2019 Annual Groundwater Monitoring and Corrective Action Report LOS CCR Landfill

Leland Olds Station
Stanton, North Dakota

Basin Electric Power Cooperative

January 31, 2020
Project #60569675

Basin Electric Power Cooperative
Bismarck, North Dakota

Quality information

Prepared by	Checked by	Verified by	Approved by
Jason D. Lach	Sam Lillard	Dennis P. Connair, P.G.	Jason D. Lach

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Three	One	Kevin L. Solie, P.E., Basin Electric Power Cooperative

Prepared for:

Basin Electric Power Cooperative
Bismarck, North Dakota

Prepared by:

AECOM
525 Vine Street
Suite 1800
Cincinnati, OH 45202
aecom.com

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List of Acronyms

AECOM	AECOM Technical Services, Inc.
Basin	Basin Electric Power Cooperative
CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
cm/sec	centimeters per second
EPA	United States Environmental Protection Agency
FGD	Flue Gas Desulfurization
ft, amsl	feet above mean sea level
ft, bgs	feet below ground surface
GWMS	groundwater monitoring system
GWPSs	groundwater protection standards
LCL	lower control limits
LOS	Leland Olds Station
LPL	lower prediction limit
mg/L	milligrams per liter
RCRA	Resource Conservation and Recovery Act
SSI	statistically significant increase
SSL	statistically significant level
TDS	total dissolved solids
UCL	upper control limits
UPL	upper prediction limit

1. Introduction

On behalf of Basin Electric Power Cooperative, (Basin), AECOM Technical Services, Inc. (AECOM) has prepared the 2019 annual report documenting groundwater monitoring and corrective action for the Coal Combustion Residuals (CCR) Landfill at Basin's Leland Olds Station (LOS).

Chapter 1 provides background information on the power generating facility, the CCR unit(s) present at the facility, and the physical setting of the CCR unit(s), specifically with regard to groundwater conditions. Chapter 2 summarizes CCR groundwater monitoring activities conducted prior to 2019. Chapter 3 summarizes the groundwater monitoring and corrective action activities completed in 2019, and references attachments to this report that contain detailed documentation of those activities. Chapter 4 provides an evaluation of the condition of the groundwater monitoring system. Chapter 5 summarizes the groundwater sampling and analysis conducted during the reporting period. Chapter 6 reviews the methods and results of statistical analysis of the groundwater monitoring data. Chapter 7 presents a summary and conclusions from the CCR groundwater monitoring in 2019 and statistical analysis of the results. Chapter 8 lists references cited in this report.

Regulatory Background

The CCR rule became effective on October 19, 2015 and established standards for the disposal of CCR in landfills and surface impoundments (CCR units). In particular, the rule set forth groundwater monitoring and corrective action requirements for CCR units. The rule includes the requirement for an "annual groundwater monitoring and corrective action report" (annual report), due by January 31 of the year following the monitoring period. The annual report is intended to document the status of the groundwater monitoring and corrective action program for each CCR unit, summarize key actions completed in the previous year, and project key activities for the upcoming year. This report is the third annual report, and includes activities performed in calendar year 2019.

Facility Location and Operational History

LOS is a coal-based generating station located southeast of Stanton, North Dakota (**Figure 1**). The plant, which began operating in 1966 consists of two power generating units with a total power output capacity of 669 megawatts.

CCR produced at LOS includes fly ash, bottom ash, and flue gas desulfurization (FGD) waste.

CCR Unit Description

CCR is disposed at LOS in the following CCR unit:

- Glenharold CCR Landfill

The CCR Landfill is located approximately 3 miles southwest of the generating units and office complex, in an area of mine spoils (**Figure 1**). Basin reported that in 2019 the Landfill received 334,374 tons of solid waste, including fly ash, FGD waste, and a minor contribution of solid debris.

Physical Setting

The geology underlying the site includes mine spoils underlain by the Sentinel Butte Formation. This formation is comprised of continental deposits in excess of 1,000 feet thick, consisting of dense clay, weakly cemented sandstone, mudstone and lignite beds.

The topography of the surrounding areas consists of alluvial terraces and historic mine spoils. Much of the surrounding mined areas have historically been developed such that precipitation outside of the landfill footprint is generally redirected as surface water runoff toward drainage ditches and culverts that drain to Alderin Creek and ultimately to the Missouri River. Groundwater is recharged primarily through regional infiltration of melt water in the spring.

The base of the LOS CCR Landfill is underlain by 50 feet (approximately) of clay-rich mine spoil that overlies the Lower Sentinel Butte Formation. The 2016 AECOM drilling investigation did not penetrate to depths great enough to expose the lower portions of the Sentinel Butte.

The uppermost aquifer is found within the 6 to 9-foot unmined lignite bed located at depths ranging roughly from 86 to 125 feet below ground surface (ft, bgs). The potentiometric surface of the uppermost groundwater present within the lignite is approximately 1880 feet above mean sea level (ft, amsl) in the southern portion of the Landfill facility sloping generally north-northeast to 1843 ft., amsl on the northern side of the landfill. Aquifer testing completed at monitoring wells MW-2016-4, MW-2016-8, and MW-2016-10 indicates an average hydraulic conductivity of 1.52×10^{-5} centimeters per second (cm/sec) for the saturated materials.

2. CCR Groundwater Monitoring Activity Prior to 2019

The regulatory process for CCR groundwater monitoring and corrective action is established by 40 Code of Federal Regulations (CFR) Section 257.90 through 257.98. The process includes a phased approach to groundwater monitoring, leading (if applicable) to the establishment of groundwater protection standards (GWPSs) for each CCR unit. Exceedances of the GWPSs that are determined to be statistically significant can trigger requirements for additional groundwater characterization and corrective action assessment followed by corrective action implementation. The following paragraphs provide a brief summary of CCR groundwater monitoring activities performed prior to 2019. CCR groundwater monitoring activities performed in 2019 are discussed in Chapter 3.

