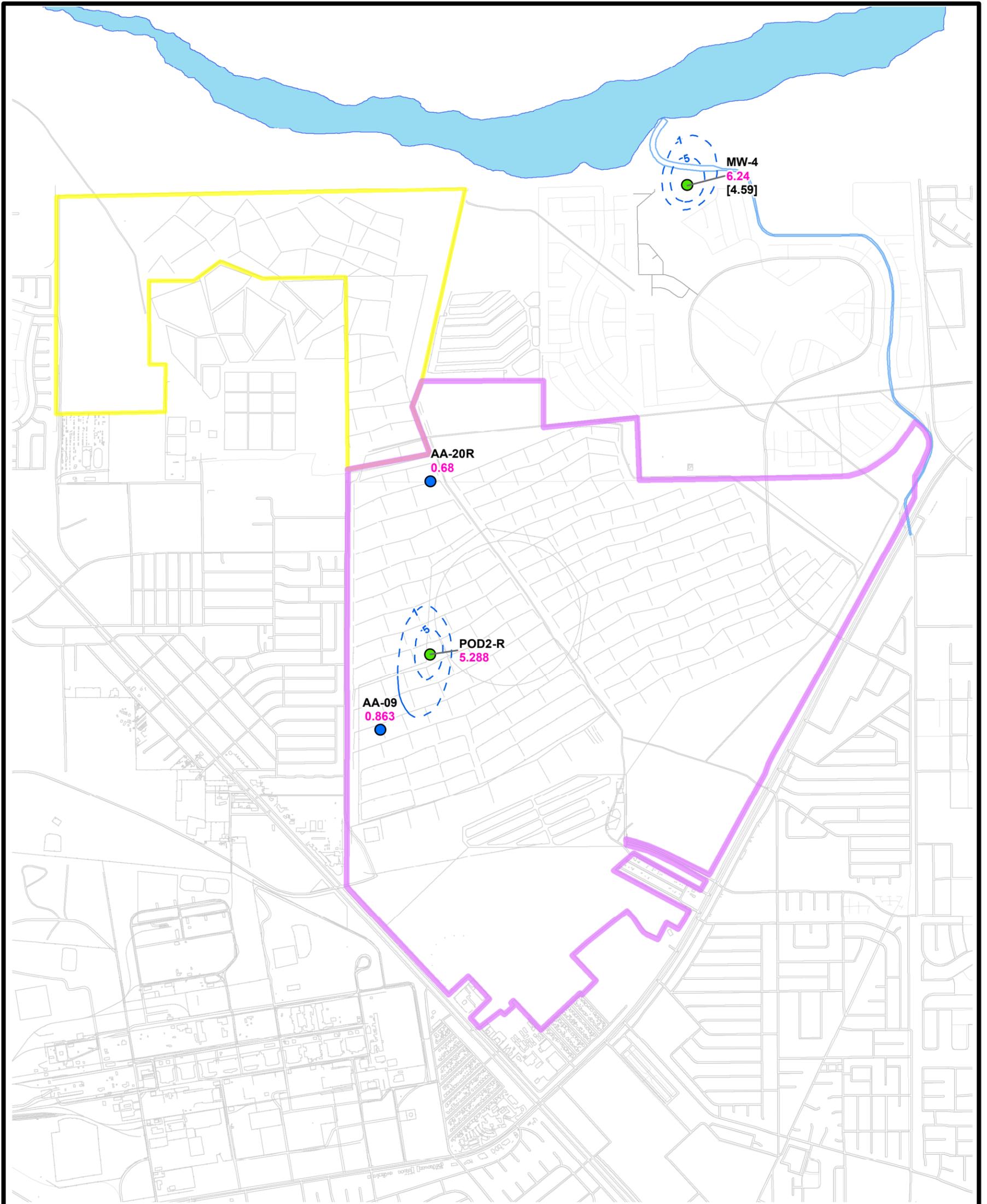
DBMW-13 = Well name  
 48 = Result (micrograms per liter)  
 (51) = Duplicate  
 [98] = Previous sampling event result



**Notes:**

1. Data from 2023 sampling event
2. Data posted for Shallow Zone Upper Muddy Creek Formation (UMCF) wells, transitional Muddy Creek Formation (xMCF) wells, and Quaternary alluvium (Qal) wells with UMCF/xMCF.
3. Layer 2 = Shallow Zone UMCF, xMCF, and Qal/UMCF/xMCF wells.
4. µg/L = micrograms per liter
5. Nevada Department of Environmental Protection (NDEP) Basic Comparison Level (BCL) for Chloroform: 70.0 µg/L (residential water)
6. Historical data posted in brackets [ ]
7. Historical data downloaded from Neptune BMI database for 2015, 2018, 2019 sampling events.
8. Source: <https://ndep.nv.gov/resources/risk-assessment-and-toxicology-basic-comparison-levels>

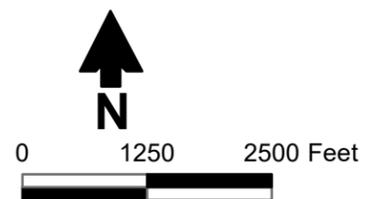
<b>BMI Common Areas (Eastside)</b> Henderson, Nevada		
<b>FIGURE 8</b> <b>Chloroform Map</b> <b>Layer 2</b>		
Prepared by: <b>DBS&amp;A</b>	Date: 1/29/2024	J:\Projects\BRC\GIS\MXDs\Dot_maps\ Fig8_Chloroform_Layer2



**Explanation**

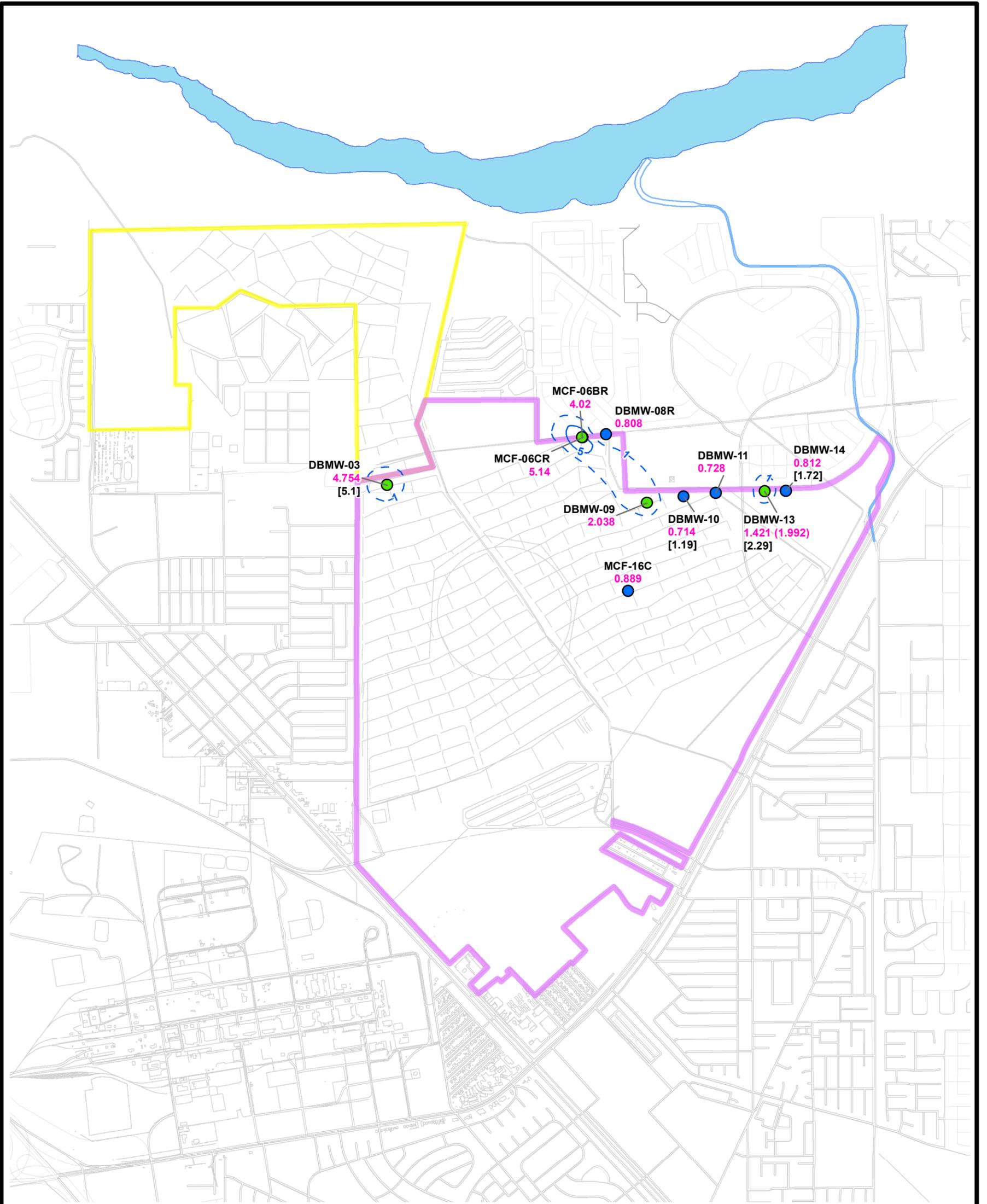
- |                       |                    |                    |
|-----------------------|--------------------|--------------------|
| <b>Layer 1 result</b> | Contour            | Eastside Main area |
| ≤ 1                   | Contour (inferred) | Eastside Hook area |
| 1.01 - 10             |                    | Las Vegas Wash     |

- DBMW-13 = Well name  
 48 = Result (pCi/L)  
 (51) = Duplicate  
 [98] = Previous sampling event result



- Notes:
1. Data from 2023 sampling event
  2. Data posted for Shallow Zone Quaternary alluvium (Qal) wells
  3. Layer 1 = Shallow Zone Qal wells
  4. pCi/L = picocuries per liter
  5. Radium = Radium 226 + Radium 228
  6. Detection limit summed if parameter not detected.
  7. Nevada Department of Environmental Protection (NDEP) Basic Comparison Level (BCL) for Radium: not listed.
  8. Historical data posted in brackets [ ]
  9. Historical data downloaded from Neptune BMI database for 2015, 2018, 2019 sampling events.
  10. Source: <https://ndep.nv.gov/resources/risk-assessment-and-toxicology-basic-comparison-levels>

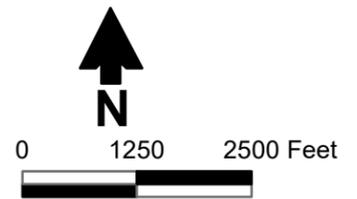
<b>BMI Common Areas (Eastside)</b> Henderson, Nevada		
<b>FIGURE 9</b> <b>Radium Map</b> <b>Layer 1</b>		 
Prepared by: <b>DBS&amp;A</b>	Date 1/29/2024	J:\Projects\BRC\GIS\MXD\Dot_maps\Fig9_Radium_Layer1



**Explanation**

- |                       |                    |                    |
|-----------------------|--------------------|--------------------|
| <b>Layer 2 result</b> | Contour            | Eastside Main area |
| ≤ 1                   | Contour (inferred) | Eastside Hook area |
| 1.01 - 10             |                    | Las Vegas Wash     |

- DBMW-13 = Well name  
 48 = Result (pCi/L)  
 (51) = Duplicate  
 [98] = Previous sampling event result



