



2018 Annual Groundwater Monitoring and Corrective Action Report

CCR Annual Monitoring Report

Hoot Lake Plant

Fergus Falls, Minnesota

Prepared for
Otter Tail Power Company

January 2019

2018 CCR Annual Groundwater Monitoring and Corrective Action Report

Hoot Lake Plant
Fergus Falls, Minnesota

January 2019

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Acronyms

Acronym	Description
CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
EPA	Environmental Protection Agency
OTP	Otter Tail Power Company
SSI	Statistically Significant Increase

1.0 Introduction

Otter Tail Power Company (OTP) operates Hoot Lake Plant, a coal-fired generation unit in Fergus Falls, Minnesota (Figure 1). Coal combustion residuals (CCR) from plant operations are placed in an on-site landfill, referred to as the Ash Landfill. The Ash Landfill is required to comply with the provisions of the US Environmental Protection Agency (EPA) CCR Rule (40 CFR Parts 257 and 261 Disposal of Coal Combustion Residuals From Electric Utilities) for existing CCR landfills. The vicinity of the CCR unit (Ash Landfill) is shown on Figure 1.

This 2018 Annual Groundwater Monitoring and Corrective Action Report (Annual Report) describes the monitoring program and results for the Ash Landfill at the Hoot Lake Plant (Site).

1.1 Purpose

As stated in Section §257.90(e), the purpose of the Annual Report is to:

- Document the status of monitoring and corrective action program for the CCR unit
- Summarize key actions completed
- Describe any problems encountered
- Discuss actions to resolve the problems
- Project key activities for the upcoming year

1.2 Status of the Groundwater Monitoring and Corrective Action Program

The 2017 Annual Groundwater Monitoring and Corrective Action Report, Hoot Lake Plant (Barr, 2018) documented the results of the baseline groundwater monitoring. The evaluation of groundwater monitoring data for statistically significant increases over background levels for constituents listed in Appendix III from the CCR Rule began on October 17, 2017 and continued in 2018..

1.3 CCR Rule Requirements

This Annual Report was prepared in accordance with the requirements of §257.90(e) of the CCR Rule, as outlined in Table 1.

Table 1 CCR Rule Requirements

CCR Rule Reference	Content Required in Report	Location
§257.90(e)(1)	Map showing the CCR unit and all monitoring wells that are part of the groundwater monitoring system	Section 2.1.1 Documentation; see Figure 1
§257.90(e)(2)	Discuss any new or decommissioned monitoring wells	Section 2.1.2 Changes to Monitoring System
§257.90(e)(3)	Provide the number and date groundwater samples were collected, and the monitoring (i.e., detection or assessment)	Section 2.1.1 Documentation
§257.90(e)(4)	Discuss any transition between monitoring programs	Section 2.2 Monitoring and Analytical Results
§257.90(e)(5)	Other information specified in §257.90 through §257.98	Other information not required in this report.

2.0 Groundwater Monitoring and Corrective Action Program

This section documents the status of the groundwater monitoring and corrective action program for the CCR unit for 2018. The groundwater monitoring system is described in Section 2.1, the monitoring and analytical results are described in Section 2.2, key actions completed and problems encountered are described in Section 2.3, and key activities planned for 2018 are described in Section 2.4.

2.1 Groundwater Monitoring System

2.1.1 Documentation

Figure 1 shows an aerial image of the CCR unit and all background (or upgradient) and downgradient monitoring wells, including the well identification numbers, which are part of the groundwater monitoring program, as required by §257.90(e)(1). Further details on the monitoring system and the CCR unit monitoring wells can be found in the *Groundwater Monitoring System Report, Ash Landfill, Hoot Lake Plant* (Barr, 2016) on the plants website.

2.1.2 Changes to Monitoring System

The CCR groundwater monitoring system was unchanged in 2018.

2.2 Monitoring and Analytical Results

CCR Rule §257.94(b) requires collection of semiannual detection monitoring samples. The monitoring wells were sampled twice in 2018. During each event, all of the detection monitoring wells were successfully sampled per the CCR Groundwater Sampling and Analysis Plan (Carlson McCain, 2017). The samples were analyzed for the constituents listed in appendix III of Part 257. Dates of sampling are reported on the field data sheets and analytical laboratory reports in Appendix A.

2.3 Key Actions Completed/Problems Encountered

The following key actions were completed for the groundwater monitoring program through 2018:

- Spring monitoring was conducted in April. Results indicated potential statistically significant increases of pH in the sample from well S-14R and fluoride in the sample from well S-2A. Results of resampling conducted in June showed no statistically significant increases.
- Fall monitoring was conducted in October. Results indicated a potential statistically significant increase of total dissolved solids in the sample from well S-10R. Results of resampling conducted in November showed no statistically significant increases.

No problems were encountered during the report period.

2.4 Key Activities for Upcoming Year

The following key groundwater monitoring program activities are planned for 2019:

- Evaluate analytical results from the 2019 semiannual detection monitoring events for statistically significant increases (SSIs) according to the Groundwater Statistical Analysis Plan (McCain, 2017).
- Continue the groundwater monitoring program in accordance with the CCR rule.

3.0 References

Barr Engineering Co., January 2018. 2017 Annual Groundwater Monitoring and Corrective Action Report - CCR Annual Monitoring Report, Hoot Lake Plant, Fergus Falls, Minnesota. Prepared for Otter Tail Power Company.

Barr Engineering Co., 2016. Groundwater Monitoring System Report, Ash Landfill, Hoot Lake Plant. Prepared for Otter Tail Power Company.

Carlson McCain, 2017. CCR Groundwater Sampling and Analysis Plan, Ash Landfill – Hoot Lake Plant, Fergus Falls, Minnesota. Prepared for Otter Tail Power Company.

Figures



- CCR Monitoring Program Well
- Existing CCR Landfill (LD002)

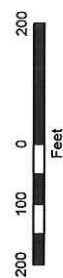


Figure 1
 SITE MAP AND CCR
 GROUNDWATER
 MONITORING SYSTEM
 Hoot Lake Ash Landfill
 Otter Tail Power Company
 Fergus Falls, MN

Appendices

Appendix A

Laboratory Reports and Field Sheets



MINNESOTA VALLEY TESTING LABORATORIES, INC.

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FINAL REPORT COMPLETION DATE: 18 May 18/18

Date Reported: 18 May 2018

MEGAN LISBURG
OTTER TAIL POWER CO
PO BOX 496
FERGUS FALLS MN 56538-0496

Work Order #: 31-0156
Account #: 006106
PO #: 48679

Project Name: HOOT LAKE PLANT

[Signature] 18 May 18
Field Service Manager/Date Reviewed
[Signature] 18 May 18
Chemistry Lab Manager/Date Reviewed
[Signature] 18 May 2018
Quality Assurance Director/Date Reviewed

RL = Reporting Limits
NQ = Not Present, Qualitative Only
PQ = Present, Qualitative Only
ND = Not Determined

All data for this report has been approved by MVTL Laboratory Management.

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.



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CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG
 OTTER TAIL POWER CO
 PO BOX 496
 FERGUS FALLS MN 56538-0496

Report Date: 18 May 2018
 Lab Number: 18-A18659
 Work Order #: 31-0156
 Account #: 006106
 Sample Matrix: GROUNDWATER
 Date Sampled: 18 Apr 2018 14:55
 Sampled By: MVTL FIELD PERSONNEL
 Date Received: 19 Apr 2018 13:20
 PO #: 48679

Project Name: HOOT LAKE PLANT

Sample Description: S-2A

Temp at Receipt: 0.2C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					24 Apr 18	JMS
Water Digestions					24 Apr 18	JMS
pH, Field	7.26	units	1.00	I-1586-85	18 Apr 18 14:55	BMW
pH	* 7.0	units	1.0	SM 4500 H+ B-2000	20 Apr 18 12:02	DK
Sulfate	116 @	mg/L	5.0	ASTM D516-07	26 Apr 18 9:43	AKF
Chloride	< 3	mg/L	3	SM 4500 Cl E	20 Apr 18 13:54	KCJ
Solids, Total Dissolved	638	mg/L	10	SM 2540 C-97	23 Apr 18 11:53	MCS
Calcium	139.0	mg/L	0.500	SW6010C	26 Apr 18 11:39	RMV
Boron	0.129	mg/L	0.100	SW6010C	26 Apr 18 11:39	RMV
Fluoride	0.590 @	mg/L	0.020	EPA 300.0	30 Apr 18 12:45	RMV

* Holding Time Exceeded

RL = Reporting Limit

Analyses performed under our Minnesota Department of Health Accreditation conform to the current TDI standards.