Groundwater monitoring at LOS is performed using a network of monitoring wells that includes both wells to monitor background water quality that is not potentially influenced by the presence of the CCR unit, and wells placed at the downgradient boundary of the unit (**Figure 2**). The hydrostratigraphic positions of the CCR monitoring wells selected for sampling background and downgradient groundwater quality for the LOS CCR Landfill are summarized below:

CCR unit	Background wells	Downgradient wells
Landfill	MW-2016-3, MW-2016-4, MW-2016-5, MW-2016-6, MW-2016-8	MW-2016-2, MW-2016-9, MW-2016-10, MW-2016-11

Monitoring well MW-2016-1 is being excluded from the groundwater monitoring network due to insufficient water production to obtain a representative sample. However, it remains in place for collection of groundwater level measurements for potential inclusion in the potentiometric map evaluation as appropriate.

Baseline Detection Monitoring was initiated in August 2016, which involved sampling groundwater for Part 257 Appendix III and IV constituents over eight Baseline Detection Monitoring events.

Baseline Detection Monitoring events were performed in general accordance with procedures established in the site-specific Sampling and Analysis Plan (AECOM 2018a), which is included in the facility's Operating Record. The Sampling and Analysis Plan describes the procedures for equipment calibration, monitoring well water level measurement, monitoring well purging and sampling, sample custody, sample shipping, laboratory analysis and documentation requirements for each groundwater sample submitted. The results of the baseline monitoring and 2018 Detection monitoring at the LOS CCR Landfill were presented and discussed in the First and Second Annual Groundwater Monitoring and Corrective Action Reports, (AECOM 2018b and AECOM 2019).

If a statistically significant increase (SSI) of any Appendix III constituent relative to background conditions is detected in the downgradient monitoring wells, and cannot be demonstrated to be associated with a source other than the CCR unit, then the CCR rule requires that groundwater monitoring transition from Detection Monitoring phase to the Assessment Monitoring phase.

The results of the 2018 Detection Monitoring for the CCR unit at LOS identified no SSIs relative to background for Appendix III constituents. As a result, the LOS CCR Landfill groundwater monitoring system continued with Detection Monitoring in 2019.

3. CCR Groundwater Monitoring and Corrective Action Activities in 2019

This chapter summarizes the activities conducted at LOS in 2019 to comply with the groundwater requirements of the CCR rule:

- Groundwater Detection Monitoring activities
  - monitoring system evaluation
  - groundwater sampling
  - laboratory analysis
- Statistical analysis of the monitoring results

Further details concerning each of these activities are provided below.

Detection Monitoring Activities

Monitoring System Evaluation

As described in the CCR Groundwater Monitoring System Report (AECOM 2017), monitoring wells were installed around the CCR unit at LOS with appropriate total depth and placement of the well screen to: (1) facilitate collection of representative groundwater samples from the uppermost aquifer, and (2) accurately measure water table elevations to support evaluation of groundwater gradient and flow direction. All monitoring wells comprising the LOS CCR Landfill monitoring system were found to be in good condition during the Detection Monitoring events conducted in 2019.

Analysis of potentiometric surface maps constructed using the depth-to-groundwater measurements obtained during groundwater Detection Monitoring indicates the direction of groundwater flow is generally to the north-northeast, consistent with data collected during previous CCR program monitoring events, and supports the wells selected to represent background groundwater quality and the quality of groundwater downgradient of the CCR units.

Groundwater Sampling and Analysis

Basin continued implementation of the Detection Monitoring program for the CCR Landfill unit in 2019 based on the results of Baseline and Detection Monitoring as discussed in Chapter 2. The 2019 Detection Monitoring events for the CCR Landfill were conducted in May and October 2019, and included analysis of collected groundwater samples for the constituents listed in Part 257 Appendix III.

Detection Monitoring sampling and analysis in 2019 was performed in general accordance with procedures established in the Sampling and Analysis Plan (AECOM 2018a). The results are presented in **Attachment A**, which also includes potentiometric surface maps for the uppermost aquifer, inferred groundwater flow direction and estimated velocities, and tabulated summary of field measurements and laboratory analytical data.

Statistical Procedures and Analysis

Statistical analysis of the results of Detection Monitoring in 2018 indicated that no Appendix III constituents had SSIs over background (AECOM, 2019). These results prompted Basin to continue Detection Monitoring in 2019.

The Appendix III groundwater quality data were evaluated using an interwell approach that statistically compares constituent concentrations at downgradient monitoring wells to those present at background monitoring wells. For LOS Landfill, monitoring wells MW-2016-3, MW-2016-4, MW-2016-5, MW-2016-6, and MW-2016-8 are designated as the background wells because they are located upgradient of the Ash Landfill, whereas the remaining monitoring wells (MW-2016-2, MW-2016-9, MW-2016-10, and MW-2016-11) are located downgradient of the facility.

Prediction limits (i.e., parametric or nonparametric) were developed for each constituent, except boron, based on the frequency of non-detect values and whether the background data for that constituent exhibited a normal, lognormal, or nonparametric distribution. Analytical data from the background monitoring wells collected between September 2016 and October 2019 were used to develop an upper prediction limit (UPL) for the Appendix III background data at 95 percent confidence. A lower prediction limit (LPL) was also developed for pH which is a two-sided parameter. ProUCL Version 5.1 was used to store the data and run the statistical analyses. Analytical data from the downgradient monitoring wells for the same time period were compared to the UPL or LPL to identify SSIs over background. Mann-Kendall trend analysis was used to identify statistically significant increasing trends for constituents with SSIs. The results of the analyses, including the UPLs and LPL for pH, are provided in **Table 1**. The statistical analysis results indicate that calcium, chloride, fluoride, pH, sulfate and total dissolved solids (TDS) do not currently exhibit SSIs over background. pH also does not exhibit a SSI below background.