- Notes:**
1. Data from 2023 sampling event
  2. Data posted for Shallow Zone Upper Muddy Creek Formation (UMCf) wells, transitional Muddy Creek Formation (xMCF) wells, and Quaternary alluvium (Qal) wells with UMCf/xMCF.
  3. Layer 2 = Shallow Zone UMCf, xMCF, and Qal/UMCf/xMCF wells.
  4. pCi/L = picocuries per liter
  5. Radium = Radium 226 + Radium 228
  6. Detection limit summed if parameter not detected.
  7. Nevada Department of Environmental Protection (NDEP) Basic Comparison Level (BCL) for Radium: not listed.
  8. Historical data posted in brackets [ ]
  9. Historical data downloaded from Neptune BMI database for 2015, 2018, 2019 sampling events.
  10. Source: <https://ndep.nv.gov/resources/risk-assessment-and-toxicology-basic-comparison-levels>

<b>BMI Common Areas (Eastside)</b> Henderson, Nevada		
<b>FIGURE 10</b> <b>Radium Map</b> <b>Layer 2</b>		
Prepared by: <b>DBS&amp;A</b>	Date: 1/29/2024	J:\Projects\BRC\GIS\MXD\Dot_maps\ Fig10_Radium_Layer2

# Attachment A

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# ERM

980 9th Street  
Suite 750  
Sacramento, CA 95814

T +1 916 924 9378  
F +1 916 920 9378

**erm.com**

BMI Compliance Coordinator  
Nevada Division of Environmental Protection  
Bureau of Industrial Site Cleanup  
2030 E. Flamingo Road, Suite 230  
Las Vegas, NV 89119-0818

**DATE**  
23 January 2024

**SUBJECT**  
Data Validation Summary Report for the  
Eastside Groundwater Monitoring Event –  
July through October 2023 (Dataset 77)  
BMI Common Areas (Eastside)  
Clark County, Nevada

**REFERENCE**  
0719904.01

Dear BMI Compliance Coordinator:

On behalf of BRC, please find enclosed the *Data Validation Summary Report for the Eastside Groundwater Monitoring Event – July through October 2023 (Dataset 77), BMI Common Areas (Eastside), Clark County Nevada*. If you have any questions or comments, please contact me at (415) 283-5856 or Ranajit Sahu at (626) 382 0001.

Sincerely,

Sandra Mulhearn  
Project Manager

cc: James (JD) Dotchin, NDEP  
Grant Evenson, NDEP  
Paul Hackenberry, Hackenberry Associates  
Lee Farris, BRC  
Ranajit Sahu, BRC

## **DATA VALIDATION SUMMARY REPORT**

---

**EASTSIDE GROUNDWATER MONITORING EVENT –  
JULY THROUGH OCTOBER 2023 (DATASET 77)  
BMI COMMON AREAS (EASTSIDE)  
CLARK COUNTY, NEVADA**

**Prepared for:**

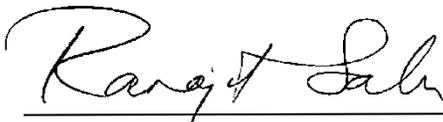
**Basic Remediation Company (BRC)  
875 West Warm Springs Road  
Henderson, Nevada 89011**

**Prepared by:**

**Environmental Resources Management, Inc.  
980 9<sup>th</sup> Street, Suite 750  
Sacramento, California 95814**

**January 2024**

I hereby certify that I am responsible for the services described in this document and for the preparation of this document. The services described in this document have been provided in a manner consistent with the current standards of the profession and to the best of my knowledge comply with all applicable federal, state, and local statutes, regulations, and ordinances. I hereby certify that all laboratory analytical data was generated by a laboratory certified by the Nevada Division of Environmental Protection for each constituent and media presented herein.



January 23, 2024

Dr. Ranajit Sahu, C.E.M. (No. EM-1699, Exp. 10/07/2024)      Date  
BRC Project Manager

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### ABBREVIATION AND ACRONYM LIST

BRC	Basic Remediation Company
DQI	data quality indicator
DVSR	Data Validation Summary Report
EDD	electronic data deliverable
EQuIS	Environmental Quality Information System
ERM	Environmental Resources Management, Inc.
LR	laboratory replicate
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
MS	matrix spike
MSD	matrix spike duplicate
NDEP	Nevada Division of Environmental Protection
PARCCS	precision, accuracy, representativeness, completeness, comparability, and sensitivity
PQL	Practical Quantitation Limit
QC	quality control
RPD	relative percent difference
SOP	Standard Operating Procedure
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound

## 1.0 INTRODUCTION

On behalf of Basic Remediation Company (BRC), Environmental Resources Management, Inc. (ERM) has prepared this *Data Validation Summary Report* (DVSR) that summarizes qualified analytical data generated during the Eastside Groundwater Monitoring Event conducted July through October 2023, at the BMI Common Areas, hereafter referred to as the Site. This report has been prepared to assess the validity (based on data validation) and usability (based on project objectives) of these analytical data for the 2023 Eastside Groundwater Monitoring Event. This DVSR follows a format similar to that prepared for the Nevada Division of Environmental Protection (NDEP) by ERM for previous DVSRs.

Fifty-eight water samples (including six field duplicates) from 49 wells, four field blanks, three equipment blanks and 10 trip blanks were collected during the course of the 2023 Eastside Groundwater Monitoring Event ([Table 1-1](#)). The samples were analyzed for arsenic, beta-BHC, radionuclides, and volatile organic compounds (VOCs) using the methods listed in [Table 1-2](#).

TestAmerica, in Phoenix, Arizona, was the primary laboratory used for the chemical analyses. TestAmerica Phoenix was not available to perform selected analyses and therefore enlisted TestAmerica St. Louis to perform radionuclide analyses.

All data were delivered either electronically on compact disc or as hard copy data deliverables and accompanied by electronic data deliverables (EDDs). Electronic deliverables from TestAmerica consisted of complete data packages, including case narrative, sample results, quality control (QC) sample summary tables, and calibration information. Electronic laboratory reports are provided in [Appendix A](#) of this report. EDDs received from the laboratories were loaded into EarthSoft's Environmental Quality Information System (EQUIS) Data Management System and used for reporting. All laboratories reported the sample results in the EDD, along with applicable laboratory qualifiers and reported associated field and laboratory QC sample results. An electronic database containing all data results has been provided in [Appendix A](#).

### 1.1 VALIDATION PROCESS

Sample results were validated in accordance with the following United States Environmental Protection Agency (USEPA) and NDEP guidance documents:

- USEPA SW-846, Third Edition, *Test Methods for Evaluating Solid Waste Physical/Chemical Methods*, Update 1, July 1992; Update IIA, August 1993; Update II, September 1994;

Update IIB, January 1995; Update III, December 1996; Update IIIA, April 1998; Update IIIB, July 2005; Updates IVA and IVB, January 2008 (USEPA 2008).

- USEPA Contract Laboratory Program *National Functional Guidelines for Organic Superfund Methods Data Review* (USEPA 2020a).
- USEPA Contract Laboratory Program *National Functional Guidelines for Inorganic Superfund Methods Data Review* (USEPA 2020b).
- NDEP *Data Verification and Validation Requirements* (NDEP 2018).

All of the data were subject to a Stage 2A review. NDEP authorized a deviation from the existing data validation guidance on March 7, 2017. NDEP now requires all groundwater data to meet Stage 2A validation as stated in the *Data Verification and Validation Requirements* (NDEP 2018). Stage 2A data validation consisted of a review of all parameters related to sample analysis, including holding times, blank contamination, laboratory control sample (LCS), matrix spike (MS)/matrix spike duplicate (MSD), and surrogates. The criteria evaluated as part of the Stage 2A data validation are listed in [Table 1-3](#). ERM conducted all the data validation. The data validation report is provided in [Appendix A](#).

The laboratories submitted a detailed case narrative, with every data package, listing any QC criteria that were not met or any other issue that might affect data quality. In addition to the criteria listed above, each laboratory case narrative was thoroughly reviewed. Results were qualified for any issues that affected data quality listed in the laboratory case narrative.

Based on data validation and review, data qualifiers were placed in the electronic database to signify whether the data were acceptable, acceptable with qualification, or rejected. Definitions of qualifiers and reason codes used to qualify data are presented in [Table 1-4](#). Validation qualifiers and definitions are based on those used by USEPA in the current validation guidelines (USEPA 2004, 2014, 2017, 2020a, 2020b) and summarized in the Standard Operating Procedure (SOP) 40 (BRC, ERM, and MWH 2009). The validated results are contained in the project database and are summarized in the attached tables.

## 1.2 REPORT ORGANIZATION

Following this introductory section, [Section 2.0](#) summarizes data validation and usability for data collected during the 2023 Eastside Groundwater Monitoring Event. [Section 3.0](#) provides general

conclusions about the usability of the dataset. The references ([Section 4.0](#)), tables, and [Appendix A](#) follow the conclusions and recommendations at the end of this document.

## 2.0 DATA VALIDATION SUMMARY

This section describes the data validation findings and usability with regard to the project-specific objectives. [Section 2.1](#) summarizes the data validation findings and [Section 2.2](#) summarizes the evaluation of the following quality indicator parameters: precision, accuracy, representativeness, completeness, comparability, and sensitivity (PARCCS).

### 2.1 DATA VALIDATION FINDINGS

This section summarizes all items of the validation process and discusses the effects of the findings on data quality.

#### 2.1.1 Holding Times and Sample Condition

Holding time refers to the period of time between sample collection and the preparation and/or analysis of the sample. The accuracy of analytical results may depend upon analysis within specified holding times and sample temperature. In general, a longer holding time is assumed to result in a less accurate measurement due to the potential for loss or degradation of the analyte over time. Sample results were reviewed for compliance with the method-prescribed preparation and analysis holding times. [Table 2-1](#) presents the holding time criteria used to validate the data.

USEPA guidance for validation allows professional judgment to be used in evaluating qualification due to holding time exceedances. Sample results that were generated after the required holding time, but less than two times after the holding time, were qualified as estimated (J- or UJ). If the samples were prepared after two times the holding time was exceeded, non-detect results were qualified as rejected (R). No samples were qualified due to holding time exceedances.

Samples in one data package were received above the required temperature limits. Only the VOCs required qualification due to method requirements. Associated detections were qualified as estimated with a low bias (J-) and non-detects were qualified as estimated (UJ) as shown in [Table 2-2](#).

#### 2.1.2 Analyte Quantitation

Quantitation limits are critical to the proper evaluation of method sensitivity and non-detect data. For this investigation, results were reported as follows:

- Practical Quantitation Limit (PQL) – This limit is defined as the lowest level at which the entire analytical system gives a recognizable signal and acceptable calibration point for the

analyte, and includes the predicted effect of sample matrices with typical interfering species. The PQL is the lowest concentration of an analyte that can be reliably measured within specified limits of precision and accuracy during routine laboratory operating conditions. PQLs are used to estimate or evaluate the minimum concentration at which the laboratory can be expected to reliably measure a specific chemical contaminant during day-to-day analyses of different sample matrices.

### 2.1.3 Blank Samples

Blanks are artificial samples designed to evaluate the nature and extent of contamination of environmental samples that may be introduced by field or laboratory procedures. Field and laboratory blanks, consisting of contaminant-free water, were prepared and analyzed as part of standard quality assurance/QC procedures to monitor for potential contamination of field equipment, laboratory process reagents, and sample containers. For the 2023 Eastside Groundwater Monitoring Event, two groups of blanks were prepared and analyzed: (1) laboratory blanks (calibration and method blanks); and (2) field QC blanks (field blanks, equipment rinsate blanks, and trip blanks). Each blank type is discussed in [Sections 2.1.3.1](#) and [2.1.3.2](#). The assignment of validation qualifiers associated with blank contamination is discussed in [Section 2.1.3.3](#).