The reporting limit was elevated for any analyte requiring a dilution as coded below:

@ = Due to sample matrix

|| = Due to concentration of other analytes

! = Due to sample quantity

+ = Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 MI LAB # 999447680 ND MICRO # 1013-M ND RW/EM # R-040

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.



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CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG
OTTER TAIL POWER CO
PO BOX 496
FERGUS FALLS MN 56538-0496

Report Date: 18 May 2018
Lab Number: 18-A18660
Work Order #: 31-0156
Account #: 006106
Sample Matrix: GROUNDWATER
Date Sampled: 18 Apr 2018 12:05
Sampled By: MVTL FIELD PERSONNEL
Date Received: 19 Apr 2018 13:20
PO #: 48679

Project Name: HOOT LAKE PLANT

Sample Description: S-3A-R

Temp at Receipt: 0.2C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					24 Apr 18	JMS
Water Digestions					24 Apr 18	JMS
pH, Field	7.34	units	1.00	I-1586-85	18 Apr 18 12:05	BS
pH	* 7.1	units	1.0	SM 4500 H+ B-2000	20 Apr 18 12:02	DK
Sulfate	81.1 @	mg/L	5.0	ASTM D516-07	26 Apr 18 9:43	AKF
Chloride	12.5	mg/L	3.0	SM 4500 Cl E	20 Apr 18 13:54	KCJ
Solids, Total Dissolved	570	mg/L	10	SM 2540 C-97	23 Apr 18 11:53	NCS
Calcium	107.0	mg/L	0.500	SW6010C	26 Apr 18 11:39	RMV
Boron	0.120	mg/L	0.100	SW6010C	26 Apr 18 11:39	RMV
Fluoride	0.210 @	mg/L	0.020	EPA 300.0	30 Apr 18 12:45	RMV

* Holding Time Exceeded

RL = Reporting Limit

Analyses performed under our Minnesota Department of Health Accreditation conform to the current TNI standards.

The reporting limit was elevated for any analyte requiring a dilution as coded below:

@ = Due to sample matrix || = Due to concentration of other analytes
! = Due to sample quantity * = Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND NW/EN # R-040

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CERTIFICATE of ANALYSIS - CCR

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Report Date: 18 May 2018
 Lab Number: 18-A18661
 Work Order #: 31-0156
 Account #: 006106
 Sample Matrix: GROUNDWATER
 Date Sampled: 18 Apr 2018 14:57
 Sampled By: MVTL FIELD PERSONNEL
 Date Received: 19 Apr 2018 13:20
 PO #: 48679

Project Name: HOOT LAKE PLANT

Sample Description: S-10R

Temp at Receipt: 0.2C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					24 Apr 18	JMS
Water Digestions					24 Apr 18	JMS
pH, Field	7.21	units	1.00	I-1586-85	18 Apr 18 14:57	BS
pH	* 7.1	units	1.0	SM 4500 H+ B-2000	20 Apr 18 12:02	DK
Sulfate	76.8 @	mg/L	5.0	ASTM D516-07	26 Apr 18 9:43	AKF
Chloride	11.5	mg/L	3.0	SM 4500 Cl E	20 Apr 18 13:54	KCJ
Solids, Total Dissolved	553	mg/L	10	SM 2540 C-97	23 Apr 18 11:53	MCS
Calcium	114.0	mg/L	0.500	SW6010C	26 Apr 18 11:39	RMV
Boron	< 0.1	mg/L	0.1	SW6010C	26 Apr 18 11:39	RMV
Fluoride	0.210 @	mg/L	0.020	EPA 300.0	30 Apr 18 12:45	RMV

* Holding Time Exceeded

RL = Reporting Limit
 Analyses performed under our Minnesota Department of Health Accreditation conform to the current TNI standards.
 The reporting limit was elevated for any analyte requiring a dilution as coded below:
 @ = Due to sample matrix # = Due to concentration of other analytes
 ! = Due to sample quantity + = Due to internal standard response
 CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447600 ND MICRO # 1013-M ND RW/DW # R-040

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CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG
 OTTER TAIL POWER CO
 PO BOX 496
 FERGUS FALLS MN 56538-0496

Report Date: 18 May 2018
 Lab Number: 18-A18662
 Work Order #: 31-0156
 Account #: 006106
 Sample Matrix: GROUNDWATER
 Date Sampled: 18 Apr 2018 12:55
 Sampled By: MVTL FIELD PERSONNEL
 Date Received: 19 Apr 2018 13:20
 PO #: 48679

Project Name: HOOT LAKE PLANT

Sample Description: S-13

Temp at Receipt: 0.2C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					24 Apr 18	JMS
Water Digestions					24 Apr 18	JMS
pH, Field	7.45	units	1.00	I-1586-85	18 Apr 18 12:55	BS
pH	* 7.1	units	1.0	SM 4500 H+ B-2000	20 Apr 18 12:02	DK
Sulfate	60.2 @	mg/L	5.0	ASTM D516-07	26 Apr 18 9:43	AKF
Chloride	7.5	mg/L	3.0	SM 4500 Cl E	20 Apr 18 13:54	KCJ
Solids, Total Dissolved	502	mg/L	10	SM 2540 C-97	23 Apr 18 11:53	MCS
Calcium	116.0	mg/L	0.500	SW6010C	26 Apr 18 11:39	RMV
Boron	< 0.1	mg/L	0.1	SW6010C	26 Apr 18 11:39	RMV
Fluoride	0.340 @	mg/L	0.020	EPA 300.0	30 Apr 18 12:45	RMV

* Holding Time Exceeded

RL = Reporting Limit
 Analyses performed under our Minnesota Department of Health Accreditation conform to the current THI standards.
 The reporting limit was elevated for any analyte requiring a dilution as coded below:
 @ = Due to sample matrix || = Due to concentration of other analytes
 ! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447690 ND MICRO # 1013-M ND GR/DR # R-040

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CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG
 OTTER TAIL POWER CO
 PO BOX 496
 FERGUS FALLS MN 56538-0496

Report Date: 18 May 2018
 Lab Number: 18-A18663
 Work Order #: 31-0156
 Account #: 006106
 Sample Matrix: GROUNDWATER
 Date Sampled: 18 Apr 2018 14:05
 Sampled By: MVTL FIELD PERSONNEL
 Date Received: 19 Apr 2018 13:20
 PO #: 48679

Project Name: HOOT LAKE PLANT

Sample Description: S-14R

Temp at Receipt: 0.2C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					24 Apr 18	JMS
Water Digestions					24 Apr 18	JMS
pH, Field	7.53	units	1.00	I-1586-85	18 Apr 18 14:05	BS
pH	* 7.2	units	1.0	SM 4500 H+ B-2000	20 Apr 18 12:02	DK
Sulfate	84.8 @	mg/L	5.0	ASTM D516-07	26 Apr 18 9:43	AKF
Chloride	5.5	mg/L	3.0	SM 4500 Cl E	20 Apr 18 13:54	KCJ
Solids, Total Dissolved	582	mg/L	10	SM 2540 C-97	23 Apr 18 11:53	MCS
Calcium	131.0	mg/L	0.500	SW6010C	26 Apr 18 11:39	RMV
Boron	< 0.1	mg/L	0.1	SW6010C	26 Apr 18 11:39	RMV
Fluoride	0.280 @	mg/L	0.020	EPA 300.0	30 Apr 18 12:45	RMV

* Holding Time Exceeded

RL = Reporting Limit

Analyses performed under our Minnesota Department of Health Accreditation conform to the current TNI standards.

The reporting limit was elevated for any analyte requiring a dilution as coded below:

@ = Due to sample matrix
 ! = Due to sample quantity

= Due to concentration of other analytes
 + = Due to internal standard response

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CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG
 OTTER TAIL POWER CO
 PO BOX 496
 FERGUS FALLS MN 56538-0496

Report Date: 18 May 2018
 Lab Number: 18-A18664
 Work Order #: 31-0156
 Account #: 006106
 Sample Matrix: GROUNDWATER
 Date Sampled: 18 Apr 2018 13:55
 Sampled By: MVTL FIELD PERSONNEL
 Date Received: 19 Apr 2018 13:20
 PO #: 48679

Project Name: HOOT LAKE PLANT

Sample Description: S-51

Temp at Receipt: 0.2C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					24 Apr 18	JMS
Water Digestions					24 Apr 18	JMS
pH, Field	7.41	units	1.00	I-1586-85	18 Apr 18 13:55	BMW
pH	* 7.2	units	1.0	SM 4500 H+ B-2000	20 Apr 18 12:02	DK
Sulfate	51.6 @	mg/L	5.0	ASTM D516-07	26 Apr 18 10:00	AKF
Chloride	18.9	mg/L	3.0	SM 4500 Cl E	20 Apr 18 14:11	KCJ
Solids, Total Dissolved	525	mg/L	10	SM 2540 C-97	23 Apr 18 11:53	MCS
Calcium	114.0	mg/L	0.500	SW6010C	26 Apr 18 12:08	RMV
Boron	< 0.1	mg/L	0.1	SW6010C	26 Apr 18 12:08	RMV
Fluoride	0.400 @	mg/L	0.020	EPA 300.0	30 Apr 18 12:45	RMV

* Holding Time Exceeded

RL = Reporting Limit

Analyses performed under our Minnesota Department of Health Accreditation conform to the current TH1 standards.