Boron was evaluated using a control chart (**Figure 3**). Upper and lower control limits were developed as the mean ± 4.5 standard deviations using the boron data for monitoring wells MW-2016-3, MW-2016-4, MW-2016-5, MW-2016-6, and MW-2016-8. Starks 1988; United States Environmental Protection Agency (EPA) 2009; ASTM 2017 suggest using 4.5 standard deviations to develop control limits for groundwater detection monitoring. **Figure 3** is a control chart that shows the background mean (0.254 milligrams per liter [mg/L]), upper and lower control limits (UCL and LCL), 0.334 and 0.173 mg/L, respectively, and the baseline and detection monitoring results for downgradient compliance wells MW-2016-2, MW-2016-9, MW-2016-10, and MW-2016-11 through May 2019. The results depicted on **Figure 3** indicate that boron does not exceed the UCL at monitoring wells MW-2016-2, MW-2016-9, MW-2016-10, and MW-2016-11 for any sampling event. Therefore, boron does not currently exhibit a SSI over background at any of the downgradient compliance wells.

Based on these results, assessment monitoring is not required at the LOS CCR Landfill, and Detection monitoring should continue in 2020.

4. General Information

The following subsections summarize any problems encountered in the LOS CCR program through 2019, any resolutions to those problems, if needed and upcoming actions planned for 2020.

Program Transitions 2019

There were no groundwater monitoring program transitions for the LOS CCR Landfill monitoring system in 2019.

Problems Encountered

No problems were encountered during the 2019 monitoring period.

Actions Planned for 2020

Basin plans on continuing the Detection Monitoring program for the LOS CCR Landfill in 2020. The Detection Monitoring program will include semi-annual groundwater sampling events and the required statistical evaluations.

5. Summary and Conclusions

AECOM, on behalf of Basin, conducted two rounds of CCR groundwater Detection Monitoring at the LOS CCR Landfill in 2019. The results were used to establish background groundwater quality for Appendix III constituents in the uppermost aquifer, identify appropriate UPLs, and determine whether any UPLs were exceeded at statistically significant levels (SSLs) downgradient of the CCR Landfill at LOS.

The statistical analysis results indicate that none of the Appendix III constituents had SSIs over background or statistically significant increasing trends in constituent concentrations. Based on these results, assessment monitoring is not required at the Leland Olds Station CCR Landfill. Detection Monitoring will continue at the site in 2020.

6. References

AECOM. 2017. CCR Groundwater Monitoring System Report, Leland Olds Station, Stanton, North Dakota. Basin Electric Power Cooperative. October 2017.

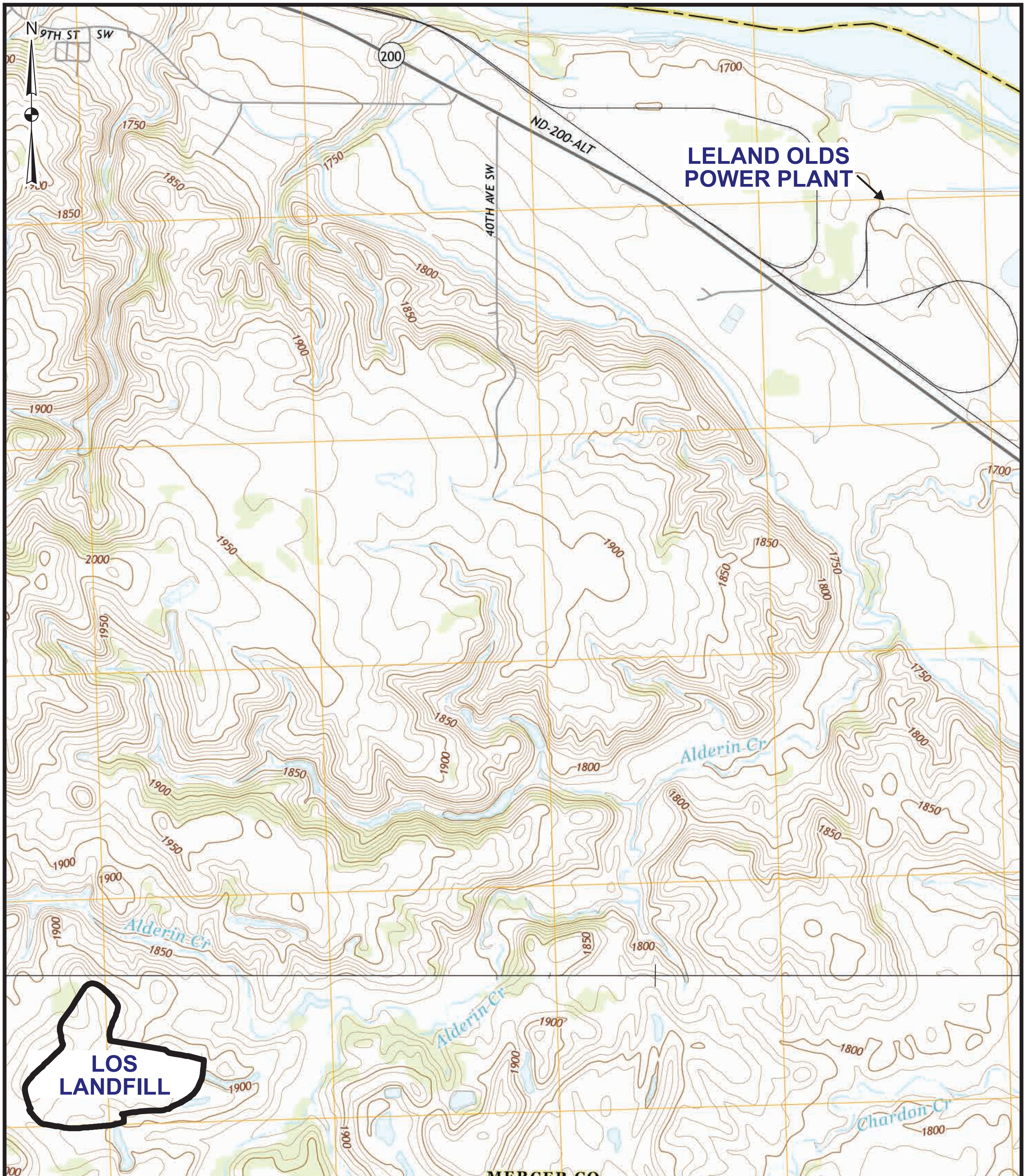
AECOM. 2018a. Sampling and Analysis Plan, CCR Monitoring Program, Leland Olds Station, Stanton, North Dakota. Basin Electric Power Cooperative. January 2018.