#### 2.1.3.1 Laboratory Blanks

The laboratory includes one type of laboratory blank in the reports: method blanks. Method blanks were prepared in the laboratory using high-grade, contaminant-free water.

**Method Blanks** – Method blanks are laboratory QC samples that are prepared and analyzed with each batch of environmental samples. Method blanks are comprised of high-grade, contaminant-free water that is carried through all preparation procedures in batches with field samples (including the addition of all reagents and QC monitoring compounds). Method blanks monitor potential contaminants in laboratory processes, reagents, and containers, and are analyzed for each analytical method used on field samples. Contaminant concentrations in blanks should be less than detection or reporting limits.

No sample results required qualification due to detections in laboratory blanks. The detections reported in the method blank were not associated with any reported sample results.

### 2.1.3.2 Field Quality Control Blanks

Three types of field QC blanks were collected and analyzed with field samples: trip blanks, equipment rinsate blanks and field blanks. Field QC blanks monitor the potential impact of field and transportation conditions on the collection and integrity of field samples, as discussed in the following paragraph.

**Trip Blanks** – Trip blanks are a type of field blank prepared at the laboratory by filling a 40-milliliter vial with high-grade, contaminant-free water and sealing it with a Teflon-lined lid. Trip blanks are shipped to the field sampling location with sample containers in the shipping cooler. When samples for VOCs are collected and shipped back to the laboratory for analysis, a trip blank is transported within the shipping container back to the laboratory for analysis of VOCs. Trip blanks monitor for potential contamination of sample containers during shipment to the field, and for potential contamination of VOC samples during collection and transportation back to the laboratory. Ten trip blanks were analyzed.

**Equipment Rinsate Blanks** – In order to identify any carry-over effect from sampling equipment, equipment blanks are collected during sample collection activities. Three equipment blanks were collected.

**Field Blanks** – In order to identify any carry-over effect from deionized water, field blanks are collected during sample collection activities. Four field blanks were collected.

### 2.1.3.3 Qualifications Due to Blank Contamination

The previous subsections describe the types of blanks that were collected and analyzed with field samples during the 2023 Eastside Groundwater Monitoring Event. This subsection discusses the procedure for evaluating blank results and applying qualifiers on field data. Note that not every compound detected in laboratory or field QC blanks results in qualification of data. Qualifiers were applied per National Functional Guidelines (USEPA 2020a,b) and results greater than 5 or 10 times the blank concentration do not require qualification. Data were qualified as estimated (J) per NDEP guidance (NDEP 2018).

No results were qualified as estimated (J) due to laboratory blank contamination (method blanks). [Table 2-3](#) presents the six result that was qualified as estimated (J) due to field blank contamination (equipment or field blanks).

## 2.1.4 Spike Samples

Spike samples are environmental matrices spiked with a subset of target compounds at known concentrations. These QC samples were analyzed with project samples to measure laboratory accuracy and potential interference from the matrix. Two types of spike samples were analyzed with the project samples to monitor for potential interferences during analysis: MS samples and blank spike samples.

### 2.1.4.1 Matrix Spike Samples

MS/MSD samples consist of aliquots of environmental samples spiked with a subset of target compounds. MS/MSD samples monitor potential interference from the Site-specific sample matrix and its effect on target compounds.

Typically, at least one MS/MSD sample pair are prepared and analyzed with each batch of environmental samples. Data are qualified in accordance with SOP 40 (BRC, ERM, and MWH 2009). As described in SOP 40, data are not qualified based on a single MS or MSD recovery outlier if the other (MS or MSD) is in control. Additionally, no qualifiers are applied for relative percent differences (RPDs) if the recoveries are within acceptance limits. No data were qualified.

### 2.1.4.2 Blank Spike Samples

Blank spike samples, also known as LCS, are an aliquot of high-grade, contaminant-free water spiked with a subset of target compounds. The LCS monitors laboratory accuracy without the bias of a sample matrix. In some cases, the LCS was analyzed in duplicate (LCSD).

When MS/MSD pairs could not be analyzed as required by the method, LCS/LCSD pairs were occasionally analyzed to demonstrate laboratory accuracy. Data are qualified in accordance with SOP 40 (BRC, ERM, and MWH 2009). One trip blank result was qualified as estimated (UJ) based upon low LCS/LCSD recoveries as shown on [Table 2-4](#). No data were rejected.

## 2.1.5 Surrogate Spikes and Carrier Gases

Surrogate spikes were prepared by adding compounds similar to target compounds of interest to sample aliquots and associated QC samples for organic analyses only. Surrogate spike recoveries monitor the efficiency of contaminant extraction from the sample medium into the instrument measuring system, and possible interference from the sample matrix that may affect the data

quality of target compound results. Similarly, carrier gases are added to radionuclide analyses to monitor the extraction and analysis of radionuclides.

Surrogate spikes were added to each of the samples submitted for organic analysis to monitor potential interferences from the matrix. Surrogates were added to the sample aliquot during preparation of the sample for analysis and surrogate recoveries were compared with QC acceptance limits. Surrogate recoveries outside of the acceptable limits indicate interference from the sample matrix for the detection of target compounds. Qualifiers were not required for high surrogate recoveries if the sample results were non-detect. No results were qualified due to surrogate recoveries or carrier gas recoveries.

### **2.1.6 Duplicate Samples**

Duplicate samples involved the preparation and analysis of an additional aliquot of a field sample. Results from duplicate sample analysis measure laboratory precision as well as homogeneity of contaminants in the field matrix. For this investigation, two types of duplicate analyses were conducted: 1) MSDs for all analyses; and 2) laboratory replicates (LR). Six field duplicates were collected during the sampling activities (DBMW-13, AA-UW5, DBMW-20, AA-UW1, AA-08, and ES-39). MSDs and LRs measure laboratory precision and sample homogeneity; while field duplicates are used to evaluate sampling technique precision, laboratory precision, and homogeneity of the sample matrix. No data were qualified based upon field duplicate imprecision.

At least one duplicate analysis (MSD or LR) was performed with each batch of environmental samples processed in the laboratory. The laboratory calculated the RPD between the two detected values for MSD and LR analyses. RPD values within the acceptable limits indicate both laboratory precision and minimal matrix heterogeneity of compounds detected in the samples.

RPDs for MS/MSD pairs and LR pairs calculated by the laboratory were generally within the laboratory's acceptance criteria. Data are not qualified for LR pairs if the results are less than five times the PQL. Data are not qualified based on RPDs if any of the MS/MSD recoveries are within acceptance limits (BRC, ERM, and MWH 2009). No data were qualified.

## **2.2 EVALUATION OF PRECISION, ACCURACY, REPRESENTATIVENESS, COMPLETENESS, COMPARABILITY, AND SENSITIVITY PARAMETERS**

Data quality indicators (DQIs) are used to verify that sampling and analytical systems used in support of project activities are effective and the quality of the data generated for this project is appropriate for making decisions affecting future activities. DQIs address the field and analytical

data quality aspects as they affect uncertainties in the data collected for Site characterization and risk assessment. The DQIs include PARCCS. The BRC *Quality Assurance Project Plan* (BRC and ERM 2009) provides the definitions and specific criteria for assessing DQIs using field and laboratory QC samples and is the basis for determining the overall quality of the dataset. Data validation activities included the evaluation of PARCCS parameters; all data not meeting the established PARCCS criteria were qualified during the validation process using the guidelines presented in the National Functional Guidelines (USEPA 2004, 2014, 2017, 2020a, 2020b).

### 2.2.1 Precision

Precision is a measure of the degree of agreement between replicate measurements of the same source or sample. Precision is expressed by RPD between replicate measurements. Replicate measurements can be made on the same sample or on two samples from the same source. Precision is generally assessed using a subset of the measurements made.

The laboratory limits for precision, as measured by the RPD between LCS analyses, are the laboratory control limits, based on historical data calculated, as specified in the analytical methods. If these limits are not met, the laboratory follows the actions specified in the analytical method and the laboratory's SOPs.

Precision of a set of analyses is evaluated by determining the RPDs for MS/MSD samples for organics and duplicate samples for inorganics. Precision is calculated using the following equation, where  $X_1$  and  $X_2$  are duplicate measurements:

$$RPD(\%) = \left[ \frac{X_1 - X_2}{\left( \frac{X_1 + X_2}{2} \right)} \right] \times 100$$

As discussed above, the precision of the data was evaluated using several laboratory QC procedures.

### 2.2.2 Accuracy

Accuracy measures the level of bias that an analytical method or measurement exhibits. To measure accuracy, a standard, or reference material containing a known concentration, is analyzed or measured and the result is compared to the known value. Several QC parameters are used to evaluate the accuracy of reported analytical results:

- Holding times and sample temperatures
- LCS percent recovery
- MS/MSD percent recovery
- Spike sample recovery
- Blank sample results

The results of ERM’s analysis of accuracy are presented in [Section 2.1](#) above. The analytes and associated samples impacted by the variances in the sample temperature can be found in [Table 2-2](#). Sample results associated with low recoveries are likely underestimated and have been qualified with the “-” flag, indicating that the results are biased low. Likewise, sample results associated with high recoveries have been qualified with the “+” flag, indicating that the results are biased high. Data may be qualified as rejected (R) based on National Functional Guidelines because false negatives are a possibility. No data were rejected.

**Blanks** – Accuracy is also evaluated by comparing results for the analysis of blank samples to results for investigative samples. Blanks are artificial samples designed to evaluate the nature and extent of contamination of environmental samples that may be introduced by field or laboratory procedures. Contaminant concentrations in blanks should be less than detection or reporting limits.

[Table 2-3](#) presents data that were qualified as estimated (J) due to blank contamination (field blanks). The presence of blank contamination results in the potential overestimation of results. Samples were qualified as estimated (J) as discussed in [Section 2.1.3.3](#).

### 2.2.3 Representativeness

Representativeness is a qualitative parameter and is defined by the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, or a process or environmental condition. There is no standard method or formula for evaluating representativeness, which is a qualitative term. Representativeness is achieved through selection of sampling locations that are appropriate relative to the objective of the specific sampling task and by collection of an adequate number of samples from the relevant types of locations. Sample results were evaluated for representativeness by examining items related to sample collection, including chain-of-custody documentation, sample labeling, collection dates, and condition of the samples upon receipt at the laboratory. Laboratory procedures also were examined, including anomalies reported by the laboratory, either upon receipt of the samples at the laboratory or during

analytical processes; adherence to recommended holding times of samples prior to analysis; calibration of laboratory instruments; adherence to analytical methods; and completeness of data package documentation.

#### **2.2.4 Completeness**

Completeness is commonly expressed as a percentage of measurements that are valid and usable relative to the total number of total measurements made. Analytical completeness is a measure of the number of overall accepted analytical results, including estimated values, compared to the total number of analytical results requested on samples submitted for analysis after review of the analytical data. The overall completeness for this dataset was calculated at 100 percent. This is above the completeness goal of 90 percent. The completeness was evaluated by method in [Table 2-5](#). The completeness goal was met for all methods.

#### **2.2.5 Comparability**

Comparability is a qualitative characteristic expressing the confidence with which one dataset can be compared to another. The desire for comparability is the basis for specifying the analytical methods listed in [Table 1-2](#); these methods are generally consistent with those used in previous investigations of the Site.