The reporting limit was elevated for any analyte requiring a dilution as coded below:

@ = Due to sample matrix

! = Due to sample quantity

|| = Due to concentration of other analytes

+ = Due to internal standard response

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CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG
OTTER TAIL POWER CO
PO BOX 496
FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-52

Report Date: 18 May 2018
Lab Number: 18-A18665
Work Order #: 31-0156
Account #: 006106
Sample Matrix: GROUNDWATER
Date Sampled: 18 Apr 2018 14:35
Sampled By: MVTI FIELD PERSONNEL
Date Received: 19 Apr 2018 13:20
PO #: 48679

Temp at Receipt: 0.2C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					24 Apr 18	JMS
Water Digestions					24 Apr 18	JMS
pH, Field	7.34	units	1.00	I-1586-85	18 Apr 18 14:35	BMW
pH	* 7.2	units	1.0	SM 4500 H+ B-2000	20 Apr 18 12:02	DK
Sulfate	60.3 @	mg/L	5.0	ASTM D516-07	26 Apr 18 10:00	AKF
Chloride	15.3	mg/L	3.0	SM 4500 Cl E	20 Apr 18 14:11	KCJ
Solids, Total Dissolved	492	mg/L	10	SM 2540 C-97	23 Apr 18 11:53	MCS
Calcium	108.0	mg/L	0.500	SW6010C	26 Apr 18 12:08	RMV
Boron	< 0.1	mg/L	0.1	SW6010C	26 Apr 18 12:08	RMV
Fluoride	0.250 @	mg/L	0.020	EPA 300.0	30 Apr 18 12:45	RMV

* Holding Time Exceeded

RL = Reporting Limit
Analyses performed under our Minnesota Department of Health Accreditation conform to the current THL standards.
The reporting limit was elevated for any analyte requiring a dilution as coded below:
0 = Due to sample matrix # = Due to concentration of other analytes
1 = Due to sample quantity + = Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447600 ND MICRO # 1013-M ND WR/DN # R-040

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.



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INORGANIC & METALS ANALYSES:

No problems were encountered with these analyses.

Quality Control Report

Lab IDs: 18-A18659 to 18-A18665

Project: HOOT LAKE PLANT CCR

Work Order: 201831-0156

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD Limit (<=)	Known Rec (%)	Known % Rec Limits	Method Blank
Boron mg/L	1.000	95	85-115	1.00	18A18651q	0.274	1.350	108	1.350	1.370	110	1.5	96	90-110	<0.1
	1.000	94	85-115	1.00	18A18657q	<0.1	0.980	98	0.980	1.040	104	5.9	97	90-110	<0.1
				1.00	18A18663q	<0.1	1.040	104	1.040	1.030	103	1.0	99	90-110	
Calcium mg/L	50.00	97	85-115	50.0	18A18657q	42.20	88.40	92	88.40	91.80	99	3.8	101	90-110	<0.5
	50.00	97	85-115	50.0	18A18663q	131.0	177.0	92	177.0	172.0	82	2.9	103	90-110	<0.5
Chloride mg/L	-	-	-	60.0	18-A18680	129	193	107	193	192	105	0.5	102	90-110	<3
	-	-	-	60.0	18-A18633	6.9	71.1	107	71.1	70.5	106	0.8	105	90-110	<3
	-	-	-	60.0	18-A18663	5.5	69.4	106	69.4	69.8	107	0.6	102	90-110	<3
	-	-	-	60.0	18-A18356	31.1	96.7	109	96.7	96.3	109	0.4	102	90-110	<3

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Page: 2 of 4

Quality Control Report

Lab IDs: 18-A18659 to 18-A18665

Project: HOOT LAKE PLANT CCR

Work Order: 201831-0156

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Rec %	Matrix Spike Result	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Fluoride mg/L	-	-	-	0.20	18-A19124	0.700	80	0.860	0.860	0.860	80	0.0	10	106	90-110	< 0.02
	-	-	-	10.0	a18938qc	0.110	86	8.76	8.76	8.86	88	1.1	10	103	90-110	
	-	-	-	1.00	a18659qc	0.590	100	1.59	1.59	1.46	87	8.5	10			

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Quality Control Report

Lab IDs: 18-A18659 to 18-A18665

Project: HOOT LAKE PLANT CCR

Work Order: 201831-0156

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
pH units	-	-	-	-	-	-	-	-	9.5	9.5	-	0.0	2.5	101	90-110	-
	-	-	-	-	-	-	-	-	7.1	7.1	-	0.0	2.5	101	90-110	-
	-	-	-	-	-	-	-	-	7.2	7.1	-	1.4	2.5	101	90-110	-
	-	-	-	-	-	-	-	-	8.4	8.4	-	0.0	2.5	101	90-110	-
Solids, Total Dissolved mg/L	-	-	-	-	-	-	-	-	323	318	-	1.6	10	96	85-115	< 10
	-	-	-	-	-	-	-	-	490	498	-	1.6	10	93	85-115	< 10
	-	-	-	-	-	-	-	-	553	563	-	1.8	7			
	-	-	-	-	-	-	-	-	1680	1680	-	0.0	7			

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Quality Control Report

Lab IDs: 18-A18659 to 18-A18665

Project: HOOT LAKE PLANT CCR

Work Order: 201831-0156

Page: 4 of 4

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Rec %	Matrix Spike Result	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD Limit (<=)	Known Rec (%)	Known % Rec Limits	Method Blank
Sulfate mg/L	-	-	-	500	18-A18394	53.1	91	509	68-132	509	515	92	1.2	95	80-120	< 5
	-	-	-	50.0	18-A18636	< 5	94	46.9	68-132	46.9	45.2	90	3.7	92	80-120	< 5
	-	-	-	500	18-A18663	84.8	104	607	68-132	607	593	102	2.3	95	80-120	< 5
	-	-	-	50.0	18-A18667	< 5	88	44.2	68-132	44.2	45.6	91	3.1	95	80-120	< 5
	-	-	-	50.0	18-A18658	9.2	101	59.7	68-132	59.7	60.6	103	1.5			

Approved by: 

1126 North Front Street
Phone: 800 782 3557

Field Service Chain of Custody Record

<u>Project Name:</u>	Offer Tail Power Co. Hoof Lake Plant	<u>Project Type:</u>	CCR	<u>Name of Samplers:</u>	Ben wort Ben stubbs
<u>Report To:</u>	Offer Tail Power Company	<u>Carbon Copy:</u>	Barr Engineering	<u>Quote Number:</u>	
<u>Attn:</u>	Paul Vulkanich	<u>Attn:</u>		<u>Work Order Number:</u>	
<u>Address:</u>	P.O. Box 496	<u>Address:</u>		<u>Lab Numbers:</u>	
<u>Phone:</u>	Fergus Falls, MN 56038-0496				
	218-739-8349				

[illegible]

Comments: CCR wells

Samples Relinquished By: <u>Ben Wolf</u>		Samples Received By: <u>A. Judd</u>	
Date: <u>17 Apr 18</u>	Time: <u>1320</u>	Date: <u>19 Apr 18</u>	Time: <u>1320</u>
Samples Relinquished into: <u>Fridge</u>		Temp: <u>2</u> <u>784</u>	
Other: <u>Log in Cart</u>		Temp: <u>0.2C</u>	
Samples Relinquished By:		Samples Received By:	
Date:	Time:	Date:	Time:
Deliver: <u>Samplers</u>	Other:	Seal Number(s) - If Used	
Transpo: <u>Ambient</u>	Ice	Other:	Seals intact? <u>Yes</u> <u>No</u>

Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

Groundwater Assessment

Sampling Personnel:

Ben Wolf

Site: Ottertail Power Co./Hoot Lake

Facility ID: SW-211

Date: 18 Apr 18

Unique Station ID:

Sample ID: S-2A

Well Condition

Well Locked? ☒ Yes ☐ No
Well Labeled? ☒ Yes ☐ No
Casing Straight? ☒ Yes ☐ No

Protective Posts? ☒ Yes ☐ No
State ID Tag? ☒ Yes ☐ No
Grout Seal Intact? ☒ Yes ☐ No