AECOM. 2018b. First Annual Groundwater Monitoring and Corrective Action Report, 2016-2017, Leland Olds Station, Stanton, North Dakota. Basin Electric Power Cooperative. January 2018.

AECOM. 2019. Second Annual Groundwater Monitoring and Corrective Action Report, 2018, Leland Olds Station, Stanton, North Dakota. Basin Electric Power Cooperative. January 2019.

U.S. Environmental Protection Agency. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities. Unified Guidance. EPA 530-R-09-007. March 2009. 884 pp.

Figures



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0 2,000 4,000

APPROXIMATE SCALE IN FEET

BASE MAP SOURCE: USGS 7½ minute topographic quadrangle maps: Hannover NE, North Dakota 2014; Stanton SE, North Dakota 2014.

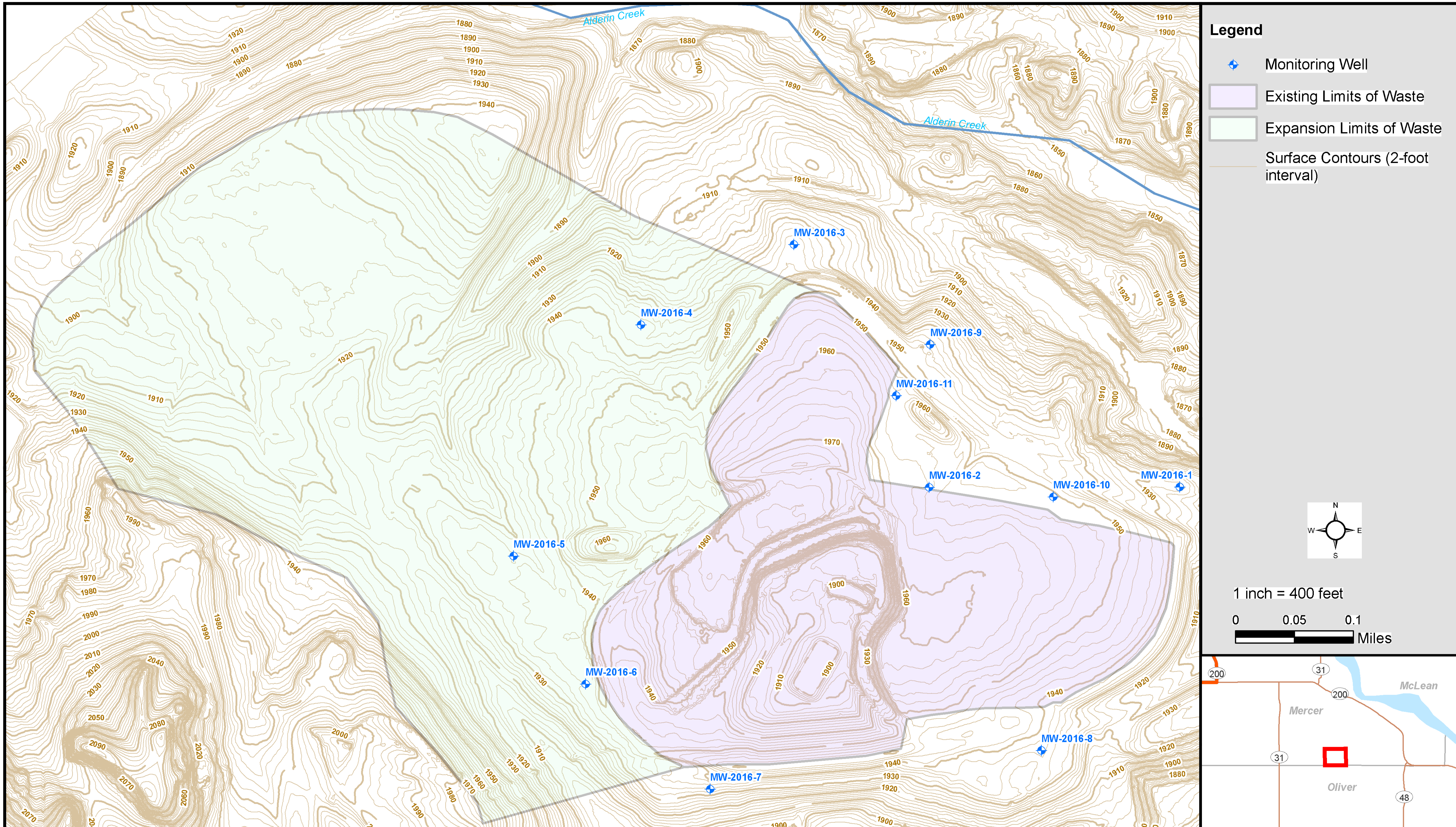
ND

Quadrangle Location

BASIN ELECTRIC POWER COOPERATIVE

FIGURE 1-1
SITE VICINITY MAP
LOS LANDFILL

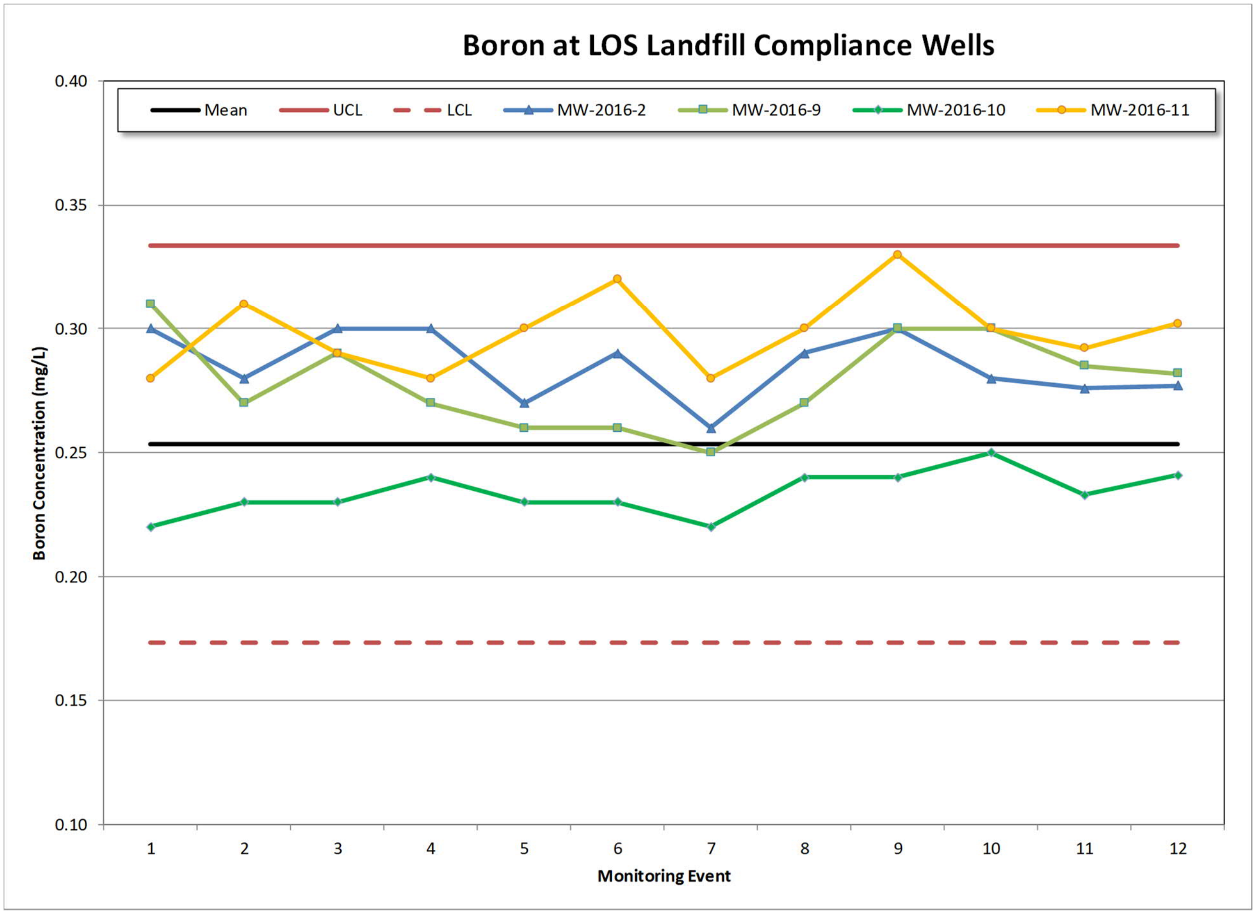
JOB NO. 60514340



BASIN ELECTRIC POWER COOPERATIVE
FIGURE 2
LOS CCR MONITORING WELL NETWORK

AECOM

Figure 3: Boron Control Chart



Table

Table 1. LOS CCR Landfill Statistical Analysis Methods and Background Upper Prediction Limits or Control Limits

Parameter (Units)	Number of Samples	Percent Nondetects	Normal or Lognormal Distribution?	Statistical Method	Background Prediction or Control Limit
Boron (mg/L)	60	0	Yes/Yes	Control Chart 99.9% UCL	0.334
Calcium (mg/L)	60	0	No/Yes	Parametric 95% UPL	21
Chloride (mg/L)	60	2	No/No	Nonparametric 95% UPL	39
Fluoride (mg/L)	60	42	No/No	Nonparametric 95% UPL	0.64
pH (std units)	70	0	No/No	Nonparametric 95% LPL/UPL	7.22/8.31
Sulfate (mg/L)	60	0	No/No	Nonparametric 95% UPL	742
TDS (mg/L)	60	0	No/No	Nonparametric 95% UPL	2,295