The comparability goal is achieved by using standard techniques to collect and analyze representative samples, and reporting analytical results in appropriate units. Only when precision and accuracy are known, can datasets be compared with confidence.

While multiple laboratories were used for this project, each laboratory was subcontracted to perform certain analyses. Therefore, the same laboratory was always responsible for performing the same analyses.

#### **2.2.6 Sensitivity**

Sensitivity is the measure of the signal from an instrument that represents an actual deflection or response above instrument noise. Analytical sensitivity is measured by the Method Detection Limit and is reported with the necessary dilution factors, preparation factors, and dry-weight factors of an individual sample as the Sample Quantitation Limit. The sensitivity requirements were based on the laboratory's ability to detect and report consistent and reliable limits.

Dilutions were required for numerous analytes. Whenever the concentration exceeded the linear range of the instrumentation, dilutions were analyzed. Results from sample dilutions were reported, when appropriate, in the electronic database included in [Appendix A](#).

### 3.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the evaluation of the dataset, 100 percent of the data obtained during the field investigation are valid (that is, not rejected) and acceptable for their intended use. The completeness goal was met for the dataset. All data qualified during the review process are summarized in [Table 3-1](#). Data results qualified by the laboratory with only ‘U’, as a result of being non-detect, are not included in [Table 3-1](#). All data results, including non-detect data, are included in [Appendix A](#) of this report. Additionally, electronic versions of all laboratory data reports, as well as data validation reports, are also provided in [Appendix A](#).

All analyses were performed as requested on the chain-of-custody. No assumptions of data quality were made based on information that was not provided. Some data were qualified based on the data review. All data results qualified with ‘J’, ‘U’, or ‘UJ’ are considered valid and acceptable for their intended use. No data results were qualified with ‘R’ or ‘R-CAB&TDS’ or considered invalid or rejected for use.

Limitations on data usability for future purposes may arise, but are not addressed in the scope of this document. These limitations will be identified through subsequent data evaluations and mitigated where possible, as appropriate.

#### 4.0 REFERENCES

- Basic Remediation Company (BRC) and Environmental Resources Management (ERM). 2009. *BRC Quality Assurance Project Plan. BMI Common Areas, Clark County, Nevada*. May.
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**TABLE 1-1**  
**SAMPLE ANALYSIS SUMMARY**  
**JULY THROUGH OCTOBER 2023**  
**EASTSIDE GROUNDWATER MONITORING EVENTS (DATASET 77)**  
**CLARK COUNTY, NEVADA**  
**(Page 1 of 4)**

Lab	LAB SDG	LAB SAMPLE ID	SAMPLE ID	MATRIX	SAMPLE/MATRIX NUMBER	LDC NUMBER	DATA VALIDATION LEVEL	SAMPLE DATE	SAMPLE TIME	VOCs	Chloroform	Arsenic	Radium-226 and 228	beta-BHC
TestAmerica, Phoenix	550-204355-1	550-204355-1	TB 7/5/2023	BW	TB1	ERM-7	2A	07/05/23	8:00	X				
TestAmerica, Phoenix	550-204355-1	550-204355-2	DBMW-09 7/5/2023	WG	W001	ERM-7	2A	07/05/23	10:05		X	X		
TestAmerica, St. Louis	550-204355-1	550-204355-2	DBMW-09 7/5/2023	WG	W001	ERM-7	2A	07/05/23	10:05				X	
TestAmerica, Phoenix	550-204355-1	550-204355-3	DBMW-10 7/5/2023	WG	W002	ERM-7	2A	07/05/23	11:36		X	X		
TestAmerica, Phoenix	550-204355-1	550-204355-4	DBMW-11 7/5/2023	WG	W003	ERM-7	2A	07/05/23	12:25		X	X		
TestAmerica, St. Louis	550-204355-1	550-204355-4	DBMW-11 7/5/2023	WG	W003	ERM-7	2A	07/05/23	12:25				X	
TestAmerica, Phoenix	550-204417-1	550-204417-3	TB 7/6/2023	BW	TB2	ERM-7	2A	07/06/23	7:30	X				
TestAmerica, Phoenix	550-204417-1	550-204417-1	DBMW-13 7/6/2023	WG	W004	ERM-7	2A	07/06/23	8:15		X	X		
TestAmerica, St. Louis	550-204417-1	550-204417-1	DBMW-13 7/6/2023	WG	W004	ERM-7	2A	07/06/23	8:15				X	
TestAmerica, Phoenix	550-204417-1	550-204417-2	DBMW-13(FD) 7/6/2023	WG	W005	ERM-7	2A	07/06/23	8:15		X	X		
TestAmerica, St. Louis	550-204417-1	550-204417-2	DBMW-13(FD) 7/6/2023	WG	W005	ERM-7	2A	07/06/23	8:15				X	
TestAmerica, Phoenix	550-204417-1	550-204417-4	DBMW-14 7/6/2023	WG	W006	ERM-7	2A	07/06/23	8:56			X		
TestAmerica, St. Louis	550-204417-1	550-204417-4	DBMW-14 7/6/2023	WG	W006	ERM-7	2A	07/06/23	8:56				X	
TestAmerica, Phoenix	550-204417-1	550-204417-5	DBMW-15 7/6/2023	WG	W007	ERM-7	2A	07/06/23	9:42			X		
TestAmerica, Phoenix	550-204417-1	550-204417-6	DBMW-16R 7/6/2023	WG	W008	ERM-7	2A	07/06/23	10:21		X	X		
TestAmerica, Phoenix	550-204417-1	550-204417-7	MCF-12B 7/6/2023	WG	W009	ERM-7	2A	07/06/23	11:03		X	X		
TestAmerica, Phoenix	550-204417-1	550-204417-8	AA-UW6 7/6/2023	WG	W010	ERM-7	2A	07/06/23	11:44			X		
TestAmerica, Phoenix	550-204417-1	550-204417-9	DBMW-08R 7/6/2023	WG	W011	ERM-7	2A	07/06/23	12:42			X		
TestAmerica, St. Louis	550-204417-1	550-204417-9	DBMW-08R 7/6/2023	WG	W011	ERM-7	2A	07/06/23	12:42				X	
TestAmerica, Phoenix	550-204417-1	550-204417-10	BEC-6 7/6/2023	WG	W012	ERM-7	2A	07/06/23	13:26		X	X		
TestAmerica, Phoenix	550-204464-1	550-204464-1	TB 7/7/2023	BW	TB3	ERM-7	2A	07/07/23	7:30	X				
TestAmerica, Phoenix	550-204464-1	550-204464-2	MCF-16C 7/7/2023	WG	W013	ERM-7	2A	07/07/23	9:14		X	X		
TestAmerica, Phoenix	550-204464-1	550-204464-3	AA-09 7/7/2023	WG	W014	ERM-7	2A	07/07/23	10:02		X	X		
TestAmerica, St. Louis	550-204464-1	550-204464-3	AA-09 7/7/2023	WG	W014	ERM-7	2A	07/07/23	10:02				X	
TestAmerica, Phoenix	550-204464-1	550-204464-4	ES-5 7/7/2023	WG	W015	ERM-7	2A	07/07/23	10:40		X			

**TABLE 1-1**  
**SAMPLE ANALYSIS SUMMARY**  
**JULY THROUGH OCTOBER 2023**  
**EASTSIDE GROUNDWATER MONITORING EVENTS (DATASET 77)**  
**CLARK COUNTY, NEVADA**  
**(Page 2 of 4)**

Lab	LAB SDG	LAB SAMPLE ID	SAMPLE ID	MATRIX	SAMPLE/MATRIX NUMBER	LDC NUMBER	DATA VALIDATION LEVEL	SAMPLE DATE	SAMPLE TIME	VOCs	Chloroform	Arsenic	Radium-226 and 228	beta-BHC
TestAmerica, Phoenix	550-204464-1	550-204464-5	ES-30 7/7/2023	WG	W016	ERM-7	2A	07/07/23	11:20		X			
TestAmerica, Phoenix	550-204464-1	550-204464-6	FB 7/7/2023	BW	FB1	ERM-7	2A	07/07/23	11:20	X				
TestAmerica, Phoenix	550-204464-1	550-204464-7	POD2-R 7/7/2023	WG	W017	ERM-7	2A	07/07/23	11:56		X	X		
TestAmerica, St. Louis	550-204464-1	550-204464-7	POD2-R 7/7/2023	WG	W017	ERM-7	2A	07/07/23	11:56				X	
TestAmerica, Phoenix	550-204464-1	550-204464-8	AA-20R 7/7/2023	WG	W018	ERM-7	2A	07/07/23	12:36		X	X		
TestAmerica, St. Louis	550-204464-1	550-204464-8	AA-20R 7/7/2023	WG	W018	ERM-7	2A	07/07/23	12:36				X	
TestAmerica, Phoenix	550-204464-1	550-204464-9	ES-32 7/7/2023	WG	W019	ERM-7	2A	07/07/23	13:14		X			
TestAmerica, Phoenix	550-204546-1	550-204546-1	TB 7/10/2023	BW	TB4	ERM-7	2A	07/10/23	7:30	X				
TestAmerica, Phoenix	550-204546-1	550-204546-2	POD-8R 7/10/2023	WG	W020	ERM-7	2A	07/10/23	8:34		X	X		X
TestAmerica, Phoenix	550-204546-1	550-204546-3	AA-UW5 7/10/2023	WG	W021	ERM-7	2A	07/10/23	9:25			X		
TestAmerica, Phoenix	550-204546-1	550-204546-4	AA-UW5(FD) 7/10/2023	WG	W022	ERM-7	2A	07/10/23	9:25			X		
TestAmerica, Phoenix	550-204546-1	550-204546-5	ES-3 7/10/2023	WG	W023	ERM-7	2A	07/10/23	10:04		X			
TestAmerica, Phoenix	550-204546-1	550-204546-6	ES-4 7/10/2023	WG	W024	ERM-7	2A	07/10/23	10:39		X			
TestAmerica, Phoenix	550-204546-1	550-204546-7	POU3 7/10/2023	WG	W025	ERM-7	2A	07/10/23	11:09		X	X		
TestAmerica, Phoenix	550-204546-1	550-204546-8	DM-1R 7/10/2023	WG	W026	ERM-7	2A	07/10/23	11:42		X	X		
TestAmerica, Phoenix	550-204546-1	550-204546-9	AA-UW2 7/10/2023	WG	W027	ERM-7	2A	07/10/23	12:20			X		
TestAmerica, Phoenix	550-204546-1	550-204546-10	AA-27 7/10/2023	WG	W028	ERM-7	2A	07/10/23	12:57			X		
TestAmerica, Phoenix	550-204681-1	550-204681-1	TB 7/11/2023	BW	TB5	ERM-7	2A	07/11/23	7:30	X				
TestAmerica, Phoenix	550-204681-1	550-204681-2	DBMW-20 7/11/2023	WG	W029	ERM-7	2A	07/11/23	8:46		X	X		
TestAmerica, Phoenix	550-204681-1	550-204681-3	DBMW-20(FD) 7/11/2023	WG	W030	ERM-7	2A	07/11/23	8:46		X	X		
TestAmerica, Phoenix	550-204681-1	550-204681-4	MW-4 7/11/2023	WG	W031	ERM-7	2A	07/11/23	9:20		X	X		
TestAmerica, St. Louis	550-204681-1	550-204681-4	MW-4 7/11/2023	WG	W031	ERM-7	2A	07/11/23	9:20				X	
TestAmerica, Phoenix	550-204681-1	550-204681-5	AA-26 7/11/2023	WG	W032	ERM-7	2A	07/11/23	10:04		X			
TestAmerica, Phoenix	550-204681-1	550-204681-6	AA-13R 7/11/2023	WG	W033	ERM-7	2A	07/11/23	10:46		X	X		
TestAmerica, Phoenix	550-204681-1	550-204681-7	MCF-03B 7/11/2023	WG	W034	ERM-7	2A	07/11/23	11:20			X		