Repairs Necessary:

Well Information

Well Depth: 79.61

Constructed Depth: 79.63

Casing Diameter: 2"

Water Level Before Purge: 76.99

Well Volume: .43 Gallons

Well Casing Elevation: 1273.776

Static Water Elevation: 1196.79

Previous Static: 1196.76

Water Level After Sample: 76.99

Measurement Method: ☒ Elec. W/L ☐ Steel Tape

Sampling Information

Weather Conditions: Temp: 43 Wind: N@15 Sky: cloudy

Sampling Method: Grundfos Bladder SS/T Disp. Bailer Whale Grab Other:

Dedicated Equipment: ☒ Yes ☐ No

Pumping Rate: .25 gpm

Well Purged Dry? Yes ☒ No

Time Pump Began: 1449 am / pm

Time Purged Dry? —

Time of Sampling: 1455 am / pm

Duplicate Sample? Yes ☒ No

Sample EH: 14.4

Sample Appearance: General: Clear Color: No 10 Phase: No 10 Odor: No 10

Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
1451	7.31	1161	8.95	2.00	0.0	.50	1	
1453	7.28	1162	8.93	1.96	0.0	1.00	2	
1455	7.26	1162	8.90	1.71	0.0	1.50	3	
							4	
							5	

Stabilized? ☒ Yes ☐ No

Amount Water Removed: 1.50 Gallons

Comments:

Exceptions to Protocol:

Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

Groundwater Assessment

Sampling Personnel:

Ben Wolf

Site: Ottertail Power Co./Hoot Lake

Facility ID: SW-211

Date: 18 Apr 18

Unique Station ID: 814830

Sample ID: S-51

Well Condition

Well Locked? ☒ Yes ☐ No

Well Labeled? ☒ Yes ☐ No

Casing Straight? ☒ Yes ☐ No

Protective Posts? ☐ Yes ☒ No

State ID Tag? ☒ Yes ☐ No

Grout Seal Intact? ☒ Yes ☐ No

Repairs Necessary:

Well Information

Well Depth: 55.60

Constructed Depth: 55.60

Casing Diameter: 2"

Water Level Before Purge: 50.00

Well Volume: .91 Gallons

Well Casing Elevation: 1286.904

Static Water Elevation: 1236.904

Previous Static: 1237.37

Water Level After Sample: 50.00

Measurement Method: ☒ Elec. WLL ☐ Steel Tape

Sampling Information

Weather Conditions: Temp: 42 Wind: NO 10 Sky: cloudy

Sampling Method: Grundfos ☒ Bladder SS/T ☐ Disp. Baller ☐ Whale ☐ Grab ☐ Other:

Dedicated Equipment: ☒ Yes ☐ No

Well Purged Dry? ☐ Yes ☒ No

Time Purged Dry?

Duplicate Sample? ☐ Yes ☒ No ID: -

Pumping Rate: .25 gpm

Time Pump Began: 1335 am / ☒ pm

Time of Sampling: 1355 am / ☒ pm

Sample EH: -64.4

Sample Appearance: General: clear Color: none Phase: light sed. Odor: Earthy

Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
<u>1339</u>	<u>7.47</u>	<u>986</u>	<u>8.91</u>	<u>2.09</u>	<u>40.5</u>	<u>1</u>	<u>1</u>	
<u>1343</u>	<u>7.42</u>	<u>1004</u>	<u>8.69</u>	<u>2.13</u>	<u>17.3</u>	<u>2</u>	<u>2</u>	
<u>1347</u>	<u>7.42</u>	<u>1007</u>	<u>8.61</u>	<u>2.14</u>	<u>6.8</u>	<u>3</u>	<u>3</u>	
<u>1351</u>	<u>7.41</u>	<u>1007</u>	<u>8.58</u>	<u>2.21</u>	<u>4.7</u>	<u>4</u>	<u>4</u>	
<u>1355</u>	<u>7.41</u>	<u>1007</u>	<u>8.56</u>	<u>2.23</u>	<u>2.8</u>	<u>5</u>	<u>5</u>	

Stabilized? ☒ Yes ☐ No

Amount Water Removed: 5 Gallons

Comments:

Exceptions to Protocol:

Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

Groundwater Assessment

Sampling Personnel:

Ben Wolf

Site: Ottertail Power Co./Hoot Lake

Facility ID: SW-211

Date: 18 Apr 18

Unique Station ID:

Sample ID: S-52

Well Condition

Well Locked? ☒ Yes ☐ No
Well Labeled? ☒ Yes ☐ No
Casing Straight? ☒ Yes ☐ No

Protective Posts? ☒ Yes ☐ No
State ID Tag? ☒ Yes ☐ No
Grout Seal Intact? ☒ Yes ☐ No

Repairs Necessary:

Well Information

Well Depth: 88.30

Well Casing Elevation: 1286.623

Constructed Depth: 88.30

Static Water Elevation: 1215.93

Casing Diameter: 2"

Previous Static: 1216.07

Water Level Before Purge: 70.69

Water Level After Sample: 70.69

Well Volume: 2.87 Gallons

Measurement Method: ☒ Elec. WL ☐ Steel Tape

Sampling Information

Weather Conditions: Temp: 42 Wind: N@10 Sky: cloudy

Sampling Method: Grundfos ☒ Bladder SS/ ☐ Disp. Baller ☐ Whale ☐ Grab ☐ Other:

Dedicated Equipment: ☒ Yes ☐ No

Pumping Rate: .25 gpm

Well Purged Dry? ☒ Yes ☐ No

Time Pump Began: 1359 am / ☒ pm

Time Purged Dry? -

Time of Sampling: 1435 am / ☒ pm

Duplicate Sample? Yes ☒ No ☐ ID: -

Sample EH: -95.2

Sample Appearance: General: clear Color: none Phase: none Odor: Sulfurous

Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
<u>1411</u>	<u>7.35</u>	<u>966</u>	<u>8.50</u>	<u>.56</u>	<u>2.2</u>	<u>3</u>	<u>1</u>	
<u>1423</u>	<u>7.34</u>	<u>966</u>	<u>8.50</u>	<u>.56</u>	<u>0.0</u>	<u>6</u>	<u>2</u>	
<u>1435</u>	<u>7.34</u>	<u>966</u>	<u>8.49</u>	<u>.55</u>	<u>0.0</u>	<u>9</u>	<u>3</u>	
							<u>4</u>	
							<u>5</u>	

Stabilized? ☒ Yes ☐ No

Amount Water Removed: 9 Gallons

Comments:

Exceptions to Protocol:

Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517



Groundwater Assessment

Sampling Personnel:

Ben Stubbs

Site: Ottertail Power Co./Hoot Lake

Facility ID: SW-211

Date: 18 Apr 18

Unique Station ID: 806342

Sample ID: S-14R

Well Condition

Well Locked? ☒ Yes ☐ No

Well Labeled? ☒ Yes ☐ No

Casing Straight? ☒ Yes ☐ No

Protective Posts? ☒ Yes ☐ No

State ID Tag? ☒ Yes ☐ No

Grout Seal Intact? ☒ Yes ☐ No

Repairs Necessary:

Well Information

Well Depth: 87.11

Constructed Depth: 70.86

Casing Diameter: 2"

Water Level Before Purge: 79.55

Well Volume: 1.23 Gallons

Well Casing Elevation: 1280.61

Static Water Elevation: 1201.06

Previous Static: 1201.36

Water Level After Sample: 79.73

Measurement Method: ☒ Elec. WLI ☐ Steel Tape

Sampling Information

Weather Conditions: Temp: 45 Wind: NE - 11 Sky: Sunny

Sampling Method: Grundfos ☒ Bladder SST ☐ Disp. Bailor ☐ Whale ☐ Grab ☐ Other:

Dedicated Equipment: ☒ Yes ☐ No

Well Purged Dry? Yes ☒ No ☐

Time Purged Dry:

Duplicate Sample? Yes ☒ No ☐ ID:

Pumping Rate: 0.25 gpm

Time Pump Began: 1340 am ☒ pm

Time of Sampling: 1405 am ☒ pm

Sample EH: 2.7

Sample Appearance: General: clear Color: none Phase: lt sediment Odor: slt sulfur

5' Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
1345	7.88	965	9.23	5.77	66.3	1.25	1	
1350	7.73	941	9.01	4.97	31.0	2.50	2	
1355	7.65	939	9.01	2.83	32.4	3.75	3	
1400	7.62	939	9.08	2.03	23.1	5.0	4	
1405	7.53	935	9.03	2.51	5.7	6.25	5	

Stabilized? Yes ☒ No ☐

Amount Water Removed: 6.25 Gallons

Comments:

Exceptions to Protocol:

CLR

Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517



Groundwater Assessment

Sampling Personnel:

Ben Strubbs

Site: Ottertail Power Co./Hoot Lake

Facility ID: SW-211

Date: 18 Apr 18

Unique Station ID: 632810

Sample ID: S-13

Well Condition

Well Locked? Yes No

Well Labeled? Yes No

Casing Straight? Yes No

Protective Posts? Yes No

State ID Tag? Yes No

Grout Seal Intact? Yes No

Repairs Necessary:

Well Information

Well Depth: 90.27

Constructed Depth: 90.19

Casing Diameter: 2"

Water Level Before Purge: 86.4

Well Volume: 0.69 Gallons

Well Casing Elevation: 1296.423

Static Water Elevation: 1210.41

Previous Static: 1210.73

Water Level After Sample: 86.11

Measurement Method: Elec. VLI Steel Tape

Sampling Information

Weather Conditions: Temp: 44

Wind: NE - 10

Sky: Fair

Sampling Method: Grundfos Bladder SST Disp. Baller Whale Grab Other:

Dedicated Equipment: Yes No

Pumping Rate: 0.25 gpm

Well Purged Dry? Yes No

Time Pump Began: 1246 am (pm)

Time Purged Dry?