Note pH has both an LPL and UPL; all other constituents only have an UPL or UCL.
Mg/L= milligrams per liter
TDS = Total dissolved solids
UCL = Upper control limit
LPL = Lower control limit

Attachment A
Sampling and Analysis Report, 2019

2019 Sampling and Analysis Report
LOS Landfill CCR Monitoring Program

Leland Olds Station
Stanton, North Dakota

Basin Electric Power Cooperative

January 31, 2020

Prepared for:
Basin Electric Power Cooperative
Bismarck, North Dakota

Prepared by:
AECOM
525 Vine Street
Suite 1800
Cincinnati, OH 45202
aecom.com

Project #60569675

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List of Acronyms

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Basin	Basin Electric Power Cooperative
CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
EPA	United States Environmental Protection Agency
LOS	Leland Olds Station
QA/QC	Quality assurance/quality control

1. Introduction

On behalf of Basin Electric Power Cooperative (Basin), AECOM Technical Services, Inc. (AECOM) prepared this Coal Combustion Residuals (CCR) Groundwater Sampling and Analysis Report for the Basin Leland Olds Station (LOS) CCR Landfill. The objective of the report is to provide a description of the field and office activities performed in 2019 in support of the LOS CCR Landfill groundwater monitoring program.

This Sampling and Analysis Report was prepared to present the results of sampling and analysis of groundwater conducted for the monitoring requirements of the United States Environmental Protection Agency (EPA) CCR rule (Chapter 40 of the Code of Federal Regulations (CFR), Section 257.90 to 257.98). Specifically, the report presents the data collected for the two groundwater Detection Monitoring events conducted in 2019.