**TABLE 1-1**  
**SAMPLE ANALYSIS SUMMARY**  
**JULY THROUGH OCTOBER 2023**  
**EASTSIDE GROUNDWATER MONITORING EVENTS (DATASET 77)**  
**CLARK COUNTY, NEVADA**  
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Lab	LAB SDG	LAB SAMPLE ID	SAMPLE ID	MATRIX	SAMPLE/MATRIX NUMBER	LDC NUMBER	DATA VALIDATION LEVEL	SAMPLE DATE	SAMPLE TIME	VOCs	Chloroform	Arsenic	Radium-226 and 228	beta-BHC
TestAmerica, Phoenix	550-204681-1	550-204681-8	AA-UW4_7/11/2023	WG	W035	ERM-7	2A	07/11/23	11:54			X		
TestAmerica, Phoenix	550-204681-1	550-204681-9	DBMW-22_7/11/2023	WG	W036	ERM-7	2A	07/11/23	12:43		X	X		
TestAmerica, Phoenix	550-204681-1	550-204681-10	AA-30_7/11/2023	WG	W037	ERM-7	2A	07/11/23	13:13		X			
TestAmerica, Phoenix	550-204748-1	550-204748-1	TB_7/12/2023	BW	TB6	ERM-7	2A	07/12/23	7:30	X				
TestAmerica, Phoenix	550-204748-1	550-204748-2	AA-UW1_7/12/2023	WG	W038	ERM-7	2A	07/12/23	8:30			X		
TestAmerica, Phoenix	550-204748-1	550-204748-3	AA-UW1(FD)_7/12/2023	WG	W039	ERM-7	2A	07/12/23	8:30			X		
TestAmerica, Phoenix	550-204748-1	550-204748-4	FB_7/12/2023	BW	FB2	ERM-7	2A	07/12/23	8:30	X				
TestAmerica, Phoenix	550-204748-1	550-204748-5	MCF-01B_7/12/2023	WG	W039	ERM-7	2A	07/12/23	9:04		X	X		
TestAmerica, Phoenix	550-204748-1	550-204748-6	AA-11R_7/12/2023	WG	W040	ERM-7	2A	07/12/23	9:40		X			
TestAmerica, Phoenix	550-204748-1	550-204748-7	DBMW-03_7/12/2023	WG	W041	ERM-7	2A	07/12/23	10:13		X	X		
TestAmerica, St. Louis	550-204748-1	550-204748-7	DBMW-03_7/12/2023	WG	W041	ERM-7	2A	07/12/23	10:13				X	
TestAmerica, Phoenix	550-204748-1	550-204748-8	DBMW-04R_7/12/2023	WG	W042	ERM-7	2A	07/12/23	10:50		X	X		
TestAmerica, Phoenix	550-204748-1	550-204748-9	DBMW-05R_7/12/2023	WG	W043	ERM-7	2A	07/12/23	11:24			X		
TestAmerica, Phoenix	550-204748-1	550-204748-10	EB_7/12/2023	BW	EB1	ERM-7	2A	07/12/23	12:05		X	X		X
TestAmerica, St. Louis	550-204748-1	550-204748-10	EB_7/12/2023	BW	EB1	ERM-7	2A	07/12/23	12:05				X	
TestAmerica, Phoenix	550-204810-1	550-204810-1	TB_7/13/2023	BW	TB7	ERM-7	2A	07/13/23	7:30	X				
TestAmerica, Phoenix	550-204810-1	550-204810-2	AA-21_7/13/2023	WG	W044	ERM-7	2A	07/13/23	8:29			X		X
TestAmerica, Phoenix	550-204810-1	550-204810-3	AA-08_7/13/2023	WG	W045	ERM-7	2A	07/13/23	9:02			X		X
TestAmerica, Phoenix	550-204810-1	550-204810-4	AA-08(FD)_7/13/2023	WG	W046	ERM-7	2A	07/13/23	9:02			X		X
TestAmerica, Phoenix	550-204810-1	550-204810-5	PC-80_7/13/2023	WG	W047	ERM-7	2A	07/13/23	9:44			X		X
TestAmerica, Phoenix	550-204810-1	550-204810-6	DBMW-19_7/13/2023	WG	W048	ERM-7	2A	07/13/23	10:21			X		X
TestAmerica, Phoenix	550-204810-1	550-204810-7	EB_7/13/2023	BW	EB2	ERM-7	2A	07/13/23	10:30		X	X		X
TestAmerica, St. Louis	550-204810-1	550-204810-7	EB_7/13/2023	BW	EB2	ERM-7	2A	07/13/23	10:30				X	
TestAmerica, Phoenix	550-204886-1	550-204886-1	TB_7/14/2023	BW	TB8	ERM-7	2A	07/14/23	7:30	X				
TestAmerica, Phoenix	550-204886-1	550-204886-2	MCF-06BR_7/14/2023	WG	W049	ERM-7	2A	07/14/23	8:55			X		

**TABLE 1-1**  
**SAMPLE ANALYSIS SUMMARY**  
**JULY THROUGH OCTOBER 2023**  
**EASTSIDE GROUNDWATER MONITORING EVENTS (DATASET 77)**  
**CLARK COUNTY, NEVADA**  
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Lab	LAB SDG	LAB SAMPLE ID	SAMPLE ID	MATRIX	SAMPLE/MATRIX NUMBER	LDC NUMBER	DATA VALIDATION LEVEL	SAMPLE DATE	SAMPLE TIME	VOCs	Chloroform	Arsenic	Radium-226 and 228	beta-BHC
TestAmerica, St. Louis	550-204886-1	550-204886-2	MCF-06BR 7/14/2023	WG	W049	ERM-7	2A	07/14/23	8:55				X	
TestAmerica, Phoenix	550-204886-1	550-204886-3	MCF-06CR 7/14/2023	WG	W050	ERM-7	2A	07/14/23	9:32		X	X		
TestAmerica, St. Louis	550-204886-1	550-204886-3	MCF-06CR 7/14/2023	WG	W050	ERM-7	2A	07/14/23	9:32				X	
TestAmerica, Phoenix	550-208433-1	550-208433-1	TB 9/29/2023	BW	TB9	ERM-7	2A	09/29/23	7:30	X				
TestAmerica, Phoenix	550-208433-1	550-208433-2	PC-62 9/29/2023	WG	W051	ERM-7	2A	09/29/23	9:40			X		X
TestAmerica, Phoenix	550-208433-1	550-208433-3	APX-2--P101 9/29/2023	WG	W052	ERM-7	2A	09/29/23	10:26			X		X
TestAmerica, St. Louis	550-208433-1	550-208433-4	DBMW-10 9/29/2023	WG	W053	ERM-7	2A	09/29/23	11:19				X	
TestAmerica, Phoenix	550-208433-1	550-208433-5	FB 9/29/2023	BW	FB3	ERM-7	2A	09/29/23	11:19	X				
TestAmerica, Phoenix	550-208433-1	550-208433-6	ES-39 9/29/2023	WG	W054	ERM-7	2A	09/29/23	11:55			X		
TestAmerica, Phoenix	550-208433-1	550-208433-7	ES-39(FD) 9/29/2023	WG	W055	ERM-7	2A	09/29/23	11:55			X		
TestAmerica, Phoenix	550-208643-1	550-208643-1	TB 10/2/2023	BW	TB10	ERM-7	2A	10/02/23	7:30	X				
TestAmerica, Phoenix	550-208643-1	550-208643-2	MCF-01B 10/2/2023	WG	W056	ERM-7	2A	10/02/23	10:01		X			
TestAmerica, Phoenix	550-208643-1	550-208643-3	ES-3 10/2/2023	WG	W057	ERM-7	2A	10/02/23	10:36			X		
TestAmerica, Phoenix	550-208643-1	550-208643-4	FB 10/2/2023	BW	FB4	ERM-7	2A	10/02/23	10:36	X				
TestAmerica, St. Louis	550-208643-1	550-208643-5	MCF-16C 10/2/2023	WG	W058	ERM-7	2A	10/02/23	11:14				X	
TestAmerica, Phoenix	550-208643-1	550-208643-6	EB 10/2/2023	BW	EB3	ERM-7	2A	10/02/23	11:20		X	X		X
TestAmerica, St. Louis	550-208643-1	550-208643-6	EB 10/2/2023	BW	EB3	ERM-7	2A	10/02/23	11:20				X	

BW - Blank Water  
FD - Duplicate sample  
EB - Equipment Blank  
FB - Field Blank  
TB - Trip Blank  
WG - Groundwater  
ID - Identification  
VOCs - Volatile Organic Compounds

**TABLE 1-2**  
**SAMPLE ANALYSIS METHODS**  
**JULY THROUGH OCTOBER 2023**  
**EASTSIDE GROUNDWATER MONITORING EVENTS (DATASET 77)**  
**CLARK COUNTY, NEVADA**  
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<b>Class</b>	<b>Method</b>
Volatile Organic Compounds	USEPA 8260B
beta-BHC	USEPA 8081B
Radium-226	E903.0
Radium-228	E904.0
Metals	E200.8

USEPA - United States Environmental Protection Agency  
SM - Standard Method

**TABLE 1-3**  
**DATA VALIDATION CRITERIA**  
**JULY THROUGH OCTOBER 2023**  
**EASTSIDE GROUNDWATER MONITORING EVENTS (DATASET 77)**  
**CLARK COUNTY, NEVADA**  
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<b>Stage 2A Validation</b>
Chain of Custody
Holding times and sample temperature
Matrix Spike and Matrix Spike Duplicate recoveries and control limits
Laboratory Control Spike and Laboratory Control Spike Duplicate recoveries and control limits
Laboratory Duplicate relative percent differences
Method blanks
Surrogate recoveries
Carrier gas recoveries
Case narrative to discuss anomalies
Calibrations <sup>1</sup>

1 - Calibration outliers were detailed in the case narrative. No calibration data were reviewed.

**TABLE 1-4**  
**DATA VALIDATION QUALIFIERS AND REASON CODES**  
**JULY THROUGH OCTOBER 2023**  
**EASTSIDE GROUNDWATER MONITORING EVENTS (DATASET 77)**  
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Laboratory Qualifier	Definition
U	Organic and inorganic analyses: the analyte was not detected above the level of the reported sample quantitation limit.
B	Inorganic analyses: the analyte was detected between the method detection limit and the sample quantitation limit. Organic analyses: the analyte was detected in the associated method blank.
J	Organic analyses: the analyte was detected between the method detection limit and the sample quantitation limit.
E	Organic and inorganic analyses: the sample concentration was greater than the calibration's upper limit and should be considered to be an estimated value.
*	Inorganic analyses: the analytical duplicate precision was not within control limits.
N	Inorganic analyses: the matrix spike was not within control limits.
D	Organic and inorganic analyses: the sample result was diluted.