Time of Sampling: 1255 am (pm)

Duplicate Sample? Yes No ID: ---

Sample EH: 78-9

Sample Appearance: General: Clear Color: none Phase: none Odor: none

Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
<u>1249</u>	<u>7.51</u>	<u>827</u>	<u>9.19</u>	<u>1.95</u>	<u>0</u>	<u>0.75</u>	<u>1</u>	
<u>1252</u>	<u>7.51</u>	<u>832</u>	<u>9.19</u>	<u>1.78</u>	<u>0</u>	<u>1.50</u>	<u>2</u>	
<u>1255</u>	<u>7.45</u>	<u>834</u>	<u>9.20</u>	<u>1.50</u>	<u>0</u>	<u>2.25</u>	<u>3</u>	
							<u>4</u>	
							<u>5</u>	

Stabilized? Yes No

Amount Water Removed: 2.25 Gallons

Comments:

Exceptions to Protocol:

CLR

Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517



Groundwater Assessment

Sampling Personnel:

Ben Stribbs

Site: Ottertail Power Co./Hoot Lake

Facility ID: SW-211

Date: 18 Apr 18

Unique Station ID: 806341

Sample ID: S-10R

Well Condition

Well Locked? ☒ Yes ☐ No
Well Labeled? ☒ Yes ☐ No
Casing Straight? ☒ Yes ☐ No

Protective Posts? ☒ Yes ☐ No
State ID Tag? ☒ Yes ☐ No
Grout Seal Intact? ☒ Yes ☐ No

Repairs Necessary:

Well Information

Well Depth: 80-62

Constructed Depth: 57.00

Casing Diameter: 2"

Water Level Before Purge: 72-32

Well Volume: 1.35 Gallons

Well Casing Elevation: 1281.47

Static Water Elevation: 1209.15

Previous Static: 1209.27

Water Level After Sample: 72-32

Measurement Method: Elec. W/L Steel Tape

Sampling Information

Weather Conditions: Temp: 45 Wind: N-11 Sky: fair

Sampling Method: Grundfos ☒ Bladder SS/T ☐ Disp. Baller ☐ Whale ☐ Grab ☐ Other:

Dedicated Equipment: ☒ Yes ☐ No

Well Purged Dry? ☒ Yes ☐ No

Time Purged Dry?

Duplicate Sample? ☒ Yes ☐ No ID: Duplicate

Pumping Rate: 0.25 gpm

Time Pump Began: 1433 am 1 pm

Time of Sampling: 1457 am 1 pm

Sample EH: 19.3

Sample Appearance: General: clear Color: none Phase: none Odor: none

Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
<u>1439</u>	<u>7.26</u>	<u>876</u>	<u>9.02</u>	<u>2.05</u>	<u>17.3</u>	<u>1.50</u>	<u>1</u>	
<u>1445</u>	<u>7.24</u>	<u>874</u>	<u>8.99</u>	<u>1.51</u>	<u>6.9</u>	<u>3.0</u>	<u>2</u>	
<u>1451</u>	<u>7.23</u>	<u>875</u>	<u>9.00</u>	<u>1.26</u>	<u>3.1</u>	<u>4.5</u>	<u>3</u>	
<u>1457</u>	<u>7.21</u>	<u>875</u>	<u>8.98</u>	<u>1.12</u>	<u>0.5</u>	<u>6.0</u>	<u>4</u>	
							<u>5</u>	

Stabilized? ☒ Yes ☐ No

Amount Water Removed: 6.0 Gallons

Comments:

Exceptions to Protocol:

CLR

Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

Groundwater Assessment

Sampling Personnel:

Ben Stubbs

Site: Ottertail Power Co./Hoot Lake

Facility ID: SW-211

Date: 18 Apr 18

Unique Station ID: 674671

Sample ID: S-3A-R

Well Condition

Well Locked? ☒ Yes ☐ No

Well Labeled? ☒ Yes ☐ No

Casing Straight? ☒ Yes ☐ No

Protective Posts? ☒ Yes ☐ No

State ID Tag? ☒ Yes ☐ No

Grout Seal Intact? ☐ Yes ☒ No

Repairs Necessary:

Well Information

Well Depth: 78.40

Constructed Depth: 78.42

Casing Diameter: 2"

Water Level Before Purge: 68.56

Well Volume: 1.60 Gallons

Well Casing Elevation: 1271.562

Static Water Elevation: 1203.00

Previous Static: 1203.37

Water Level After Sample: 68.61

Measurement Method: Elec. W/L ☐ Steel Tape

Sampling Information

Weather Conditions: Temp: 40 Wind: NE - 9 Sky: partly cloudy

Sampling Method: ☐ Grundfos ☒ Bladder/SST ☐ Disp. Baller ☐ Whale ☐ Grab ☐ Other:

Dedicated Equipment: ☒ Yes ☐ No

Well Purged Dry? ☐ Yes ☒ No

Time Purged Dry?

Duplicate Sample? ☐ Yes ☒ No

ID:

Pumping Rate: 0.25 gpm

Time Pump Began: 1130 am / pm

Time of Sampling: 1205 am / pm

Sample EH: 91.7

Sample Appearance: General: clear Color: none Phase: none Odor: none

Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
1137	7.79	875	8.81	1.95	3.8	1.75	1	
1144	7.55	875	8.82	2.38	6.5	3.50	2	
1151	7.43	881	8.81	1.98	0	5.25	3	
1158	7.39	882	8.82	1.84	0	7.0	4	
1205	7.34	883	8.80	1.82	0	8.75	5	

Stabilized? ☒ Yes ☐ No

Amount Water Removed: 8.75 Gallons

Comments:

Exceptions to Protocol:

CLR

Hollen, Josh

From: Tim Portner <tportner@mvtl.com>
Sent: Monday, December 31, 2018 8:47 AM
To: Hollen, Josh
Subject: RE: Hoot Lake

*** This is an EXTERNAL email. DO NOT open attachments or click links in suspicious email. ***

Good morning Josh

Regular state samples are filtered and CCR samples are not filtered per your email February 13 2018.

Any other questions let me know

Thanks and Happy New Year

Tim Portner

Field Service Manager | Minnesota Valley Testing Laboratories, Inc.
1126 North Front Street | New Ulm, MN 56073 | Mobile 507-276-8089 | mvtl.com





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FINAL REPORT COMPLETION DATE: 24 Jul 18 AB

Date Reported: 5 Jul 2018

PAUL VUKONICH
OTTER TAIL POWER CO.
PO BOX 496
FERGUS FALLS MN 56538-0496

Work Order #: 31-0276
Account #: 006106
PO #: 48679

Project Name: HOOT LAKE PLANT

T. J. [Signature] 19 Aug 18
Field Service Manager/Date Reviewed

[Signature] 18 July 18
Chemistry Lab Manager/Date Reviewed

[Signature] 19 Jul 2018
Quality Assurance Director/Date Reviewed

RL = Reporting Limits
NQ = Not Present, Qualitative Only
PQ = Present, Qualitative Only
ND = Not Determined

All data for this report has been approved by MVTL Laboratory Management

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.