2. Groundwater Flow

As required by 40 CFR Section 257.93(c), groundwater elevations were measured in each well prior to purging, each time groundwater was sampled. The measurements, presented in **Table 1**, were used to create potentiometric surface maps for the uppermost aquifer for the Detection monitoring events. The resulting potentiometric surface maps were used to evaluate the direction of groundwater flow and hydraulic gradient for the subject CCR unit. **Figure 1** and **Figure 2** represent potentiometric surface maps constructed using measurements taken on May 20, 2019 and October 8, 2019 respectively and shows inferred groundwater flow directions for the CCR unit. These potentiometric maps illustrate groundwater flow patterns that are generally consistent with the patterns observed during previous monitoring events. Calculated groundwater flow velocities are summarized in **Table 2**.

Based on the groundwater flow conditions documented in this chapter, the relative functions of the monitoring wells employed in the LOS CCR Landfill groundwater monitoring system are as follows:

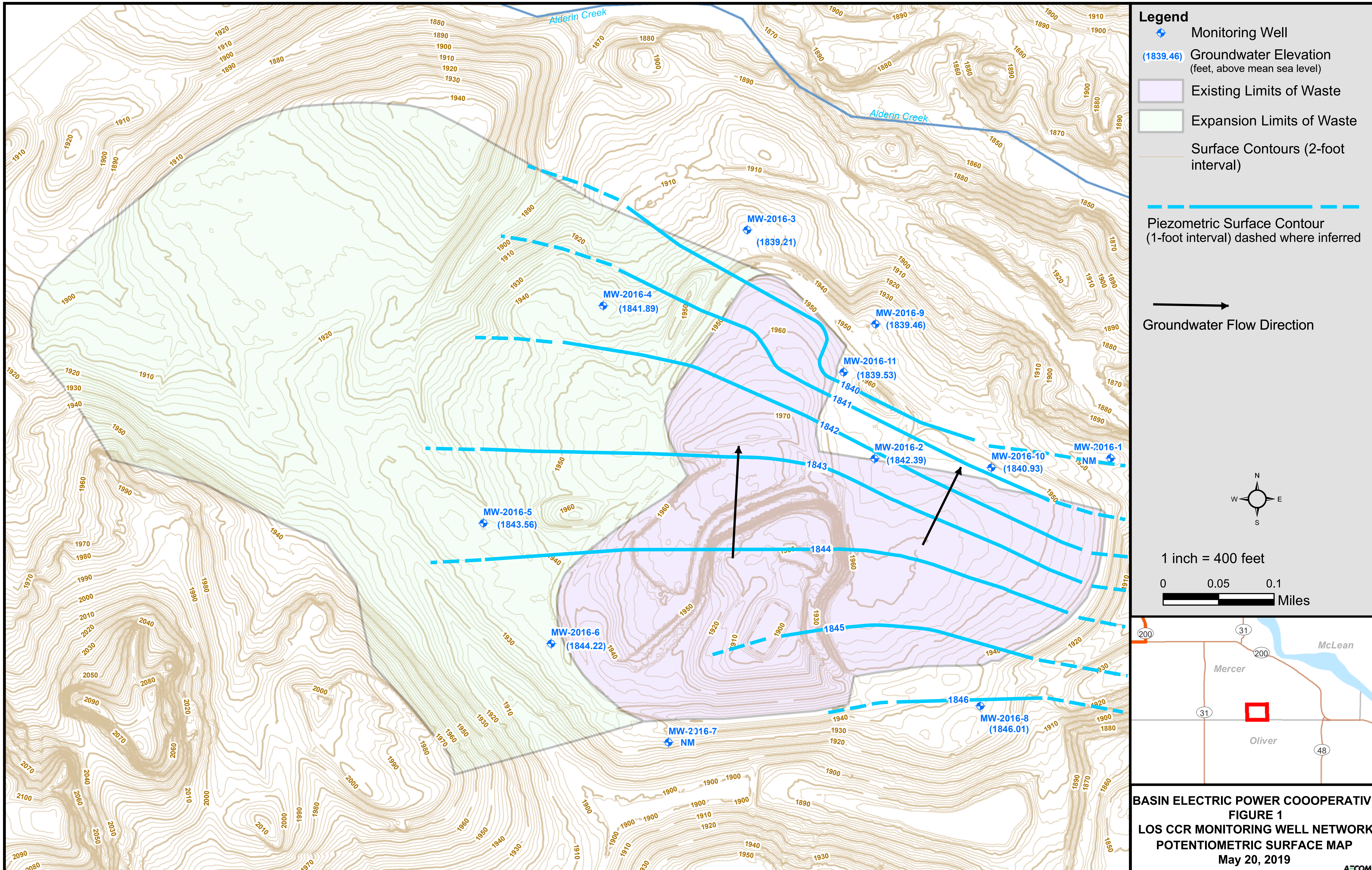
CCR unit	Background wells	Downgradient wells
Landfill	MW-2016-3, MW-2016-4, MW-2016-5, MW-2016-6, MW-2016-8	MW-2016-2, MW-2016-9, MW-2016-10, MW-2016-11

Monitoring wells MW-2016-1 is being excluded from the groundwater monitoring network due to insufficient water production to obtain a representative sample. However, it remains in place for collection of groundwater level measurements for potential use in potentiometric mapping as appropriate.