Functional Guidelines Validation Qualifier	Definition
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
UJ	The nondetected analyte was qualified as estimated at the sample quantitation limit. The reported sample quantitation limit is approximate and may be inaccurate or imprecise.
R	The sample result is rejected and unusable due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
J+	The result is an estimated quantity, biased high. The associated numerical value is the approximate concentration of the analyte in the sample.
J-	The result is an estimated quantity, biased low. The associated numerical value is the approximate concentration of the analyte in the sample.

**TABLE 1-4**  
**DATA VALIDATION QUALIFIERS AND REASON CODES**  
**JULY THROUGH OCTOBER 2023**  
**EASTSIDE GROUNDWATER MONITORING EVENTS (DATASET 77)**  
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<b>Project- Specific Validation Qualifier</b>	<b>Definition</b>
X <sup>##</sup>	The analytical result is not used for reporting because a more accurate and precise result is reported in its place.
Z <sup>##</sup>	The associated data has not been subjected to the data review/validation process.
J-TDS	Inorganic analysis: the analytical result is estimated based on failure of Total Dissolved Solids (TDS) correctness check performed in accordance with Standard Methods (see Section 5.1)
J-CAB	Inorganic analysis: the analytical result is estimated based on failure of cation-anion balance correctness check performed in accordance with Standard Methods
R-CAB&TDS	Inorganic analysis: the analytical result is unreliable based on failure of cation-anion balance and TDS correctness checks performed in accordance with Standard Methods.

<b>Validation Reason Code</b>	<b>Definition</b>
0	The analyte was non-detected based on laboratory analyses and not due to any qualifications of the data.
1	The sample preparation and/or analytical holding time was exceeded.
2 <sup>#</sup>	The analyte was detected below the report limit but above the method detection limit.
3	The analyte was detected in an associated laboratory blank sample.
4	The MS/MSD recovery was outside of control limits.
5	The LCS recovery was outside of control limits.
6 <sup>##</sup>	The MS/MSD RPD was outside of control limits.
7 <sup>##</sup>	The LCS RPD was outside of control limits.
8	The surrogate recovery was outside of control limits.
9 <sup>##</sup>	Level IV data validation qualification.
10	The sample chromatogram did not resemble the standard hydrocarbon pattern.
11	The sample concentration was greater than the instrument's calibration range.
12	The calibration criterion of RRF, %D, %R, r <sup>2</sup> and/or %RSD was not met.
13	The analyte was detected in field blank, rinsate blank, and/or trip blank sample.
14	The internal standards did not meet control criteria.
15	The serial dilution did not meet control criteria.
16	The difference between columns did not meet control criteria.
17	Field duplicates did not meet the 50% RPD control criterion.
18	Sample receipt temperature exceeded the acceptable range of from 4 to 6 degrees Celsius.

**TABLE 1-4**  
**DATA VALIDATION QUALIFIERS AND REASON CODES**  
**JULY THROUGH OCTOBER 2023**  
**EASTSIDE GROUNDWATER MONITORING EVENTS (DATASET 77)**  
**CLARK COUNTY, NEVADA**  
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<b>Validation Reason Code</b>	<b>Definition</b>
19	Analytical duplicate precision did not meet control criteria.
20	Headspace in vials containing water samples to be analyzed for volatiles.
21	The tracer yields did not meet control criteria.
22	The ratio of the measured TDS value to the mathematically calculated TDS sum was outside the specified error range (the cation-anion balance was within the error limits specified in Standard Methods).
23	The cation-anion balance was outside the error limits specified in Standard Methods (the ratio of the measured TDS value to the mathematically calculated TDS sum was within the specified error range).
24	The cation-anion balance was outside the error limits specified in Standard Methods, and the ratio of the measured TDS value to the mathematically calculated TDS sum was outside the specified error range.
25	Other

# This reason code is applied to data entries with lab qualifiers J (organic) or B (inorganic), as defined above.

## These reason codes were used in the validation of historical data and will not be used in current and future site investigations.

**TABLE 2-1**  
**HOLDING TIME REQUIREMENTS**  
**JULY THROUGH OCTOBER 2023**  
**EASTSIDE GROUNDWATER MONITORING EVENTS (DATASET 77)**  
**CLARK COUNTY, NEVADA**  
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Method Class	Compound	Aqueous Samples	
		Method	Holding Time
Volatile Organic Compounds	See analyte list	USEPA 8260B	14 days
Organochlorine Pesticides	beta-BHC	USEPA 8081B	7 days to extraction, 40 days to analysis
Radionuclides	Radium-226	E903.0	6 months
	Radium-228	E904.0	6 months
Metals	Arsenic	E200.8	180 days

NA - not applicable

SM - Standard Method

USEPA - United States Environmental Protection Agency

**TABLE 2-2**  
**SUMMARY OF DATA QUALIFIED DUE TO TEMPERATURE EXCEEDANCES**  
**JULY THROUGH OCTOBER 2023**  
**EASTSIDE GROUNDWATER MONITORING EVENTS (DATASET 77)**  
**CLARK COUNTY, NEVADA**  
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Field Sample ID	Lab Sample ID	Method	Sample Date	Analyte	Result	Unit	Violation	Limit	PQL	Check Qualifier	Final Qualifier
BEC-6_7/6/2023	550-204417-10	SW8260B	7/6/2023	Chloroform	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
DBMW-08R_7/6/2023	550-204417-9	SW8260B	7/6/2023	Chloroform	160	µg/L	9.4°C	≤6°C	10	J-	J-
DBMW-13_7/6/2023	550-204417-1	SW8260B	7/6/2023	Chloroform	48	µg/L	9.4°C	≤6°C	2.0	J-	J-
DBMW-16R_7/6/2023	550-204417-6	SW8260B	7/6/2023	Chloroform	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
DBMW-13(FD)_7/6/2023	550-204417-2	SW8260B	7/6/2023	Chloroform	51	µg/L	9.4°C	≤6°C	2.0	J-	J-
MCF-12B_7/6/2023	550-204417-7	SW8260B	7/6/2023	Chloroform	9.4	µg/L	9.4°C	≤6°C	2.0	J-	J-
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	cis-1,2-Dichloroethene	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	cis-1,3-Dichloropropene	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Dibromomethane	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Dichlorobromomethane	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Dichlorodifluoromethane	<5	µg/L	9.4°C	≤6°C	5.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Methylene Chloride	<5	µg/L	9.4°C	≤6°C	5.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Ethylene Dibromide	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Hexachlorobutadiene	<5	µg/L	9.4°C	≤6°C	5.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Iodomethane	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Isopropylbenzene	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	m-Xylene & p-Xylene	<5	µg/L	9.4°C	≤6°C	5.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Methyl tert-butyl ether	<1	µg/L	9.4°C	≤6°C	1.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Chloromethane	<5	µg/L	9.4°C	≤6°C	5.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Ethylbenzene	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Xylenes, Total	<10	µg/L	9.4°C	≤6°C	10	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Chloroform	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Vinyl chloride	<5	µg/L	9.4°C	≤6°C	5.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Vinyl acetate	<25	µg/L	9.4°C	≤6°C	25	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Trichlorofluoromethane	<5	µg/L	9.4°C	≤6°C	5.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Trichloroethene	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	trans-1,3-Dichloropropene	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	trans-1,2-Dichloroethene	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	n-Butylbenzene	<5	µg/L	9.4°C	≤6°C	5.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Toluene	<5	µg/L	9.4°C	≤6°C	5.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Tetrachloroethene	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	tert-Butylbenzene	<5	µg/L	9.4°C	≤6°C	5.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Styrene	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ

**TABLE 2-2**  
**SUMMARY OF DATA QUALIFIED DUE TO TEMPERATURE EXCEEDANCES**  
**JULY THROUGH OCTOBER 2023**  
**EASTSIDE GROUNDWATER MONITORING EVENTS (DATASET 77)**  
**CLARK COUNTY, NEVADA**  
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Field Sample ID	Lab Sample ID	Method	Sample Date	Analyte	Result	Unit	Violation	Limit	PQL	Check Qualifier	Final Qualifier
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	sec-Butylbenzene	<5	µg/L	9.4°C	≤6°C	5.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	o-Xylene	<5	µg/L	9.4°C	≤6°C	5.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Naphthalene	<5	µg/L	9.4°C	≤6°C	5.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	N-Propylbenzene	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Chloroethane	<5	µg/L	9.4°C	≤6°C	5.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Chlorobromomethane	<5	µg/L	9.4°C	≤6°C	5.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	1,3,5-Trimethylbenzene	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	1,2-Dichloropropane	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	1,2-Dichloroethane	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	1,2-Dichlorobenzene	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	1,2-Dibromo-3-Chloropropane	<5	µg/L	9.4°C	≤6°C	5.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	1,2,4-Trimethylbenzene	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	1,2,4-Trichlorobenzene	<5	µg/L	9.4°C	≤6°C	5.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	1,2,3-Trichloropropane	<10	µg/L	9.4°C	≤6°C	10	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	1,2,3-Trichlorobenzene	<5	µg/L	9.4°C	≤6°C	5.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	1,1-Dichloropropene	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	1,1-Dichloroethene	<5	µg/L	9.4°C	≤6°C	5.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	1,1-Dichloroethane	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	1,1,2-Trichloroethane	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	1,1,2,2-Tetrachloroethane	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	1,1,1-Trichloroethane	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	1,3-Dichlorobenzene	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Chlorodibromomethane	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	1,3-Dichloropropane	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	2,2-Dichloropropane	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Chlorobenzene	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Carbon tetrachloride	<5	µg/L	9.4°C	≤6°C	5.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Carbon disulfide	<5	µg/L	9.4°C	≤6°C	5.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Bromomethane	<10	µg/L	9.4°C	≤6°C	10	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Bromoform	<5	µg/L	9.4°C	≤6°C	5.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Bromobenzene	<5	µg/L	9.4°C	≤6°C	5.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Benzene	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	Acetone	<20	µg/L	9.4°C	≤6°C	20	UJ	UJ

**TABLE 2-2**  
**SUMMARY OF DATA QUALIFIED DUE TO TEMPERATURE EXCEEDANCES**  
**JULY THROUGH OCTOBER 2023**  
**EASTSIDE GROUNDWATER MONITORING EVENTS (DATASET 77)**  
**CLARK COUNTY, NEVADA**  
**(Page 3 of 3)**

Field Sample ID	Lab Sample ID	Method	Sample Date	Analyte	Result	Unit	Violation	Limit	PQL	Check Qualifier	Final Qualifier
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	4-Methyl-2-pentanone (MIBK)	<10	µg/L	9.4°C	≤6°C	10	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	4-Isopropyltoluene	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	4-Chlorotoluene	<5	µg/L	9.4°C	≤6°C	5.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	2-Hexanone	<10	µg/L	9.4°C	≤6°C	10	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	2-Chlorotoluene	<5	µg/L	9.4°C	≤6°C	5.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	2-Butanone (MEK)	<10	µg/L	9.4°C	≤6°C	10	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	1,4-Dichlorobenzene	<2	µg/L	9.4°C	≤6°C	2.0	UJ	UJ
TB_7/6/2023	550-204417-3	SW8260B	7/6/2023	1,1,1,2-Tetrachloroethane	<5	µg/L	9.4°C	≤6°C	5.0	UJ	UJ

µg/L - microgram per liter

°C - degrees Celsius

ID - identification

FD - field duplicate

PQL - practical quantitation limit

J- - Result is biased low.