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CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH
OTTER TAIL POWER CO
PO BOX 496
FERGUS FALLS MN 56538-0496

Report Date: 5 Jul 2018
Lab Number: 18-A30168
Work Order #: 31-0276
Account #: 006106
Sample Matrix: GROUNDWATER
Date Sampled: 18 Jun 2018 12:48
Sampled By: MVTL FIELD PERSONNEL
Date Received: 18 Jun 2018 16:41
PO #: 48679

Project Name: HOOT LAKE PLANT

Sample Description: S-14R

Temp at Receipt: 0.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH, Field	7.03	units	1.00	I-1586-85	18 Jun 18 12:48	BMW

RL = Reporting Limit

Analyses performed under our Minnesota Department of Health Accreditation conform to the current TNI standards.
The reporting limit was elevated for any analyte requiring a dilution as coded below:

Q = Due to sample matrix # = Due to concentration of other analytes
I = Due to sample quantity + = Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.

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Quality Control Report

Lab ID: 18-A30167

Project: HOOT LAKE PLANT

Work Order: 201831-0276

Page: 1 of 1

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix		Matrix		Matrix		MSD/		MSD/		MSD/		MSD/		Known Rec (%)	Known % Rec Limits	Method Blank
						Spike Orig Result	Spike Rec %	Spike Result	Spike Rec %	Spike % Rec Limits	Dup Orig Result	Dup Result	Dup Limit (<)	Dup RPD	Dup RPD	Dup RPD	Dup Limit (<)	Dup RPD	Dup RPD			
Fluoride mg/L				1.00	a31282qc	0.120	1.17	105	75-125	1.17	1.16	104	0.9	10	99	90-110	< 0.02					

Approved by: 

1126 North Front Street
Phone: 800 782 3557

Fax: 507 359 2890

Phone: 800 782 3557

Field Service Chain of Custody Record

This is an exact copy of
the original document

By AD Date 18 Jun 18
pages 1-4

<u>Project Name:</u>	Otter Tail Power Co. Hoot Lake Plant	<u>Project Type:</u>	CCR
<u>Report To:</u>	Otter Tail Power Company	<u>Carbon Copy:</u>	Barr Engineering
<u>Attn:</u>	Paul Vukonich	<u>Attn:</u>	
<u>Address:</u>	P.O. Box 496 Fergus Falls, MN 56038-0496	<u>Address:</u>	
<u>Phone:</u>	218-739-8349	<u>Quote Number:</u>	
		<u>Work Order Number:</u>	31-0376
		<u>Lab Numbers:</u>	
		<u>Name of Samplers:</u>	Ben Wolf Dusty Ferguson

[illegible]

Comments: CCR wells

*SHR is Field PH only!
*SHA is Flowide only!

Samples Relinquished By:	Ben W.D.		Samples Received By:	A. Suder	
Date:	18 June 18	Time: 1641	Date:	18 June 18	Time: 1641
Samples Relinquished into: Fridge Log in Cart Other:					
Samples Relinquished By:			Samples Received By:		
Date:		Time:	Date:		Time:
Delivery:	(Samplers) Ambient Other:		Seal Number(s) - If Used		
Transport:	Ambient (Ice) Other:		Seals Intact? Yes No		

Tim Portner

Subject: FW: Summer monitoring at Hoot Lake

From: Hollen, Josh [mailto:jhollen@otpc.com]
Sent: Wednesday, May 30, 2018 10:01 AM
To: Tim Portner <tportner@mvtl.com>
Cc: Vukonich, Paul <pvukonich@otpc.com>
Subject: RE: Summer monitoring at Hoot Lake

Tim,

That will work. It is 2 wells that need to be resampled for the CCR. Treat it as a normal sampling event for the two wells, so GW level, purge and stabilization, good field notes, all the other stuff, you know the routine. Remember it's CCR so no field filtering.

The two wells we need to have resampled are monitoring well S-2A for fluoride, and monitoring well S-14R for pH. We will want a rush analysis for these two wells on the chain of custody.

Let me know if you have any questions.

Josh Hollen
Environmental Compliance Specialist
Otter Tail Power Company
(218) 739-8314

500 now for each

Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

Groundwater Assessment

Sampling Personnel:

Ben Wolt
Dusty Forsyth

Site: Ottertail Power Co./Hoot Lake

Facility ID: SW-211

Date: 18 June 18

Unique Station ID:

Sample ID: S-2A

Well Condition

Well Locked? ☒ Yes ☐ No

Well Labeled? ☒ Yes ☐ No

Casing Straight? ☒ Yes ☐ No

Repairs Necessary:

Protective Posts? ☒ Yes ☐ No

State ID Tag? ☒ Yes ☐ No

Grout Seal Intact? ☒ Yes ☐ No

Well Information

Well Depth: 79.61

Constructed Depth: 79.63

Casing Diameter: 2"

Water Level Before Purge: 76.28

Well Volume: 54 Gallons

Well Casing Elevation: 1273.776

Static Water Elevation: 1197.49

Previous Static: 1196.79

Water Level After Sample: 76.30

Measurement Method: ☒ Elec. W/L ☐ Steel Tape

Sampling Information

Weather Conditions: Temp: 76 Wind: SE @ 5 Sky: clear

Sampling Method: ☒ Grundfos ☒ Bladder S&T ☐ Disp. Bailer ☐ Whale ☐ Grab ☐ Other:

Dedicated Equipment: ☒ Yes ☐ No

Well Purged Dry? ☒ Yes ☐ No

Time Purged Dry? —

Duplicate Sample? ☒ Yes ☐ No ID: —

Pumping Rate: .25 gpm

Time Pump Began: 1216 am / ☒ pm

Time of Sampling: 1225 am / ☒ pm

Sample EH: 175.2

Sample Appearance: General: clear Color: none Phase: none Odor: none

Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
1219	6.84	1119	10.68	2.27	0.0	.75	1	
1222	6.83	1120	10.42	2.00	0.0	1.50	2	
1225	6.83	1120	10.25	1.97	0.0	2.25	3	
							4	
							5	

Stabilized? ☒ Yes ☐ No

Amount Water Removed: 2.25 Gallons

Comments:

Exceptions to Protocol:

Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517



Groundwater Assessment

Sampling Personnel:

Ben Wolf
Dusty Farasyn

Site: Ottertail Power Co./Hoot Lake

Facility ID: SW-211

Date: 18 Jun 18

Unique Station ID: 806342

Sample ID: S-14R

Well Condition

Well Locked? ☒ Yes ☐ No

Well Labeled? ☒ Yes ☐ No

Casing Straight? ☒ Yes ☐ No

Protective Posts? ☒ Yes ☐ No

State ID Tag? ☒ Yes ☐ No

Grout Seal Intact? ☒ Yes ☐ No

Repairs Necessary: _____

Well Information

Well Depth: 87.11

Constructed Depth: 70.86

Casing Diameter: 2"

Water Level Before Purge: 79.37

Well Volume: 1.25 Gallons

Well Casing Elevation: 1280.61

Static Water Elevation: 1201.24

Previous Static: 1201.06

Water Level After Sample: 79.48

Measurement Method: Elec. WLI Steel Tape

Sampling Information

Weather Conditions: Temp: 76 Wind: S @ 5 Sky: clear

Sampling Method: Grundfos ☒ Bladder SS/T ☒ Disp. Bailer ☐ Whale ☐ Grab ☐ Other: _____

Dedicated Equipment: ☒ Yes ☐ No

Pumping Rate: .25 gpm

Well Purged Dry? ☐ Yes ☒ No

Time Pump Began: 1233 am / pm

Time Purged Dry? -

Time of Sampling: 1248 am / pm

Duplicate Sample? ☐ Yes ☒ No ID: -

Sample EH: -76.1

Sample Appearance: General: clear Color: NOV Phase: NOV Odor: NOV

Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
1238	7.08	1095	10.21	1.11	0.0	1.25	1	
1243	7.04	1076	10.32	.87	0.0	2.50	2	
1248	7.03	1070	10.20	.77	0.0	3.75	3	
							4	
							5	

Stabilized? ☒ Yes ☐ No

Amount Water Removed: 3.75 Gallons

Comments:

** Field readings only!*

Exceptions to Protocol:



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Page: 1 of 8

FINAL REPORT COMPLETION DATE: 9 Nov 18 RY

Date Reported: 7 Nov 2018

PAUL VUKONICH
OTTER TAIL POWER CO
PO BOX 496
FERGUS FALLS MN 56538-0496

Work Order #: 31-0497
Account #: 006106
PO #: 48679

Project Name: HOOT LAKE PLANT

[Signature] 08 Nov 18
Field Service Manager/Date Reviewed

[Signature] 07 Nov 18
Chemistry Lab Manager/Date Reviewed

[Signature] 07 Nov 18
Quality Assurance Director/Date Reviewed

RL = Reporting Limits
NQ = Not Present, Qualitative Only
PQ = Present, Qualitative Only
ND = Not Determined

All data for this report has been approved by MVTL Laboratory Management.