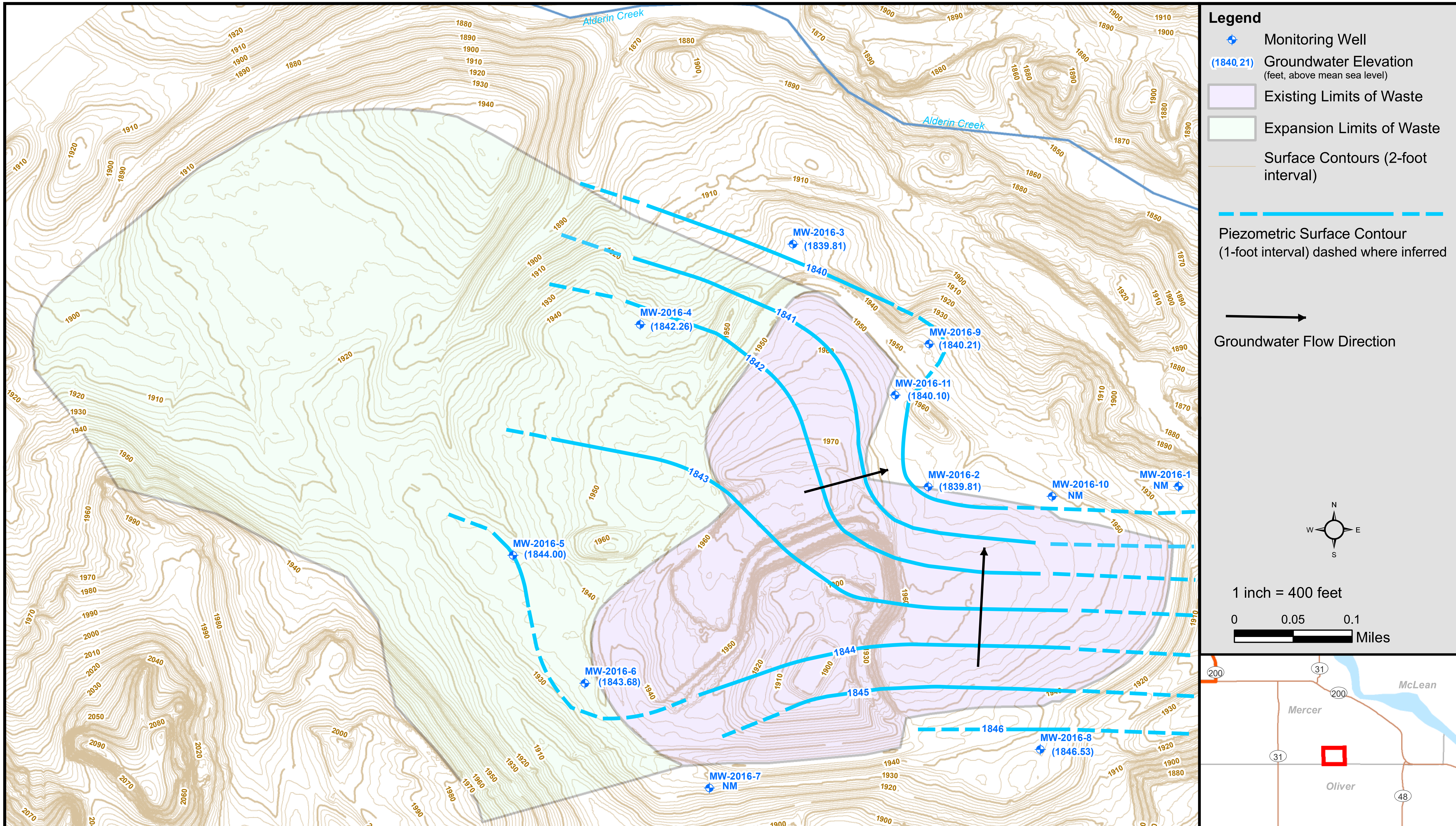
3. Groundwater Quality

The analytical testing laboratory provided reports presenting the results of laboratory analysis for each monitoring event. These laboratory reports are included in the operating record and were reviewed for completeness against the project-required methods and the chain-of-custody forms. Laboratory reports were also reviewed for holding times, and that the data was appropriately flagged based on the quality assurance/quality control (QA/QC) testing results provided by the laboratory. The results were compiled into summary form as presented in **Table 3**.

Figures



Legend
Monitoring Well
(1839.46) Groundwater Elevation
(feet, above mean sea level)
Existing Limits of Waste
Expansion Limits of Waste
Surface Contours (2-foot interval)
Piezometric Surface Contour
(1-foot interval) dashed where inferred
Groundwater Flow Direction
N
W
E
S
1 inch = 400 feet
0
0.05
0.1
Miles
Alderin Creek
Alderin Creek
MW-2016-3
(1839.21)
MW-2016-4
(1841.89)
MW-2016-9
(1839.46)
MW-2016-11
(1839.53)
MW-2016-2
(1842.39)
MW-2016-10
(1840.93)
MW-2016-1
NM
MW-2016-5
(1843.56)
MW-2016-6
(1844.22)
MW-2016-7
NM
MW-2016-8
(1846.01)
1840
1841
1842
1843
1844
1845
1846
McLean
Mercer
Oliver
200
31
200
31
48
BASIN ELECTRIC POWER COOOPERATIVE
FIGURE 1
LOS CCR MONITORING WELL NETWORK
POTENTIOMETRIC SURFACE MAP
May 20, 2019
AECOM



BASIN ELECTRIC POWER COOOPERATIVE
FIGURE 2
LOS CCR MONITORING WELL NETWORK
POTENTIOMETRIC SURFACE MAP
October 8, 2019

AECOM

Tables

TABLE 1

2019 GROUNDWATER MONITORING WATER LEVELS AND ELEVATIONS
CCR PROGRAM MONITORING WELLS
LELAND OLDS STATION CCR LANDFILL- STANTON ND