UJ - non-detect estimated quantitation limit

**TABLE 2-3**  
**SUMMARY OF DATA QUALIFIED DUE TO FIELD BLANK CONTAMINATION**  
**JULY THROUGH OCTOBER 2023**  
**EASTSIDE GROUNDWATER MONITORING EVENTS (DATASET 77)**  
**CLARK COUNTY, NEVADA**  
**(Page 1 of 1)**

Field Sample ID	Lab Sample ID	Method	Sample Date	Analyte	Result	Unit	PQL	Reported Concentration	Blank Concentration	Check Qualifier	Final Qualifier
AA-20R_7/7/2023	550-204464-8	SW8260B	7/7/2023	Chloroform	37	µg/L	2	37	7.6	J	J
ES-5_7/7/2023	550-204464-4	SW8260B	7/7/2023	Chloroform	29	µg/L	2	29	7.6	J	J
MCF-01B_7/12/2023	550-204748-5	SW8260B	7/12/2023	Chloroform	9.8	µg/L	2	9.8	4.5	J	J
MCF-16C_10/2/2023	550-208643-5	E904.0	10/2/2023	Radium-228	0.746	pCi/L	1	0.746	0.896	J	J
AA-08_7/13/2023	550-204810-3	E200.8	7/13/2023	Arsenic	2.9	µg/L	0.5	2.9	1.2	J	J
AA-08(FD)_7/13/2023	550-204810-4	E200.8	7/13/2023	Arsenic	2.7	µg/L	0.5	2.7	1.2	J	J

µg/L - microgram per liter

pCi/L - picoCurie per liter

ID - identification

FD - field duplicate

PQL - practical quantitation limit

J - result is estimated

**TABLE 2-4**  
**SUMMARY OF DATA QUALIFIED DUE TO LCS/LCSD RECOVERY EXCEEDANCES**  
**JULY THROUGH OCTOBER 2023**  
**EASTSIDE GROUNDWATER MONITORING EVENTS (DATASET 77)**  
**CLARK COUNTY, NEVADA**

(Page 1 of 1)

Field Sample ID	Lab Sample ID	Method	Analysis Date	Analyte	Result	Unit	% Recovery	Limit	PQL	Check Qualifier	Final Qualifier
TB_7/5/2023	550-204355-1	SW8260B	07/14/23	Vinyl chloride	<5	ug/L	78/73	80-120	5	UJ	UJ

ID- Identification

TB - trip blank

PQL - practical quantitation limit

UJ - non-detect estimated quantitation limit

ug/L - microgram per liter

**TABLE 2-5**  
**PERCENT COMPLETENESS BY METHOD**  
**JULY THROUGH OCTOBER 2023**  
**EASTSIDE GROUNDWATER MONITORING EVENTS (DATASET 77)**  
**CLARK COUNTY, NEVADA**  
**(Page 1 of 1)**

<b>Method</b>	<b>Number of Results</b>	<b>Number of Rejected Results</b>	<b>Completeness</b>
SW8260B	921	0	100%
SW8081B	11	0	100%
E903.0	18	0	100%
E904.0	18	0	100%
E200.8	51	0	100%
All	1019	0	100%

**TABLE 3-1**  
**SUMMARY OF QUALIFIED DATA RESULTS**  
**JULY THROUGH OCTOBER 2023**  
**EASTSIDE GROUNDWATER MONITORING EVENTS (DATASET 77)**  
**CLARK COUNTY, NEVADA**  
**(Page 1 of 3)**

Field Sample ID	Lab Sample ID	Method	Analysis Date	Analyte	Result	Unit	PQL	Qualifier
BEC-6_7/6/2023	550-204417-10	SW8260B	07/18/23	Chloroform	<2	µg/L	2	UJ
DBMW-08R_7/6/2023	550-204417-9	SW8260B	07/19/23	Chloroform	160	µg/L	10	J-
DBMW-13_7/6/2023	550-204417-1	SW8260B	07/18/23	Chloroform	48	µg/L	2	J-
DBMW-16R_7/6/2023	550-204417-6	SW8260B	07/18/23	Chloroform	<2	µg/L	2	UJ
DBMW-13(FD)_7/6/2023	550-204417-2	SW8260B	07/18/23	Chloroform	51	µg/L	2	J-
MCF-12B_7/6/2023	550-204417-7	SW8260B	07/18/23	Chloroform	9.4	µg/L	2	J-
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	cis-1,2-Dichloroethene	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	cis-1,3-Dichloropropene	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Dibromomethane	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Dichlorobromomethane	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Dichlorodifluoromethane	<5	µg/L	5	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Methylene Chloride	<5	µg/L	5	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Ethylene Dibromide	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Hexachlorobutadiene	<5	µg/L	5	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Iodomethane	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Isopropylbenzene	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	m-Xylene & p-Xylene	<5	µg/L	5	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Methyl tert-butyl ether	<1	µg/L	1	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Chloromethane	<5	µg/L	5	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Ethylbenzene	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Xylenes, Total	<10	µg/L	10	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Chloroform	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Vinyl chloride	<5	µg/L	5	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Vinyl acetate	<25	µg/L	25	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Trichlorofluoromethane	<5	µg/L	5	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Trichloroethene	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	trans-1,3-Dichloropropene	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	trans-1,2-Dichloroethene	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	n-Butylbenzene	<5	µg/L	5	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Toluene	<5	µg/L	5	UJ

**TABLE 3-1**  
**SUMMARY OF QUALIFIED DATA RESULTS**  
**JULY THROUGH OCTOBER 2023**  
**EASTSIDE GROUNDWATER MONITORING EVENTS (DATASET 77)**  
**CLARK COUNTY, NEVADA**  
**(Page 2 of 3)**

Field Sample ID	Lab Sample ID	Method	Analysis Date	Analyte	Result	Unit	PQL	Qualifier
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Tetrachloroethene	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	tert-Butylbenzene	<5	µg/L	5	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Styrene	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	sec-Butylbenzene	<5	µg/L	5	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	o-Xylene	<5	µg/L	5	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Naphthalene	<5	µg/L	5	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	N-Propylbenzene	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Chloroethane	<5	µg/L	5	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Chlorobromomethane	<5	µg/L	5	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	1,3,5-Trimethylbenzene	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	1,2-Dichloropropane	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	1,2-Dichloroethane	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	1,2-Dichlorobenzene	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	1,2-Dibromo-3-Chloropropane	<5	µg/L	5	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	1,2,4-Trimethylbenzene	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	1,2,4-Trichlorobenzene	<5	µg/L	5	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	1,2,3-Trichloropropane	<10	µg/L	10	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	1,2,3-Trichlorobenzene	<5	µg/L	5	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	1,1-Dichloropropene	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	1,1-Dichloroethene	<5	µg/L	5	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	1,1-Dichloroethane	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	1,1,2-Trichloroethane	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	1,1,2,2-Tetrachloroethane	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	1,1,1-Trichloroethane	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	1,3-Dichlorobenzene	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Chlorodibromomethane	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	1,3-Dichloropropane	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	2,2-Dichloropropane	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Chlorobenzene	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Carbon tetrachloride	<5	µg/L	5	UJ

**TABLE 3-1**  
**SUMMARY OF QUALIFIED DATA RESULTS**  
**JULY THROUGH OCTOBER 2023**  
**EASTSIDE GROUNDWATER MONITORING EVENTS (DATASET 77)**  
**CLARK COUNTY, NEVADA**  
**(Page 3 of 3)**

Field Sample ID	Lab Sample ID	Method	Analysis Date	Analyte	Result	Unit	PQL	Qualifier
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Carbon disulfide	<5	µg/L	5	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Bromomethane	<10	µg/L	10	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Bromoform	<5	µg/L	5	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Bromobenzene	<5	µg/L	5	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Benzene	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	Acetone	<20	µg/L	20	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	4-Methyl-2-pentanone (MIBK)	<10	µg/L	10	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	4-Isopropyltoluene	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	4-Chlorotoluene	<5	µg/L	5	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	2-Hexanone	<10	µg/L	10	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	2-Chlorotoluene	<5	µg/L	5	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	2-Butanone (MEK)	<10	µg/L	10	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	1,4-Dichlorobenzene	<2	µg/L	2	UJ
TB_7/6/2023	550-204417-3	SW8260B	07/18/23	1,1,1,2-Tetrachloroethane	<5	µg/L	5	UJ
TB_7/5/2023	550-204355-1	SW8260B	07/14/23	Vinyl chloride	<5	ug/L	5	UJ
AA-20R_7/7/2023	550-204464-8	SW8260B	07/18/23	Chloroform	37	µg/L	2	J
ES-5_7/7/2023	550-204464-4	SW8260B	07/18/23	Chloroform	29	µg/L	2	J
MCF-01B_7/12/2023	550-204748-5	SW8260B	07/18/23	Chloroform	9.8	µg/L	2	J
MCF-16C_10/2/2023	550-208643-5	E904.0	10/25/23	Radium-228	0.746	pCi/L	1	J
AA-08_7/13/2023	550-204810-3	E200.8	07/18/23	Arsenic	2.9	µg/L	0.5	J
AA-08(FD)_7/13/2023	550-204810-4	E200.8	07/18/23	Arsenic	2.7	µg/L	0.5	J

ID - identification

PQL - practical quantitation limit

FD - Field Duplicate

EB - equipment blank

µg/L - microgram per liter

pCi/L - picoCuries per liter

J - estimated value

+ Result is biased high

- Result is biased low

UJ - non-detect estimated quantitation limit

APPENDIX A

LABORATORY REPORTS, DATA VALIDATION REPORTS, AND  
ELECTRONIC DATABASE (on DVD)



## MEMO

TO	Ron Sahu
FROM	Sandra Mulhearn
DATE	23 January 2024
REFERENCE	0719904.01
SUBJECT	Data Review of BRC Eastside 2023 Groundwater Monitoring Samples: Eurofins Phoenix Data Packages 550-204355-1, 550-204417-1, 550-204464-1, 550-204546-1, 550-204681, 550-204748-1, 550-204810-1, 550-204886-1, 550-208433-1, and 550-208643-1.

The data quality was assessed, and any necessary qualifiers were applied following the United States Environmental Protection Agency (USEPA) *National Functional Guidelines for Organic Superfund Methods Data Review*, November 2020; USEPA *National Functional Guidelines for Inorganic Superfund Methods Data Review*, November 2020; Nevada Division of Environmental Protection (NDEP) *Supplemental Guidance on Data Validation*, March and April 2009; NDEP *Guidance on Qualifying Data due to Blank Contamination for the BRC*, January 2012; and *Standard Operating Procedure 40*, BRC, ERM, and MWH 2009.

## CHAIN-OF-CUSTODY DISCREPANCIES

The container label for sample POD-8R did not match the chain-of-custody (COC) in data package 550-204546-1. The lab changed the COC per the client.

## PRESERVATION EVALUATION

The sample shipments were received at the laboratory within the method-prescribed temperature preservation requirements of less than 6 degrees Celsius (°C) with one exception. Samples in data package 550-204417-1 were received at 9.4°C. Volatile organic compound (VOC) samples were qualified as estimated with a low bias (J-/UJ). The other requested methods do not have temperature requirements and did not require qualification. The affected data are presented in Table 1.

All samples had the correct chemical preservation.

## HOLDING TIME EVALUATION

The samples were prepared and analyzed within the method-prescribed time period from the date of collection. No qualifications were necessary.

## BLANK EVALUATION

The method, field, equipment and trip blank sample results were non-detected for each of the target analytes with exceptions noted in Table 2. Results within 5 or 10 times the blank concentration were qualified as estimated (J).

## CALIBRATION VERIFICATION EVALUATION

The initial calibration verification (ICV) and continuing calibration verification (CCV) recoveries were within the laboratory's limits of acceptance, with two exceptions. Qualifications were not necessary for the high ICV/CCV recoveries as the analytes were not detected in the associated samples. The ICV/CCV outliers are presented in Table 3.

## BLANK SPIKE EVALUATION

The laboratory control sample and laboratory control sample duplicate recoveries and relative percent differences (RPDs) were within the laboratory's limits of acceptance, with the exceptions presented in Table 4. No data were qualified if an outlier could be verified by another in-control recovery. One sample result was qualified as estimated with a low bias (UJ).

## MATRIX SPIKE EVALUATION

The matrix spike and matrix spike duplicate recoveries and RPDs were within the laboratory's limits of acceptance for samples prepared from project samples, indicating acceptable laboratory accuracy and precision and minimal matrix interference.

## SURROGATE SPIKE EVALUATION

The surrogate recoveries were within acceptable limits with two exceptions shown in Table 5. No qualifications were required based on surrogate recoveries. No data were qualified based upon these high recoveries as the analytes were not detected in the sample.

## CARRIER GAS EVALUATION

The carrier gas recoveries were within acceptable limits. No qualifications were required based on carrier gas recoveries.

## LABORATORY DUPLICATE EVALUATION

The laboratory prepared several project samples as laboratory duplicates. The RPDs for detected analytes were within the control limits. The acceptable RPDs indicate acceptable laboratory precision.

## CALIBRATION RANGE EXCEEDANCES

The laboratory noted that the calibration range was exceeded in samples spiked for matrix spike analyses. Qualifiers are not added to matrix spike samples and the recoveries were within the acceptable range.

## FIELD DUPLICATE EVALUATION

Six field duplicate pairs were submitted. The field duplicate results and calculated RPDs are presented in Table 6. Data were compared to a precision limit of 50 percent RPD if the sample results were greater than five times the practical quantitation limit. No data were qualified.

## OVERALL ASSESSMENT

No results were rejected. All of the data, including qualified data, can be used for decision-making purposes; however, the limitations indicated by the applied qualifiers should be considered when using the data. The quality of the data generated during this investigation is acceptable for the preparation of technically defensible documents.

**Table 1**  
**Samples with Exceeded Preservation Requirements**  
**2024 Annual Groundwater Monitoring**  
**Eastside Groundwater**  
**Henderson, Nevada**

Lab Package	Sample ID	Method	Preservation Condition	Limits	Affected Analyte	ERM Qualifier
550-204417-1	DBMW-13	8260B	9.4°C	≤6°C	Chloroform	J- detects
		Metals (200.8 LL)	9.4°C	none	None for qualification	--
		Radium-226	9.4°C	none	None for qualification	--
		Radium-228	9.4°C	none	None for qualification	--
550-204417-1	GW-20230706	8260B	9.4°C	≤6°C	Chloroform	J- detects
		Metals (200.8 LL)	9.4°C	none	None for qualification	--
		Radium-226	9.4°C	none	None for qualification	--
		Radium-228	9.4°C	none	None for qualification	--
550-204417-1	TB-20230706	8260B	9.4°C	≤6°C	All	UJ Non-detect
550-204417-1	DBMW-14	Metals (200.8 LL)	9.4°C	none	None for qualification	--
		Radium-226	9.4°C	none	None for qualification	--
		Radium-228	9.4°C	none	None for qualification	--
550-204417-1	DBMW-15	Metals (200.8 LL)	9.4°C	none	None for qualification	--
550-204417-1	DBMW-16R	8260B	9.4°C	≤6°C	Chloroform	UJ Non-detect
		Metals (200.8 LL)	9.4°C	none	None for qualification	--
550-204417-1	MCF-12B	8260B	9.4°C	≤6°C	Chloroform	J- detects
		Metals (200.8 LL)	9.4°C	none	None for qualification	--
550-204417-1	AA-UW6	Metals (200.8 LL)	9.4°C	none	None for qualification	--

**Table 1**  
**Samples with Exceeded Preservation Requirements**  
**2024 Annual Groundwater Monitoring**  
**Eastside Groundwater**  
**Henderson, Nevada**

Lab Package	Sample ID	Method	Preservation Condition	Limits	Affected Analyte	ERM Qualifier
550-204417-1	DBMW-08R	8260B	9.4°C	≤6°C	Chloroform	J- detects
		Metals (200.8 LL)	9.4°C	none	None for qualification	--
		Radium-226	9.4°C	none	None for qualification	--
		Radium-228	9.4°C	none	None for qualification	--
550-204417-1	BEC-6	8260B	9.4°C	≤6°C	All	UJ Non-detect
		Metals (200.8 LL)	9.4°C	none	None for qualification	--

Notes:

≤ = less than or equal to

°C = degrees Celsius

J = detected results are estimated

J- = detected results are estimated with a low bias

UJ = non-detected, estimated report limit

**Table 2**  
**Blank and Associated Suspect Sample Detections**  
**2024 Annual Groundwater Monitoring**  
**Eastside Groundwater**  
**Henderson, Nevada**

Lab Package	Blank ID	Detected Analyte	Reported Blank Concentration	Blank Report Limit	Associated Sample	Associated Sample Result	Associated Sample Report Limit	Units	ERM Qualifier
550-204748-1	FB-20230712	Chloroform	4.5	2.0	MCF-01B	9.8	2.0	µg/L	J
	EB-20230712	Arsenic	0.84	0.50	None for qualification, sample result >10x	--	--	µg/L	--
550-204464-1	FB-20230707	Chloroform	7.6	2.0	ES-5	29	2.0	µg/L	J
					AA-20R	37	2.0	µg/L	J
550-204810-1	EB-20230713	Arsenic	1.2	0.50	AA-08	2.9	0.50	µg/L	J
					GW-20230713	2.7	0.50	µg/L	J
550-208433-1	FB-20230929	4-Methyl-2-Pentanone	1.2	10	None for qualification, sample result ND	--	--	µg/L	--
		n-Butylbenzene	0.73	5.0	None for qualification, sample result ND	--	--	µg/L	--
		Naphthalene	2.8	5.0	None for qualification, sample result ND	--	--	µg/L	--
		4-Isopropyltoluene	0.52	2.0	None for qualification, sample result ND	--	--	µg/L	--
		tert-Butylbenzene	0.63	5.0	None for qualification, sample result ND	--	--	µg/L	--
550-208643-1	EB-20231002	Radium-228	0.896	1.0	MCF-16C	0.746	1	pCi/L	J

Notes:  
-- = not applicable; associated data not affected  
>10x = greater than ten times  
µg/L = micrograms per liter  
pCi/L = picoCuries per liter  
EB = equipment blank  
FB = field blank  
ND = Not detected  
J = detected results are estimated

**Table 3  
 Calibration Verification Recoveries Outside of Acceptable Limits  
 2024 Annual Groundwater Monitoring  
 Eastside Groundwater  
 Henderson, Nevada**

Lab Package	ICV or CCV	Analyte	ICV/CCV Recovery	ICV/CCV Limits	Associated Sample	Reported Concentration	Units	ERM Qualifier
550-204417-1	CCV	Vinyl chloride	High	NR	None for qualification, samples ND	--	--	--
550-204464-1	CCV	Vinyl chloride	High	NR	None for qualification, samples ND	--	--	--
550-204886-1	ICV	1,1-Dichloroethene	High	NR	None for qualification, samples ND	--	--	--
		Dichlorodifluoromethane	High	NR	None for qualification, samples ND	--	--	--

Notes:

- = not applicable; associated data not affected
- CCV = continuing calibration verification
- ICV = initial calibration verification
- High = recovery above maximum acceptable limit
- ND = not detected
- NR = not reported

**Table 4**  
**Laboratory Control Sample Recoveries Outside of Acceptable Limits**  
**2024 Annual Groundwater Monitoring**  
**Eastside Groundwater**  
**Henderson, Nevada**

Lab Package	Spike Sample ID	Associated Sample	Analyte	Recovery (%)	Limit (%)	RPD	RPD Limit	Result	Units	ERM Qualifier
550-204355-1	LCS/D 550-303917/4	None for qualification, one passing recovery	1,1-Dichloroethene	Pass/77	80-120	Pass	23	--	--	--
		TB-20230705	Vinyl Chloride	78/73	80-120	Pass	27	ND	ug/L	UJ
550-204417-1/ 550-204464-1	LCS 550-304138/5	None for qualification, one passing recovery	Vinyl Chloride	Pass/123	80-120	Pass	27	--	--	--
550-204748-1	LCS/D 550-304109/4	None for qualification, one passing recovery	Dichlorodifluoromethane	152/Pass	29-150	Pass	30	--	--	--
		None for qualification, one passing recovery	Vinyl Chloride	125/Pass	80-120	Pass	27	--	--	--
550-204810-1	LCS/D 550-304109/4	None for qualification, one passing recovery	Dichlorodifluoromethane	152/Pass	29-150	Pass	30	--	--	--
		None for qualification, one passing recovery	Vinyl Chloride	125/Pass	80-120	Pass	27	--	--	--
550-204886-1	LCS/D 550-304196/4	None for qualification, one passing recovery	tert-Butylbenzene	Pass/139	64-139	Pass	20	--	--	--

Notes:

-- = not applicable; associated data not affected

LCS/LCSD = Laboratory control sample/ laboratory control sample duplicate

ND = Not detected

UJ = non-detected results are estimated

RPD = relative percent difference

**Table 5**  
**Surrogate Recovery Results out of Acceptable Limits**  
**2024 Annual Groundwater Monitoring**  
**Eastside Groundwater**  
**Henderson, Nevada**

Lab Package	Sample ID	Method	Surrogate	Recovery (%)	Limit (%)	Affected Analyte	Dilution Factor	ERM Qualifier
550-204810-1	AA-08	EPA 8081B	Tetrachloro-m-xylene	300	28-132	None for Qualification; all ND	1	--
550-204810-1	GW-20230713	EPA 8081B	Tetrachloro-m-xylene	297	28-132	None for Qualification; all ND	1	--

Notes:

-- = not applicable; associated data not affected

ND = not detected

**Table 6**  
**Field Duplicate Results and Calculated Relative Percent Differences**  
**2024 Annual Groundwater Monitoring**  
**Eastside Groundwater**  
**Henderson, Nevada**

Lab Package	Primary/Duplicate Sample ID	Analyte	Concentration		Report Limit		Units	RPD <50%	ERM Qualifier
			Sample	Duplicate	Sample	Duplicate			
550-204417-1	DBMW-13/GW-20230706	Chloroform	48	51	2.0	2.0	µg/L	6.1	--
		Arsenic	44	42	0.50	0.50	µg/L	4.7	--
550-204546-	AA-UW5/GW-20230710	Arsenic	24	23	0.50	0.50	µg/L	4.3	--
550-204681-1	DBMW-20/GW-20230711	Chloroform	12	19	2.0	2.0	µg/L	45	--
		Arsenic	49	49	0.50	0.50	µg/L	0	--
550-204748-	AA-UW1/GW-20230712	Arsenic	130	130	0.50	0.50	µg/L	0	--
550-204810-	AA-08/GW-20230713	Arsenic	2.9	2.7	0.50	0.50	µg/L	7.1	--
550-208433-	ES-39/GW-20230929	Arsenic	72	72	0.50	0.50	µg/L	0	--

Notes:

RPD = Relative percent difference

µg/L = Micrograms per liter