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.



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CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH
OTTER TAIL POWER CO
PO BOX 496
FERGUS FALLS MN 56538-0496

Report Date: 7 Nov 2018
Lab Number: 18-A56754
Work Order #: 31-0497
Account #: 006106
Sample Matrix: GROUNDWATER
Date Sampled: 15 Oct 2018 12:09
Sampled By: MVTl FIELD PERSONNEL
Date Received: 16 Oct 2018 13:24
PO #: 48679

Project Name: HOOT LAKE PLANT

Sample Description: S-3AR

Temp at Receipt: 0.9C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Water Digestions					22 Oct 18	JMS
pH, Field	6.85	units	1.00	I-1586-85	15 Oct 18 12:09	MS
pH	* 7.1	units	1.0	SM 4500 H+ B-2000	17 Oct 18 14:12	DK
Sulfate	129	mg/L	5.0	ASTM D516-07	25 Oct 18 9:22	AKF
Chloride	13.5	mg/L	3.0	SM 4500 Cl E	18 Oct 18 11:08	KCJ
Solids, Total Dissolved	559	mg/L	10	SM 2540 C-97	18 Oct 18 12:00	NB
Calcium	115.0	mg/L	0.500	SW6010C	24 Oct 18 16:11	KAM
Boron	0.123	mg/L	0.100	SW6010C	24 Oct 18 16:11	KAM
Fluoride	0.160	mg/L	0.020	EPA 300.0	20 Oct 18 4:20	RMV

* Holding Time Exceeded

RL = Reporting Limit

Analyses performed under our Minnesota Department of Health Accreditation conform to the current TNI standards.
The reporting limit was elevated for any analyte requiring a dilution as coded below:

g = Due to sample matrix

l = Due to sample quantity

= Due to concentration of other analytes

+ = Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WH/DW # R-040

MVTl guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTl to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTl. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.



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CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH
OTTER TAIL POWER CO
PO BOX 496
FERGUS FALLS MN 56538-0496

Report Date: 7 Nov 2018
Lab Number: 18-A56755
Work Order #: 31-0497
Account #: 006106
Sample Matrix: GROUNDWATER
Date Sampled: 15 Oct 2018 12:44
Sampled By: MVTL FIELD PERSONNEL
Date Received: 16 Oct 2018 13:24
PO #: 48679

Project Name: HOOT LAKE PLANT

Sample Description: S-10R

Temp at Receipt: 0.9C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Water Digestions					22 Oct 18	JMS
pH, Field	6.82	units	1.00	I-1586-85	15 Oct 18 12:44	MS
pH	* 7.1	units	1.0	SM 4500 H+ B-2000	17 Oct 18 14:12	DK
Sulfate	116	mg/L	5.0	ASTM D516-07	25 Oct 18 9:41	AKF
Chloride	12.6	mg/L	3.0	SM 4500 Cl E	18 Oct 18 11:08	KCJ
Solids, Total Dissolved	566	mg/L	10	SM 2540 C-97	18 Oct 18 12:00	NB
Calcium	116.0	mg/L	0.500	SW6010C	24 Oct 18 16:11	KAM
Boron	< 0.1	mg/L	0.1	SW6010C	24 Oct 18 16:11	KAM
Fluoride	0.160	mg/L	0.020	EPA 300.0	20 Oct 18 4:20	RMV

* Holding Time Exceeded

RL = Reporting Limit

Analyses performed under our Minnesota Department of Health Accreditation conform to the current TNI standards.

The reporting limit was elevated for any analyte requiring a dilution as coded below:

0 = Due to sample matrix

! = Due to sample quantity

= Due to concentration of other analytes

+ = Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WR/DW # R-040

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CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH
OTTER TAIL POWER CO
PO BOX 496
FERGUS FALLS MN 56538-0496

Report Date: 7 Nov 2018
Lab Number: 18-A56756
Work Order #: 31-0497
Account #: 006106
Sample Matrix: GROUNDWATER
Date Sampled: 15 Oct 2018 13:59
Sampled By: MVTL FIELD PERSONNEL
Date Received: 16 Oct 2018 13:24
PO #: 48679

Project Name: HOOT LAKE PLANT

Sample Description: S-13

Temp at Receipt: 0.9C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Water Digestions					22 Oct 18	JMS
pH, Field	7.03	units	1.00	I-1586-85	15 Oct 18 13:59	MS
pH	* 7.2	units	1.0	SM 4500 H+ B-2000	17 Oct 18 14:12	DK
Sulfate	85.8	mg/L	5.0	ASTM D516-07	25 Oct 18 9:41	AKF
Chloride	8.6	mg/L	3.0	SM 4500 Cl E	18 Oct 18 11:08	KCJ
Solids, Total Dissolved	501	mg/L	10	SM 2540 C-97	18 Oct 18 12:00	NB
Calcium	115.0	mg/L	0.500	SW6010C	24 Oct 18 16:11	KAM
Boron	< 0.1	mg/L	0.1	SW6010C	24 Oct 18 16:11	KAM
Fluoride	0.220	mg/L	0.020	EPA 300.0	20 Oct 18 4:20	RMV

* Holding Time Exceeded

RL = Reporting Limit

Analyses performed under our Minnesota Department of Health Accreditation conform to the current TNI standards.

The reporting limit was elevated for any analyte requiring a dilution as coded below:

@ = Due to sample matrix

! = Due to sample quantity

= Due to concentration of other analytes

+ = Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WR/DW # R-040

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CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH
OTTER TAIL POWER CO
PO BOX 496
FERGUS FALLS MN 56538-0496

Project Name: HOOT LAKE PLANT

Sample Description: S-14R

Report Date: 7 Nov 2018
Lab Number: 18-A56757
Work Order #: 31-0497
Account #: 006106
Sample Matrix: GROUNDWATER
Date Sampled: 15 Oct 2018 13:24
Sampled By: MVTL FIELD PERSONNEL
Date Received: 16 Oct 2018 13:24
PO #: 48679

Temp at Receipt: 0.9C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Water Digestions					22 Oct 18	JMS
pH, Field	6.83	units	1.00	I-1586-85	15 Oct 18 13:24	MS
pH	* 7.1	units	1.0	SM 4500 H+ B-2000	17 Oct 18 14:12	DK
Sulfate	123	mg/L	5.0	ASTM D516-07	25 Oct 18 9:41	AKF
Chloride	5.7	mg/L	3.0	SM 4500 Cl E	18 Oct 18 11:08	KCJ
Solids, Total Dissolved	600	mg/L	10	SM 2540 C-97	18 Oct 18 12:00	NB
Calcium	133.0	mg/L	0.500	SW6010C	24 Oct 18 16:11	KAM
Boron	< 0.1	mg/L	0.1	SW6010C	24 Oct 18 16:11	KAM
Fluoride	0.190	mg/L	0.020	EPA 300.0	20 Oct 18 4:20	RMV

* Holding Time Exceeded

RL = Reporting Limit

Analyses performed under our Minnesota Department of Health Accreditation conform to the current TNI standards.

The reporting limit was elevated for any analyte requiring a dilution as coded below:

@ = Due to sample matrix

! = Due to sample quantity

= Due to concentration of other analytes

+ = Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040

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CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH
OTTER TAIL POWER CO
PO BOX 496
FERGUS FALLS MN 56538-0496

Report Date: 7 Nov 2018
Lab Number: 18-A56758
Work Order #: 31-0497
Account #: 006106
Sample Matrix: GROUNDWATER
Date Sampled: 15 Oct 2018 14:58
Sampled By: MVTL FIELD PERSONNEL
Date Received: 16 Oct 2018 13:24
PO #: 48679

Project Name: HOOT LAKE PLANT

Sample Description: S-51

Temp at Receipt: 0.9C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Water Digestions					22 Oct 18	JMS
pH, Field	7.23	units	1.00	I-1586-85	15 Oct 18 14:58	DGF
pH	* 7.0	units	1.0	SM 4500 H+ B-2000	17 Oct 18 14:12	DK
Sulfate	63.3	mg/L	5.0	ASTM D516-07	25 Oct 18 9:41	AKF
Chloride	19.2	mg/L	3.0	SM 4500 Cl E	18 Oct 18 11:08	KCJ
Solids, Total Dissolved	507	mg/L	10	SM 2540 C-97	18 Oct 18 12:00	NB
Calcium	112.0	mg/L	0.500	SW6010C	24 Oct 18 16:11	KAM
Boron	< 0.1	mg/L	0.1	SW6010C	24 Oct 18 16:11	KAM
Fluoride	0.220	mg/L	0.020	EPA 300.0	20 Oct 18 4:20	RMV

* Holding Time Exceeded

RL = Reporting Limit

Analyses performed under our Minnesota Department of Health Accreditation conform to the current TNI standards.