Well ID	Reference Elevation Top of Casing* (feet, NAVD 88)	May 20, 2019 Depth to Water (feet)	Groundwater Elevation (feet, NAVD 88)	October 8, 2019 Depth to Water (feet)	Groundwater Elevation (feet, NAVD 88)
MW-2016-2	1957.98	115.59	1842.39	114.99	1842.99
MW-2016-3	1939.88	100.67	1839.21	100.07	1839.81
MW-2016-4	1939.97	98.16	1841.81	97.71	1842.26
MW-2016-5	1937.54	93.98	1843.56	93.54	1844.00
MW-2016-6	1939.31	95.09	1844.22	95.63	1843.68
MW-2016-8	1939.361	93.3	1846.06	92.83	1846.53
MW-2016-9	1947.392	107.93	1839.46	107.18	1840.21
MW-2016-10	1953.315	112.39	1840.93	NR	NR
MW-2016-11	1956.73	117.2	1839.53	116.63	1840.10

TABLE 2

ESTIMATED GROUNDWATER GRADIENT AND SEEPAGE VELOCITY
CCR PROGRAM MONITORING WELLS

LELAND OLDS STATION CCR LANDFILL – STANTON, NORTH DAKOTA

Date of event	d_l (ft)	d_h (ft)	i (ft/ft)	n_e	K (ft/day)	v_s (ft/day)
9/27/2016	680	4	5.88E-03	0.185	0.0344	1.09E-03
2/13/2017	680	3	4.41E-03	0.185	0.0344	8.20E-04
3/16/2017	600	4	6.67E-03	0.185	0.0344	1.24E-03
4/11/2017	600	3	5.00E-03	0.185	0.0344	9.30E-04
5/17/2017	920	4	4.35E-03	0.185	0.0344	8.08E-04
6/20/2017	880	4	4.55E-03	0.185	0.0344	8.45E-04
7/18/2017	960	6	6.25E-03	0.185	0.0344	1.16E-03
8/21/2017	960	5	5.21E-03	0.185	0.0344	9.68E-04
4/18/2018	800	4	5.00E-03	0.185	0.0344	9.30E-04
10/11/2018	960	3	3.13E-03	0.185	0.0344	5.81E-04
5/20/2019	800	2	2.50E-03	0.185	0.034	4.65E-04
10/8/2019	1080	4	3.70E-03	0.185	0.034	6.89E-04

d_l = Horizontal separation between upgradient and downgradient locations perpendicular to potentiometric contours

d_h = Change in hydraulic head between upgradient and downgradient locations

i = Hydraulic gradient (change in elevation over distance)

n_e = Site average porosity of 18.5%

K = Site average hydraulic conductivity of 3.44 E-02 ft/day from slug and pumping tests at site

v_s = Seepage Velocity (ft/day)

Hydraulic Gradient Governing Equation[1] – $i = -{}^{dh}/_{dl}$

Seepage Velocity Governing Equation[2] – $v_s = {}^{-K * i}/_{n_e}$

1. In textbook form, d_h is a negative number as hydraulic head is reported as the higher value subtracted from the lower value.
2. Negative operation performed as in textbook form, hydraulic gradient is negative.

Table 3

2019 Analytical Results Summary
LOS Landfill CCR Monitoring Well Network
Leland Olds Station - Stanton, North Dakota

	Event	Date	Boron mg/L	Calcium mg/L	Chloride mg/L	Fluoride mg/L	pH SU	Sulfate mg/L	Dissolved mg/L
			Appendix III Constituents						
MW-2016-2	2019_05_May	5/20/19	0.276	9.1	13.6 J	< 2.50 U	< -9999	389	1890 H
MW-2016-3	2019_05_May	5/20/19	0.244	5.6	37.3	0.314 J	7.66	47.6	1510 H
MW-2016-4	2019_05_May	5/20/19	0.237	5.8	20.2	0.31 J	7.83	377	1770 H
MW-2016-5	2019_05_May	5/20/19	0.246	9.09	8.35 J	< 2.50 U	7.53	607	1890 H
MW-2016-6	2019_05_May	5/20/19	0.27	8.49	6.77 J	< 2.50 U	7.46	734	2030 H
MW-2016-8	2019_05_May	5/20/19	0.254	12.4	9.6 J	< 2.50 U	7.94	742	1910 H
MW-2016-9	2019_05_May	5/20/19	0.285	6.83	23.3	< 2.50 U	7.26	244	1800 H
MW-2016-10	2019_05_May	5/20/19	0.233	5.65	16.2	< 2.50 U	7.61	327	1780 H
MW-2016-10 Dup	2019_05_May	5/20/19	0.236	5.72	16.2	< 2.50 U		326	1710 H
MW-2016-11	2019_05_May	5/20/19	0.292	6.71	24.2	< 2.50 U	7.64	266	1680 H
MW-2016-2	2019_10_Oct	10/8/19	0.277 B	9.21	13.7	0.476 J	7.8	360 H	1820
MW-2016-3	2019_10_Oct	10/8/19	0.263 B	5.38	36.7	0.622	8	47.2	1520
MW-2016-4	2019_10_Oct	10/8/19	0.232 B	5.36	20.5	0.641	8.22	337 H	1760
MW-2016-5	2019_10_Oct	10/8/19	0.255 B	7.35	7.28	0.584	7.69	615 H	1890
MW-2016-6	2019_10_Oct	10/8/19	0.266 B	7.93	6.38	0.428 J	7.87	688 H	2040
MW-2016-8	2019_10_Oct	10/8/19	0.259 B	12.2	9.13	0.353 J	8.08	691 H	11000
MW-2016-9	2019_10_Oct	10/8/19	0.282 B	6.69	22.3	0.503	7.79	215 H	1790
MW-2016-10	2019_10_Oct	10/9/19	0.241 B	5.97	16.2	0.615	8.66	300	1670
MW-2016-10 Dup	2019_10_Oct	10/9/19	0.245 B	6.06	15.4	0.567		327 H	1660
MW-2016-11	2019_10_Oct	10/9/19	0.302 B	6.58	22.6	0.52	7.76	247	1670

TDS = Total Dissolved Solids
mg/L = milligrams per liter
S.U. = Standard units
pCi/L = picoCurie/liter
J = Estimated concentration below reporting limit
H = Sample was prepped or analyzed beyond the specified holdilng time