The reporting limit was elevated for any analyte requiring a dilution as coded below:

@ = Due to sample matrix

! = Due to sample quantity

= Due to concentration of other analytes

+ = Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WR/DW # R-040

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.



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CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH
OTTER TAIL POWER CO
PO BOX 496
FERGUS FALLS MN 56538-0496

Report Date: 7 Nov 2018
Lab Number: 18-A56759
Work Order #: 31-0497
Account #: 006106
Sample Matrix: GROUNDWATER
Date Sampled: 15 Oct 2018 15:43
Sampled By: MVTL FIELD PERSONNEL
Date Received: 16 Oct 2018 13:24
PO #: 48679

Project Name: HOOT LAKE PLANT

Sample Description: S-52

Temp at Receipt: 0.9C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Water Digestions					22 Oct 18	JMS
pH, Field	7.18	units	1.00	I-1586-85	15 Oct 18 15:43	DGF
pH	* 7.1	units	1.0	SM 4500 H+ B-2000	17 Oct 18 14:12	DK
Sulfate	57.1	mg/L	5.0	ASTM D516-07	25 Oct 18 9:41	AKF
Chloride	17.0	mg/L	3.0	SM 4500 Cl E	18 Oct 18 11:08	KCJ
Solids, Total Dissolved	464	mg/L	10	SM 2540 C-97	18 Oct 18 12:00	NB
Calcium	105.0	mg/L	0.500	SW6010C	24 Oct 18 16:11	KAM
Boron	< 0.1	mg/L	0.1	SW6010C	24 Oct 18 16:11	KAM
Fluoride	0.330	mg/L	0.020	EPA 300.0	20 Oct 18 4:20	RMV

* Holding Time Exceeded

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= Due to concentration of other analytes

! = Due to sample quantity

+ = Due to internal standard response

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Quality Control Report

Lab IDs: 18-A56753 to 18-A56759

Project: HOOT LAKE PLANT

Work Order: 201831-0497

Page: 1 of 1

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Rec %	Matrix Spike Result	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD Limit (≤)	Known Rec (%)	Known % Rec Limits	Method Blank
Boron mg/L	1.000	98	85-115	1.00	18-A56759	< 0.1	103	1.030	75-125	1.030	1.050	105	1.9	102	90-110	< 0.1
Calcium mg/L	50.00	103	85-115	50.0	18-A56759	105.0	110	160.0	75-125	160.0	156.0	102	2.5	104	90-110	< 0.5
Chloride mg/L	-	-	-	60.0	18-A56856	6.1	104	68.5	86-117	68.5	66.5	101	3.0	106	90-110	< 3
Fluoride mg/L	0.200	110	85-115	0.20	18-A56756	0.220	80	0.380	75-125	0.380	0.410	95	7.6	104	90-110	< 0.02
pH units	-	-	-	-	-	-	-	-	-	8.2	8.2	-	0.0	101	90-110	-
Solids, Total Dissolved mg/L	-	-	-	-	-	-	-	-	-	254	251	-	1.2	104	85-115	< 10
Sulfate mg/L	-	-	-	50.0	18-A56751	< 5	91	45.4	68-132	45.4	43.5	87	4.3	97	80-120	< 5
	-	-	-	50.0	18-A56755	116	106	169	68-132	169	164	96	3.0	99	80-120	< 5

Approved by: _____



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FINAL REPORT COMPLETION DATE: 18 Dec 1808

MEGAN LISBURG
OTTER TAIL POWER CO
PO BOX 496
FERGUS FALLS MN 56538-0496

OTTER TAIL POWER CO

PO BOX 496

FERGUS FALLS MN 56538-0496

Work Order #: 31-0596

Account #: 006106

PO #: 48679

Project Name: HOOT LAKE PLANT

Field Service Manager/Date Reviewed

Chemistry Lab Manager/Date Reviewed

Quality Assurance Director/Date Reviewed

RL = Reporting Limits

NQ = Not Present, Qualitative Only

PQ = Present, Qualitative Only

ND = Not Determined

All data for this report has been approved by MVTI Laboratory Management.

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CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG
OTTER TAIL POWER CO
PO BOX 496
FERGUS FALLS MN 56538-0496

Report Date: 13 Dec 2018
Lab Number: 18-A67395
Work Order #: 31-0596
Account #: 006106
Sample Matrix: GROUNDWATER
Date Sampled: 29 Nov 2018 11:19
Sampled By: MVTL FIELD PERSONNEL
Date Received: 29 Nov 2018 14:55
PO #: 48679

Project Name: HOOT LAKE PLANT

Sample Description: S-10R

Temp at Receipt: 1.3C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH, Field	6.94	units	1.00	SM4500-H+-2011	29 Nov 18 11:19	BMW
Solids, Total Dissolved	443	mg/L	10	SM 2540 C-97	4 Dec 18 10:46	AL

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The reporting limit was elevated for any analyte requiring a dilution as coded below:

@ = Due to sample matrix

= Due to concentration of other analytes

! = Due to sample quantity

+ = Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040

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Quality Control Report

Lab ID: 18-A67395

Project: HOOT LAKE PLANT

Work Order: 201831-0596

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Rec %	Matrix Spike Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Solids, Total Dissolved mg/L	-	-	-	-	-	-	-	-	300 124	308 120	-	2.6 3.3	10 10	104	85-115	< 10

Approved by: 

Field Service Chain of Custody Record

Samples Relinquished By: <u>Franklin</u>		Samples Received By: <u>A. J. Juchau</u>	
Date: <u>29 Nov 18</u>	Time: <u>1455</u>	Date: <u>29 Nov 18</u>	Time: <u>1455</u>
Samples Relinquished into: <u>Fridge</u>		Samples Relinquished into: <u>Other:</u>	
Samples Relinquished By: <u></u>		Samples Received By: <u></u>	
Date: <u></u>	Time: <u></u>	Date: <u></u>	Time: <u></u>
Delivery: <u>Sampers</u>	Other: <u></u>	Seal Number(s) - If Used <u></u>	
Transport: <u>Ambient</u>	Other: <u></u>	Seals Intact? <u>Yes</u>	No <u>No</u>

Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

Groundwater Assessment

Sampling Personnel:

Matt Stein
Ben Wolf

Site: Otter Tail Power Co./ Hoot Lake

Facility ID: SW-211

Date: 29 NOV 18

Unique Station ID: 806341

Sample ID: S-10R

Well Condition

Well Locked? ☒ Yes ☐ No
Well Labeled? ☒ Yes ☐ No
Casing Straight? ☒ Yes ☐ No

Protective Posts? ☒ Yes ☐ No
State ID Tag? ☒ Yes ☐ No
Grout Seal Intact? ☒ Yes ☐ No

Repairs Necessary:

Well Information

Well Depth: 80.62

Well Casing Elevation: 1281.47

Constructed Depth: 57.00

Static Water Elevation: 1208.67

Casing Diameter: 2"

Previous Static: 1209.15

Water Level Before Purge: 72.80

Water Level After Sample: 72.82

Well Volume: 1.27 Gallons

Measurement Method: ☒ Elec. WLD ☐ Steel Tape

Sampling Information

Weather Conditions: Temp: 27 Wind: SE 8 Sky: cloudy / fog

Sampling Method: Grundfos ☒ Bladder SST ☐ Disp. Baller ☐ Whale ☐ Grab ☐ Other:

Dedicated Equipment: ☒ Yes ☐ No

Pumping Rate: 0.25 gpm

Well Purged Dry? ☒ Yes ☐ No

Time Pump Began: 1101 ☒ am ☐ pm

Time Purged Dry?

Time of Sampling: 1119 ☒ am ☐ pm

Duplicate Sample? ☒ Yes ☐ No ID: —

Sample EH: 11.6

Sample Appearance: General: clear Color: none Phase: none Odor: none

Time	pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
<u>1107</u>	<u>6.96</u>	<u>888</u>	<u>8.63</u>	<u>2.13</u>	<u>9.7</u>	<u>1.50</u>	<u>1</u>	
<u>1113</u>	<u>6.95</u>	<u>887</u>	<u>8.63</u>	<u>2.13</u>	<u>9.7</u>	<u>3.0</u>	<u>2</u>	
<u>1119</u>	<u>6.94</u>	<u>888</u>	<u>8.64</u>	<u>2.13</u>	<u>9.1</u>	<u>4.5</u>	<u>3</u>	
							<u>4</u>	
							<u>5</u>	

Stabilized? ☒ Yes ☐ No

Amount Water Removed: 4.5 Gallons

Comments:

Exceptions to Protocol: