

2017 Annual Groundwater Monitoring and Corrective Action Report

CCR Annual Monitoring Report

Ash Disposal Area

Big Stone Plant Big Stone City, South Dakota

Prepared for Otter Tail Power Company

January 2018

2017 CCR Annual Groundwater Monitoring and Corrective Action Report

Ash Disposal Area

Big Stone Plant Big Stone City, South Dakota

January 2018

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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 Big Stone Plant, a coal-fired generation unit near Big Stone City, South Dakota (Figure 1). Coal combustion residuals (CCR) from plant operations are placed in an on-site landfill, referred to as the Ash Disposal Area. The Ash Disposal Area 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 location of the CCR unit (Ash Disposal Area) is shown on Figure 1.

This 2017 Annual Groundwater Monitoring and Corrective Action Report (Annual Report) describes the monitoring program and results for the Ash Disposal Area at Big Stone 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
- Highlight key activities for the upcoming year

1.2 Status of the Groundwater Monitoring and Corrective Action Program

Baseline monitoring was completed prior to October 17, 2017. The evaluation of groundwater monitoring data for statistically significant increases over background levels for the constituents listed in Appendix III from the CCR Rule began on October 17, 2017.

1.3 CCR Rule Requirements

This Annual Report has been prepared in accordance with the requirements of §257.90(e) of the CCR Rule, as outlined in the following 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 2.2 Monitoring and Analytical Results
§257.90(e)(4)	Discuss any transition between monitoring programs	Section 2.4 Key Activities for Upcoming Year
§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 the period starting with the effective date of the Rule through the end of 2017. 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, that 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 are included in the Groundwater Monitoring System Report, Big Stone Plant Ash Disposal Area (Barr, 2016).

2.1.2 Changes to Monitoring System

The groundwater monitoring system was unchanged in 2017.

2.2 Monitoring and Analytical Results

CCR Rule provisions §257.90(e)(3) and §257.94(b) require collection of eight independent samples to establish background water quality for the detection monitoring program. A total of 48 (six monitoring wells for eight sampling events) groundwater samples were collected and analyzed for the constituents listed in Appendices III and IV (Part 257) before October 17, 2017. 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 2017:

- Baseline groundwater samples were collected and analyzed for the constituents listed in Appendices III and IV from the CCR Rule.
- A statistical method was selected for evaluating groundwater monitoring data by a qualified professional engineer in 2017.

There was insufficient recharge at monitoring well H4OX to sample Appendices III and IV (Part 257) constituents during the September 7, 2016 sampling event. Monitoring well H4OX was later resampled and no problems were reported.

2.4 Key Activities for Upcoming Year

The following key groundwater monitoring program activities are planned for 2018:

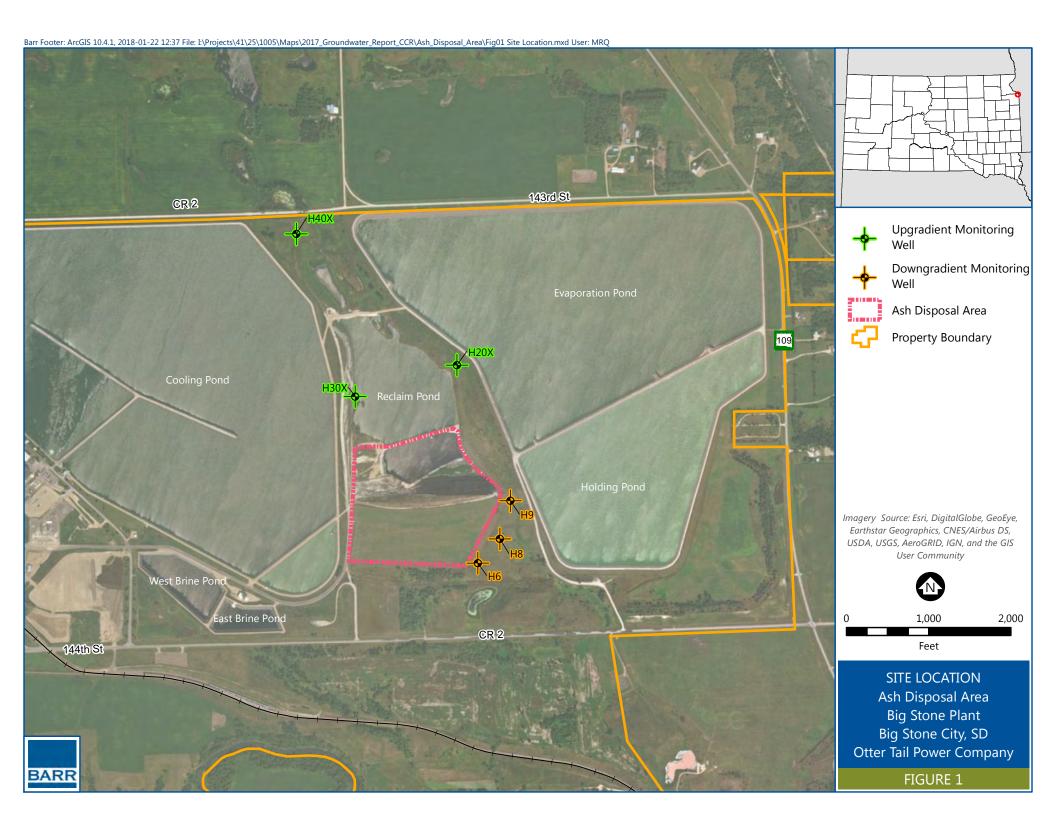
- Evaluate analytical results from the 2018 semiannual detection monitoring events for statistically significant increases (SSIs) according to the CCR Groundwater Sampling and Analysis Plan (Carlson McCain, 2017).
- Continue the groundwater monitoring program in accordance with the CCR rule.

3.0 References

Barr, 2016, Groundwater Monitoring System Report, Big Stone Plant Ash Disposal Area. Prepared for Otter Tail Power Company. December 2016.

Carlson McCain, 2017. CCR Groundwater Sampling and Analysis Plan (Including Statistical Method Selection and Certification), Big Stone Plant Ash Disposal Area. Prepared for Otter Tail Power Company. October 2017.

Figures



Appendices

Appendix A

Laboratory Reports and Field Sheets





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FINAL REPORT COMPLETION DATE: 11 DC 16 0 %

Date Reported: 5 Oct 2016

PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496 FERGUS FALLS MN 56538-0496 Work Order #: 31-0455 Account #: 006106 PO #: 48680

Project Name: BIG STONE PLANT CCR

Field Service Manager/Date Reviewed

Thampson Brumout 5 October 2016 Quality Assurance Director/Date Reviewed

RL = Reporting Limits

NQ = Not Present, Qualitative Only

PQ = Present, Qualitative Only

ND = Not Determined





PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: BIG STONE PLANT CCR

Sample Description: H2OX

Page: 2 of 27

Report Date: 5 Oct 2016 Lab Number: 16-A46025 Work Order #: 31-0455 Account #: 006106

Sample Matrix: GROUNDWATER

Date Sampled: 7 Sep 2016 12:30 Sampled By: MVTL FIELD PERSONNEL Date Received: 8 Sep 2016 10:55

PO #: 48680

Temp at Receipt: 3.0C

	As Recei	ved	Method RL	Method Reference	Dat	te alyze	i	Analyst
MS Water Digestions						Sep		TWB
Water Digestions					9	Sep :		TWB
Appearance, Field	CLEAR		NA	SM 2110	7		16 12:30	DGF
Water Elevation	1095.25		NA	NA			6 12:30	DGP
Temperature - Field	11.35	deg, C	NA	170.1	7		6 12:30	DGF
Specific Conductance, Fld	4115	umbos/cm	1	120.1			6 12:30	DGF
pH, Field	6.80	units	1.00	I-1586-85			6 12:30	DGF
Hq	* 6.9	units	1.0	SM 4500 H+B-96	8	Sep 1	6 15:44	JFG
Radium 226	See Attac	ched				100		OL
Radium 228	See Attac	ched		EPA M9320				OL
Sulfate	2480 ~	mg/L	4.0	ASTM D516-02	15	Sep 1	6 8:59	KCJ
Chloride	3.4	mq/L	3.0	SM 4500 C1 B	15	Sep 1	6 7:52	AKF
Mercury	< 0.005	ug/L	0.005	EPA 245.7	16	Sep 1	6 11:40	TWB
Solids, Total Dissolved	3820	mg/L	10	SM 2540 C-97	9	Sep 1	6 9:15	RC
Calcium	355.0	mg/L	0.500	SW6010C			6 14:07	RMB
Cuabada	See Narra		3.55.75					
Lithium	0.435	mg/L	0.005	SW6010C	24	Sep 1	6 13:07	RMB
Barium	0.010	mg/L	0.005	SW6010C			6 14:07	RMB
Beryllium	< 0.005	mg/L	0.005	SW6010C	13	Sep 1	6 14:07	RMB
Chromium	< 0.01	mg/L	0.01	SW6010C	13	Sep 1	6 14:07	RMB
Cobalt	< 0.005	mg/L	0.005	SW6010C	13	Sep 1	6 14:07	RMB
	See Narra							
Molybdenum	0.037	mq/L	0.015	SW6010C	13	Sep 1	6 14:07	RMB
Boron	0.271	mg/L	0.100	SW6010C	13	Sep 1	6 14:07	RMB
Antimony	< 2.5 €	ug/L	0.5	SW6020A	14	Sep 1	6 15:23	RMV
Arsenic	< 2.5 €	ug/L	0.5	SW6020A	14	Sep 1	6 15:23	RMV
Cadmium	0.55 @	ug/L	0.10	SW6020A	14	Sep 1	6 15:23	RMV
Lead	< 1	uq/L	0.5	SW6020A	13	Sep 1	6 18:36	RMV
2000	@See Narr			A CANADA				
Selenium	27.2 @	ug/L	0.50	SW6020A	14	Sep 1	6 15:23	RMV
Thallium	< 0.2	ug/L	0.1	SW6020A	13	Sep 1	6 18:36	RMV
	OSee Narr		37.7			2		
Fluoride	0.130	mg/L	0.020	EPA 300.0	12	Sep 1	6 12:58	RMB

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 concentration of other analytes
Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 NI LAB # 999447680 ND MICRO # 1013-M NO WW/DW # R-040



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PAUL VUKONICH OTTER TAIL POWER CO

PO BOX 496

56538-0496 FERGUS FALLS MN

Project Name: BIG STONE PLANT CCR

Sample Description: H2OX

Page: 3 01 27

Report Date: 5 Oct 2016 Lab Number: 16-A46025 Work Order #: 31-0455 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 7 Sep 2016 12:30 Sampled By: MVTL FIELD PERSONNEL Date Received: 8 Sep 2016 10:55

PO #: 48680

Temp at Receipt: 3.0C

As Received Result

Method RL

Method Reference

Date Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

- Sample diluted due to result above calibration of linear range.

OL = Analysis performed by an Outside Laboratory.

RL = Reporting Limit





PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: BIG STONE PLANT CCR

Sample Description: H3OX

Page: 4 of 27

Report Date: 5 Oct 2016 Lab Number: 16-A46026 Work Order #: 31-0455 Account #: 006106

Sample Matrix: GROUNDWATER

Date Sampled: 7 Sep 2016 13:16 Sampled By: MVTL FIELD PERSONNEL Date Received: 8 Sep 2016 10:55

PO #: 48680

Temp at Receipt: 3.0C

	As Receiv	ved	Method RL	Method Reference	Date Analy	zed	Analyst
MS Water Digestions					9 Se	16	TWB
Water Digestions					9 Seg	16	TWB
Appearance, Field	CLEAR		NA	SM 2110	7 Sej	16 13:16	DGF
Water Elevation	1090.07		NA	NA	7 Sej	16 13:16	DGF
Temperature - Field	13.59	deg, C	NA.	170.1	7 Sep	16 13:16	DGF
Specific Conductance, Fld	4233	umhos/cm	1	120.1	7 Sej	16 13:16	DGF
pH, Field	6.80	units	1.00	I-1586-85	7 Sey	16 13:16	DGF
pH	* 6.9	units	1.0	SM 4500 H+B-96	8 Ser	16 15:44	JEG
Radium 226	See Attac	The second second	0.5				OL
Radium 228	See Attac			EPA M9320			OL
Sulfate	1920 ~	mg/L	4.0	ASTM D516-02	15 Ser	16 8:59	KCJ
Chloride	78.2	mg/L	3.0	SM 4500 Cl B	15 Sep	16 7:52	AKF
Mercury	< 0.005	ug/L	0.005	EPA 245.7	16 Sep		TWB
Solids, Total Dissolved	3400	mg/L	10	SM 2540 C-97		16 9:15	RC
Calcium	438.0 ~	mg/L	0.500	SW6010C	14 Ser	16 13:07	RMB
Lithium	0.144	mq/L	0.005	SW6010C		16 13:07	RMB
Barium	0.019	mg/L	0.005	SW6010C		16 14:07	RMB
Beryllium	< 0.005	mg/L	0.005	SW6010C	13 Sep	16 14:07	RMB
Chromium	< 0.01	mg/L	0.01	SW6010C	13 Sep	16 14:07	RMB
Cobalt	< 0.005	mg/L	0.005	SW6010C	13 Sep	16 14:07	RMB
Cobarc	See Narra						
Molybdenum	0.056	mq/L	0.015	SW6010C	13 Seg	16 14:07	RMB
Boron	9.000 -	mg/L	0.100	SW6010C	14 Sep	16 13:07	RMB
Antimony	< 2.5 @	ug/L	0.5	SW6020A	14 Ser	16 15:23	RMV
Arsenic	< 2.5 @	ug/L	0.5	SW6020A	14 Ser	16 15:23	RMV
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	14 Sep	16 15:23	RMV
Lead	< 2.5 @	ug/L	0.5	SW6020A	14 Ser	16 15:23	RMV
Selenium	< 2.5 @	ug/L	0.5	SW6020A	14 Ser	16 15:23	RMV
Thallium	< 0.5 @	ug/L	0.1	SW6020A	14 Ser	16 15:23	RMV
Fluoride	0.270	mg/L	0.020	EPA 300.0	12 Sep	16 12:58	RMB

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

- Sample diluted due to result above calibration of linear range.

OL = Analysis performed by an Outside Laboratory.

RL = Reporting Limit
Analyses performed under our Minnesots Department of Health Accreditation conform to the current TMI standards.

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

But to concentration of other analytes

Due to concentration of other analytes

Due to internal standard response

CERTIFICATION: MM LAB # 027-015-125 ### HI LAB # 999447680 ### MM MXCRO # 1013-M ### ND WM/DW # R-040





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

Project Name: BIG STONE PLANT CCR

Sample Description: H6

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Report Date: 5 Oct 2016 Lab Number: 16-A46027 Work Order #: 31-0455 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 7 Sep 2016 14:18 Sampled By: MVTL FIELD PERSONNEL Date Received: 8 Sep 2016 10:55

PO #: 48680

Temp at Receipt: 3.0C

	As Recei	ved	Method RL	Method Reference	Date Analyze	1	Analysc
MS Water Digestions					9 Sep	16	TWB
Water Digestions					9 Sep	16	TWB
Appearance, Field	CLEAR		NA.	SM 2110		16 14:18	DGF
Temperature - Field	12.05	deg. C	NA	170.1	7 Sep	6 14:18	DGF
Specific Conductance, Fld	965	umhos/cm	1	120.1	7 Sep	6 14:18	DGF
pH, Field	7.28	units	1.00	I-1586-85		6 14:18	DGF
pH	* 7.4	units	1.0	SM 4500 H+B-96	8 Sep	6 15:44	JFG
Radium 226	See Atta	ched					OL
Radium 228	See Atta	hed		EPA M9320			OL
Sulfate	86.3 @	mg/L	4.0	ASTM D516-02	15 Sep :	6 B:59	KCJ
Chloride	< 3	mg/L	3	SM 4500 Cl E	15 Sep 3	6 7:52	AKF
Mercury	< 0.005	ug/L	0.005	EPA 245.7	16 Sep 3	6 11:40	TWB
Solids, Total Dissolved	510	mg/L	10	SM 2540 C-97	9 Sep	6 9:15	RC
Calcium	48.60	mg/L	0.500	SW6010C	13 Sep 3	6 14:07	RMB
C42024M	See Narra				7.0		
Lithium	0.028	mq/L	0.005	SW6010C	14 Sep 1	6 13:07	RMB
Barium	0.088	mg/L	0.005	SW6010C	13 Sep 1	6 14:07	RMB
Beryllium	< 0.005	mg/L	0.005	SW6010C	13 Sep 1	6 14:07	RMB
Chromium	< 0.01	mg/L	0.01	SW6010C	13 Sep 1	6 14:07	RMB
Cobalt	< 0.005	mg/L	0.005	SW6010C	13 Sep 1	6 14:07	RMB
000010	See Narra						
Molybdenum	0.029	mq/L	0.015	SW6010C	13 Sep 1	6 14:07	RMB
Boron	5.170	mg/L	0.100	SW6010C	13 Sep 1	6 14:07	RMB
Antimony	< 1 0	ug/L	0.5	SW6020A	14 Sep 1	6 15:23	RMV
Arsenic	1.33	ug/L	0.50	SW6020A	13 Sep 1	6 18:36	RMV
ALBEIIAG	@See Narr			- W. M. J. C. L.			
Cadmium	< 0.2	ug/L	0.1	SW6020A	13 Sep 1	6 18:36	RMV
Cadini diii	@See Narr		17.12		200		
Lead	< 1	ug/L	0.5	SW6020A	13 Sep 1	6 18:36	RMV
nead	@See Narr		7	E-11. 2. 0. 0. 5.0			
Selenium	6.99 @	ug/L	0.50	SW6020A	14 Sep 1	6 15:23	RMV
Thallium	< 0.2	ug/L	0.1	SW6020A	13 Sep 1		RMV
THOTTYME	@See Narr			2564444			
Fluoride	0,530	mg/L	0.020	EPA 300.0	12 Sep 1	6 12:58	RMB
FIGOLIGE	0,530	m9/ 12			200	200232	377





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

Project Name: BIG STONE PLANT CCR

Sample Description: H6

Report Date: 5 Oct 2016 Lab Number: 16-A46027 Work Order #: 31-0455 Account #: 006106 Sample Matrix: GROUNDWATER

Date Sampled: 7 Sep 2016 14:18 Sampled By: MVTL FIELD PERSONNEL Date Received: 8 Sep 2016 10:55

PO #: 48680

Temp at Receipt: 3.0C

As Received Result

Method RL

Method Reference

Date Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Texra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

OL = Analysis performed by an Outside Laboratory.





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

Project Name: BIG STONE PLANT CCR

Sample Description: H8

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Report Date: 5 Oct 2016 Lab Number: 16-A46028 Work Order #: 31-0455 Account #: 006106

Sample Matrix: GROUNDWATER

Date Sampled: 7 Sep 2016 15:12 Sampled By: MVTL FIELD PERSONNEL Date Received: 8 Sep 2016 10:55

PO #: 48680

Temp at Receipt: 3.0C

	As Recei	ved	Method RL	Method Reference	Date Analyze	1	Analyst
Market Market Land	91111111111	_			9 Sep	16	TWB
MS Water Digestions					9 Sep		TWB
Water Digestions	CLEAR		NA	SM 2110		16 15:12	DGF
Appearance, Field Water Elevation	1073.00		NA	NA		16 15:12	
Temperature - Field	11.05	deg, C	NA	170.1		6 15:12	DGF
Specific Conductance, Fld	1414	umbos/cm	1	120.1		6 15:12	DGF
	7,12	units	1.00	I-1586-85		6 15:12	DGF
pH, Field	* 7.2	units	1.0	SM 4500 H+B-96		6 15:44	JFG
pH Radium 226	See Atta		2.0	Se 4500 M15-50	o bop .		OL
Radium 228	See Atta			EPA M9320		4	OL
A SOUTH POINT OF THE OWNER OWNER OF THE OWNER OWNE	329 -	mg/L	4.0	ASTM D516-02	15 Sep 1	6 8:59	KCJ
Sulfate	3.7	mg/L	3.0	SM 4500 Cl E	15 Sep 1		AKE
Chloride	< 0.005	ug/L	0.005	EPA 245.7		6 11:40	TWB
Mercury	2 7 5 7 6 7		10	SM 2540 C-97		6 9:15	RC
Solids, Total Dissolved	925	mg/L	94.50	SW6010C		6 14:07	RMB
Calcium	127.0	mg/L	0.500	SWEDTOC	13 beh	. L4.07	Idab
24.62	See Narra	A Service of the Control of the Cont	0.005	SW6010C	14 Con 1	6 13:07	RMB
Lithium	0.043	mg/L	0.005	SW6010C		6 14:07	RMB
Barium	0.035	mg/L	0.005				RMB
Beryllium	< 0.005	mg/L	0.005	SW6010C		6 14:07	RMB
Chromium	< 0.01	mg/L	0.01	SW6010C			RMB
Cobalt	< 0.005	mg/L	0.005	SW6010C	ra seb 1	6 14:07	HUND
PCATA X	See Narra		10.002				RMB
Molybdenum	0.016	mg/L	0.015	SW6010C	13 Sep 1		
Boron	4.200	mg/L	0.100	SW6010C	13 Sep 1		RMB
Antimony	< 2.5 @	ug/L	0.5	SW6020A	14 Sep 1		RMV
Arsenic	< 1	ug/L	0.5	SW6020A	13 Sep 1	6 18:36	RMV
	@See Narz			cheese.	320 5777 5	2002	2020
Cadmium	< 0.2	ug/L	0.1	SW6020A	13 Sep 1	6 18:36	RMV
	@See Narr	ACTION NO.			0.000	2.7.0.0	2149
Lead	< 1	ug/L	0.5	SW6020A	13 Sep 1	6 18:36	RMV
	@See Narr	ative				an arterial	COSTA
Selenium	8.26 @	ug/L	0.50	SW6020A	14 Sep 1		RMV
Thallium	< 0.2	ug/L	0.1	SW6020A	13 Sep 1	6 18:36	RMV'
	@See Narr	ative				9.61.55	
Fluoride	0.550	mg/L	0.020	EPA 300.0	12 Sep 1	6 12:58	RMB

RU = 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 concentration of other analytes

Due to concentration of other analytes

Due to internal standard response

CERTIFICATION: MR LAB # 027-015-125 MI LAB # 999447680 MD MICRO # 1013-M ND WM/DW # R-040



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

Project Name: BIG STONE PLANT CCR

Sample Description: H8

Report Date: 5 Oct 2016 Lab Number: 16-A46028 Work Order #: 31-0455 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 7 Sep 2016 15:12
Sampled By: MVTL FIELD PERSONNEL
Date Received: 8 Sep 2016 10:55

PO #: 48680

Temp at Receipt: 3.0C

As Received Result Method RL Method Reference Date Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

- Sample diluted due to result above calibration of linear range.

OL = Analysis performed by an Outside Laboratory.

RL = Reporting Limit
Analyses performed under our Minnesota Department of Mealth Accreditation conform to the current TNI standards.

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

8 = Due to sample matrix
1 = Due to concentration of other analytes
1 = Due to sample quantity

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





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

Project Name: BIG STONE PLANT CCR

Sample Description: H9

Report Date: 5 Oct 2016 Lab Number: 16-A46029 Work Order #: 31-0455 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 7 Sep 2016 16:12 Sampled By: MVTL FIELD PERSONNEL Date Received: 8 Sep 2016 10:55

PO #: 48680

Temp at Receipt: 3.0C

	As Recei	ved	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					9 Sep 16	TWB
Water Digestions					9 Sep 16	TWB
Appearance, Field	CLEAR		NA	SM 2110	7 Sep 16 16:12	DGF
Water Elevation	1075.44		NA	NA	7 Sep 16 16:12	DGF
Temperature - Field	10.37	deg. C	NA	170.1	7 Sep 16 16:12	DGF
Specific Conductance, Fld	3164	umhos/cm	1	120.1	7 Sep 16 16:12	DGF
pH, Field	6.62	units	1.00	I-1586-85	7 Sep 16 16:12	DGF
Но	* 6.8	units	1.0	SM 4500 H+B-96	8 Sep 16 15:44	JFG
Radium 226	See Atta	ched				OL
Radium 228	See Attac			EPA M9320		OL
Sulfate	1630 ~	mq/L	4.0	ASTM D516-02	15 Sep 16 8:59	KCJ
Chloride	15.1	mg/L	3.0	SM 4500 Cl E	15 Sep 16 7:52	AKF
Mercury	< 0.005	ug/L	0.005	EPA 245.7	16 Sep 16 11:40	TWB
Solids, Total Dissolved	2710	mq/L	10	SM 2540 C-97	9 Sep 16 9:15	RC
Calcium	606.0 ~	mg/L	0.500	SW6010C	14 Sep 16 13:07	RMB
Lithium	0.138	mg/L	0.005	SW6010C	14 Sep 16 13:07	RMB
Barium	0.032	mg/L	0.005	SW6010C	13 Sep 16 14:07	RMB
Bervllium	< 0.005	mg/L	0.005	SW6010C	13 Sep 16 14:07	RMB
Chromium	< 0.01	mg/L	0.01	SW6010C	13 Sep 16 14:07	RMB
Cobalt	< 0.005	mg/L	0.005	SW6010C	13 Sep 16 14:07	RMB
CODATC	See Narra			20000		
Molybdenum	< 0.015	mg/L	0.015	SW6010C	13 Sep 16 14:07	RMB
Boron	1.210	mg/L	0.100	SW6010C	13 Sep 16 14:07	RMB
Antimony	< 1 @	ug/L	0.5	SW6020A	14 Sep 16 15:23	RMV
Arsenic	< 1 @	ug/L	0.5	SW6020A	14 Sep 16 15:23	RMV
Cadmium	0.22 @	ug/L	0.10	SW6020A	14 Sep 16 15:23	RMV
Lead	< 1	ug/L	0.5	SW6020A	13 Sep 16 18:36	RMV
Lead	@See Narr		0.3	Buccass	22 200 20 20,20	****
a / \$40 - 14 0 - 1		2020010	0.50	SW6020A	14 Sep 16 15:23	RMV
Selenium	1.62 @	ug/L	0.1	SW6020A	13 Sep 16 18:36	RMV
Phallium	< 0.2	ug/L	0.1	SHOUZUM	13 Beb 10 10:30	44.4
A CONTRACT	@See Narr	The second secon	0 000	EPA 300.0	12 Sep 16 12:58	RMB
Fluoride	0.160	mg/L	0.020	BPA 300.0	12 bch 10 15:30	MAC





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

Project Name: BIG STONE PLANT CCR

Sample Description: H9

Report Date: 5 Oct 2016 Lab Number: 16-A46029 Work Order #: 31-0455 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 7 Sep 2016 16:12 Sampled By: MVTL FIELD PERSONNEL Date Received: 8 Sep 2016 10:55

PO #: 48680

Temp at Receipt: 3.0C

As Received Result

Method RL

Method Reference Date Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

- Sample diluted due to result above calibration of linear range.

OL = Analysis performed by an Outside Laboratory.





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

Project Name: BIG STONE PLANT CCR

Sample Description: H40X

Report Date: 5 Oct 2016 Lab Number: 16-A46039 Work Order #: 31-0455 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 7 Sep 2016 13:40 Sampled By: MVTL FIELD PERSONNEL Date Received: 8 Sep 2016 10:55

PO #: 48680

Temp at Receipt: 3.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Misc Comment	INSUFFICE	ENT VOLUME-	NO SAMPLE	DW/5	7. TAX 10. TAX	- No.
Well Depth, Field	27.49	feet	NA	Field	7 Sep 16 13:40	DGF
Water Level Before Purge	18,90	feet	NA	NA	7 Sep 16 13:40	DGF
Static Elevation, Field	1089.32	ft	NA	Field	7 Sep 16 13:40	DGF

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

CERTIFICATION: MN LAB # 027-015-125 NI LAB # 999447680 ND MICRO # 1013-N ND WM/DW # R-040



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc.

1126 N Front St

New Ulm, MN 56073

ProjectName:

Lab ID:

COC:

31-0455

S1609153-001

ClientSample ID: A46025 H2OX

FieldSampler: Matrix:

Report ID

WorkOrder:

DateReceived: 9/9/2016 11:50:00 AM

S1609153

S1609153001

Water

CollectionDate: 9/7/2016 12:30:00 PM

Date Reported 9/30/2016

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	ND	pCI/L		1	SM 7500 Ra-B	09/20/2016 1422	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	09/20/2016 1422	MB
Radium 228	ND	pCi/L		2	Ga-Tech	09/24/2016 450	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	09/24/2016 450	MB

These results apply only to the samples tested.

Qualiflers:

E

Value above quantitation range Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL Outside the Range of Dilutions Matrix Effect

RL - Reporting Limit

Calculated Value

Holding times for preparation or analysis exceeded

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery Ilmits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Analyte detected in the associated Method Blank

Page 1 of 14



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

31-0455

Lab ID:

\$1609153-002 ClientSample ID: A46026 H3OX

COC:

Date Reported 9/30/2016

Report ID

S1609153001

WorkOrder:

S1609153

DateReceived:

CollectionDate: 9/7/2016 1:16:00 PM 9/9/2016 11:50:00 AM

FieldSampler:

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	09/20/2016 1422	MB
Radium 226 Precision (±)	NA	pCl/L			SM 7500 Ra-B	09/20/2016 1422	MB
Radium 228	ND	pCi/L		2	Ga-Tech	09/24/2016 752	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	09/24/2016 752	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

E

Value above quantitation range
Analyte detected below quantitation limits
Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

Calculated Value

Holding times for preparation or analysis axceeded Analyzed by another laboratory Not Detected at the Reporting Limit H

ND

Spike Recovery outside accepted recovery limits

Reviewed by: All

Wade Nieuwsma, Assistant Laboratory Manager

Page 2 of 14



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc.

1126 N Front St

New Ulm, MN 56073

ProjectName:

31-0455

Lab ID:

S1609153-003 ClientSample ID: A46027 H6

COC:

Date Reported 9/30/2016

Report ID

S1609153001

WorkOrder:

S1609153

CollectionDate: 9/7/2016 2:18:00 PM

DateReceived: 9/9/2016 11:50:00 AM

FieldSampler:

Matrix:

Water

Commente

Comments							_
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total						The same and	
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	09/20/2016 1422	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	09/20/2016 1422	MB
Radium 228	4.5	pCi/L		2	Ga-Tech	09/24/2016 1053	MB
Radium 228 Precision (±)	3.1	pCi/L			Ga-Tech	09/24/2016 1053	MB

These results apply only to the samples tested.

Qualiflers:

Analyte detected in the associated Method Blank Value above quantitation range

Analyte detected below quantitation limits Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Ollutions

Matrix Effect

RL - Reporting Limit

Calculated Value

Holding times for preparation or analysis exceeded Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by: All

Wade Nieuwsma, Assistant Laboratory Manager

Page 3 of 14



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

31-0455

Lab ID:

S1609153-004 ClientSample ID: A46028 H8

COC:

Date Reported 9/30/2016

Report ID

S1609153001

WorkOrder:

S1609153

CollectionDate: 9/7/2016 3:12:00 PM DateReceived: 9/9/2016 11:50:00 AM

FieldSampler:

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/i	nit
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	09/20/2016 1422	MB
Radium 226 Precision (±)	NA.	pCi/L			SM 7500 Ra-B	09/20/2016 1422	MB
Radium 228	ND	pCi/L		2	Ga-Tech	09/24/2016 1354	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	09/24/2016 1354	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

Calculated Value

Holding times for preparation or analysis exceeded Analyzed by another laboratory

ND Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

Reviewed by: all

Wade Nieuwsma, Assistant Laboratory Manager

Page 4 of 14



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

MVTL Inc. Company:

1126 N Front St

New Ulm, MN 56073

ProjectName:

31-0455

Lab ID:

\$1609153-005 ClientSample ID: A46029 H9

COC:

Date Reported

9/30/2016

Report ID

S1609153001

WorkOrder:

S1609153

CollectionDate: 9/7/2016 4:12:00 PM DateReceived: 9/9/2016 11:50:00 AM

FieldSampler:

Matrix:

Water

Commonto

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	09/20/2016 1422	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	09/20/2016 1422	MB
Radium 228	ND	pCI/L		2	Ga-Tech	09/24/2016 1655	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	09/24/2016 1655	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

C Calculated Value

Holding limes for preparation or analysis exceeded Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by: all

Wade Nieuwsma, Assistant Laboratory Manager

Page 5 of 14

Minnesota Valley Testing Laboratories, Inc. New Ulm, MN 56073 507 354 8517

Groundwater Assessment	Site:	Otter	Tail Power Co./ Big	Stone		
Sampling Personnel:	Facility ID:					
Dusty Forasyo	Date:	Date: 75ep16				
	Unique Stat	ion ID:				
	Sample ID:		Well H2OX (Middle		
Well Condition Well Locked? (Fes No Well Labeled? (Fes No Casing Straight? (Fes No	Protective P State ID Tag Grout Seal I	? Yes	No			
Repairs Necessary:						
Well Information Well Depth: 32.83	Well Casing	Elevation:	1103.91			
Constructed Depth: 32.20	Static Water		095.25			
Casing Diameter: 2"	Previous Sta		6.98			
Water Level Before Purge: 8.66	-	After Sample:	Below Pump			
Well Volume: 3,94 Gallons	Measureme			Tape		
Weather Conditions: Temp: 65 Sampling Method: Grundfos Bradder S	Wind: L+V Disp. Baller Whale	Sky: Grab Other:	Cloudy			
Dedicated Equipment: Yes No	Pumping Ra	te: 0,25	gpm			
Well Purged Dry? (es No	Time Pump	Began: /20	9 am /	0		
Time Purged Dry? 1225	Time of Sam	pling: 123	o am /	pm		
Duplicate Sample? Yes No ID:	Sample EH:	234,0				
Sample Appearance: General: Clear	Color: None Phase	: None	Odor: Non	4		
Time pH Specific Temp	D. O. Turbidity mg/L NTU		SEQ Comments:	- L		
1225 6.75 4072 10.8	NA NA	4	1			
	11 11	The second	2			
	THE RESERVE OF THE PERSON OF T		3			
		Fig. Co. and	4			
1230 6.80 4115 11.35			5 Recharge			
Stabilized? Yes	Amount Water Removed:	4	Gallons	_		
Comments:	, another reals removed.		Callotto			

- very slow recharge!

Minnesota Valley Testing Laboratories, Inc. New Ulm, MN 56073 507 354 8517

	Groundwater Assessment				Site:		Otter Tai	Power Co./ E	ig Stone	
Sampling	ampling Personnel:					Facility ID:				
7	_	กษรษา			Date:	75ep10	c			
	1	7			Unique St	ation ID:	_			
			_		Sample ID):		Well H3OX	(Mide	
Well Co	ndition	-								
Well Lock	ed?	Ves No		-	Protective	Posts? Y	es	(No)		
Well Labe	eled?	YES No	7		State ID T	ag? Y	es	(No)		
Casing St	raight?	Ves No	_		Grout Sea	I Intact? Y	es	(NO)		
	ecessary:									
Well Info	ormation									
Well Dept	h: 2	2.68			Well Casir	g Elevation:		1095.19		
	ed Depth:	22.55	_			er Elevation:		90.07		
Casing Di		2"			Previous S	static:	1090,5			
		urge: 5,1	2		Water Lev	el After Sam	pl Be	ow Rimo	200	
Water Lev	e beide r									
Water Lev Well Volum		.8G	Gallons			ent Method:		WLD Stee	Tape	
								With Stee	Tape	
Well Volu		.gc/	Gallons					With Stee	el Tape	
Well Volui	me: 2	.gc/	Gallons	Wind:		ent Method:	€lec.	With Stee	I Tape	
Well Volui	me: 2 g Informa Conditions:	.gc/		Wind:	Measurem	ent Method: S	€lec.	With Stee	l Tape	
Sampling Weather C	me: 2 g Informa Conditions:	tion Temp: 6 Grundfos	Gallons		Measurem	ent Method: S Grab Of	ky: Fo	With Stee	Tape	
Sampling Weather C	me: 2 g Informa Conditions: Method: Equipment	tion Temp: 6 Grundfos	Gallons		Measurem	S Grab Or Rate: O	ky: Fo	W⊯ Stee	I Tape	
Sampling Weather C Sampling Dedicated	g Informa Conditions: Method: Equipmented Dry?	tion Temp: G Grundfos t: (ES) No	Gallons		Measurem	S Grab Of Rate: O Began:	ky: Fo	Stee		
Sampling Weather C Sampling Dedicated Well Purge	g Informa Conditions: Method: Equipment ed Dry?	tion Temp: G Grundfos t: CES No	Gallons g padder SSA	Disp. Bailer	Measurem \text{V} The Whale Pumping Former Pumping of Sample El- Sample El-	S Grab Of Rate: O Began: /	ky: Fo	Stee	/ @B	
Sampling Weather C Sampling Dedicated Well Purge Time Purg Duplicate	g Informa Conditions: Method: Equipment ed Dry?	tion Temp: Grundfos t: (ES) No (ES) No 1311 Yes (No)	Gallons g		Measurem \text{V} The Whale Pumping Former Pumping of Sample El- Sample El-	S Grab Or Rate: O Began: /	ky: Fo	Stee	/ @B	
Sampling Weather C Sampling Dedicated Well Purg Time Purg Duplicate Sample Ap	g Informa Conditions: Method: Equipmented Dry? led Dry? Sample? ppearance:	tion Temp: G Grundfos t: Ces No Yes No 1311 Yes No General:	Gallons g practicer SSA	Disp. Bailer	Measurem \text{V} The Whale Pumping Former Pumping of Sample El- Sample El-	S Grab Or Rate: O Began: /	ky: Fo	gpm am am	/ @B	
Sampling Weather C Sampling Dedicated Well Purge Time Purg Duplicate	g Informa Conditions: Method: Equipment ed Dry? led Dry? Sample? ppearance:	tion Temp: Grundfos t: (es) No (es) No 1311 Yes (No) General:	Gallons g pradder SSA ID: Clean	Color: N	Measurem \(\text{V} \) r Whale Pumping F Time Pum Time of Sa Sample El-	S Grab Of Rate: O Began: /	ky: For her: 125 9	gpm am am Odor: Nor	/ @B	
Sampling Weather C Sampling Dedicated Well Purg Time Purg Duplicate Sample Ap	g Informa Conditions: Method: Equipmented Dry? led Dry? Sample? ppearance:	tion Temp: G Grundfos t: Ces No Yes No 1311 Yes No General:	Gallons g practicer SSA	Disp. Bailer	Measurem \(\text{V} \) Twhale Pumping F Time Pum Time of Sa Sample EF Sample F Phas Turbidity	S Grab Of Rate: O Began: / Impling: It / 87: 19 Gallons	ky: Forther:	gpm am am Odor: Nor	/ @B	
Sampling Weather C Sampling Dedicated Well Purg Time Purg Duplicate Sample Ap	g Informa Conditions: Method: Equipment ed Dry? led Dry? Sample? ppearance:	tion Temp: Grundfos t: (es) No (es) No 1311 Yes (No) General:	Gallons g pradder SSA ID: Clean	Color: N	Measurem \(\text{V} \) Twhale Pumping F Time Pum Time of Sa Sample EF Sample F Phas Turbidity	S Grab Of Rate: O Began: / Impling: It / 87: 19 Gallons	ky: For ther: -25 9 31 6 0	gpm am am Odor: Nor	/ @B	
Sampling Weather C Sampling Dedicated Well Purg Time Purg Duplicate Sample Ap	g Informa Conditions: Method: Equipment ed Dry? sed Dry? Sample? ppearance: pH G:79	tion Temp: Grundfos t: (es) No (es) No 1311 Yes (No) General:	Gallons g pradder SSA ID: Clean	Color: N	Measurem \(\text{V} \) Twhale Pumping F Time Pum Time of Sa Sample EF Sample F Phas Turbidity	S Grab Of Rate: O Began: / Impling: It / 87: 19 Gallons	ky: For ther: 35 9 31 6 0	gpm am am Odor: Nor	/ @B	
Sampling Weather C Sampling Dedicated Well Purg Time Purg Duplicate Sample Ap	g Informa Conditions: Method: Equipment ed Dry? led Dry? Sample? ppearance:	tion Temp: Grundfos t: (es) No (es) No 1311 Yes (No) General:	Gallons g pradder SSA ID: Clean	Color: N	Measurem \(\text{V} \) Twhale Pumping F Time Pum Time of Sa Sample EF Sample F Phas Turbidity	S Grab Of Rate: O Began: / Impling: It / 87: 19 Gallons	ky: For ther: .25 9 316 0 SEQ 1 2 3	gpm am am Odor: Nor	/ @B	

Minnesota Valley Testing Laboratories, Inc. New Ulm, MN 58073 507 354 8517

Groundwater .	Assessmen	t		Site:	Otte	Tail Po	ower Co./ Big S	Stone
Sampling Personn	nel:			Facility ID:	_			
Dusty	Farasyn			Date:	75016			
	7			Unique Sta	ation ID:			
		Ξ.		Sample ID			Well H6	
Well Condition	- 200.00				7 7 7 1 2	_		
Well Locked?	(TES) NO			Protective	Posts? (TES		No	
Well Labeled?	MES No			State ID T	ag? Yes		OND	
Casing Straight?	Mes No			Grout Sea	Intact? Yes		(ND	
Repairs Necessar	y:	=		10.61 17.1.30.5			1000	
Well Informatio	n							
Well Depth:	17.92			Well Casin	g Elevation:		NA	
Constructed Depth		-			er Elevation:		1	
Casing Diameter:	2"			Previous S	tatic:		1	
Water Level Before	e Purge: 14.	IG		Water Lev	el After Sample	e: Belo	as Pump	
Well Volume:	0.61	Gallons			ent Method:		WLI Steel	Tape
				1				
Sampling Inform	nation	V Z C						
Weather Condition	s: Temp:	69	Wind:	L+V	Sky:	Clo	de	
Sampling Method:	Grundfos	Bladder SSCP			Grab Other:	-	7	
Dedicated Equipme				Pumping R		25	gpm.	
Well Purged Dry?	Ces No			Time Pum		110		(mb)
Time Purged Dry?				Time of Sa		18		一
Duplicate Sample?		ID: -	_	Sample El-				
Sample Appearance		Clear	Color: A	bre Pha			Odor: Wan	2
Time 3PpH	Specific	Temp	D. O.	Turbidity	Gallons	ISEQ	Comments:	
1413 7,37	985	13,78	NA	NA	0.75	1		10
1112	100	1	1	1	10.77	2		
						3		
	10.00					4		
1418 7.28	965	12.05			0.75	5	Recharge	
Stabiliz Yes	(40)		Amount V	Vater Remove	d: 0.75	-	Gallons	
Comments:								

Minnesota Valley Testing Laboratories, Inc. New Ulm, MN 56073 507 354 8517

Groundwater Assessment		Site:	Ott	er Tail P	ower Co./ Big Stone
Sampling Personnel:		Facility ID:	-		
Dusty Farasyn			75e016		
1 1 1 1 1 1		Unique Sta		_	
		Sample ID			Well H8
Well Condition					
Well Locked? (No		Protective	Posts? (Fes	. 6	(NO)
Well Labeled? Yes Vo		State ID Ta			(NO)
Casing Straight? YES No		Grout Seal	Intact? (Yes	3	No
Repairs Necessary:					
Well Information					
Well Depth: 22.33		Well Casin	g Elevation:		1081.23
Constructed Depth: 22.05			er Elevation:	10	73.00
Casing Diameter: 2"		Previous S	tatic:		
Water Level Before Purge: 8,23		Water Leve	el After Sampl	e: 9,2	15
Well Volume: 2,30 Gallons			ent Method:	(Elec.	
		1		-	
Sampling Information					
Weather Conditions: Temp: 69	Wind:	LIV	Sky	: Clo	ud.
Sampling Method: Grundfos Budder SSC			Grab Othe		7
Dedicated Equipment: (18) No		Pumping R			gpm
Well Purged Dry? Yes No		Time Pump		42	am / @
Time Purged Dry?		Time of Sa		12	am / 💬
Duplicate Sample? Yes (No ID:		Sample EH		1.31	
Sample Appearance: General: Cles	Color:	None Pha		e	Odor: None
Time (7) pH Specific Temp	D. O.	Turbidity	Gallons	SEQ	Comments:
1452 7.18 1409 11.10	NA	NA	2.5	1	Commond.
1502 7.12 1408 10.94	10%	TV4	5	2	
1512 7.12 1414 11.05			7.5	3	
1714 114 1117 11103			(2)	4	
			1	5	
Stabilized? Yes No	Amount	Water Remo	ve 7.5	-	Gallons
Comments:	7 HITOURING	Tator Troine	113	_	

Minnesota Valley Testing Laboratories, Inc. New Ulm, MN 5607 507 354 8517

New	Ulm.	MN	5607

	Y AN WORKSTON	Assessment			Site:		r Tail Po	wer Co./ Big S
Sampling Personne					Facility I		>1	
	Dusty	Farasyn	_		Date:	750	6	
	100				Unique 8		5	
			-		Sample	ID:	W	ell H9
Well C	ondition							
Well Lo	cked?	Yes No			Protectiv	e Posts Yes	>	No
Well La	beled?	Yes (No				Tag? Yes		(NO)
Casing	Straight?	res No			Grout Se	al Intacyes	5	No
	Necessar	y:	7		4			
Well In	formatio	n					-	
Well De	oth:	30:71			Well Cas	ing Elevatio	n:	1086.21
	cted Depth	1: 30.20	-			ater Elevatio		75,44
	Diameter:	2"			Previous			21-1-1
		e Purge: /0:7	7		Water Le	vel After Sa	mple:	3,05
Well Vo		3,25	Gallons			ment Metho		
					1			
Sampli	ng Inform	nation		_				
	r Condition		70	Wind:	L+V	Sky:	Clou	4
	g Method:		Bladder SSD			Grab Other		7
	ed Equipm				Pumping	The second in the second	1.25	gpm
	ged Dry?					np Beggo: /		am /
	rged Dry?					Sampling:		am /
		Yes No	ID: -	_	Sample B			
	Appearance		lear	Color:		hase: No		Odor: Nove
								7,7-1
Time(3)	H	Specific Cond.	Temp	D. O.	Turbidity	Gallons	SEQ#	Comments:
1540	6.56	3165	10,69	NA	NA	3.25	1	
1559	6.60	3162	10.55	1 1	1	6.50	2	
1612	6.62	3164	10:37			9.75	3	
			11 1			100	4	
1	100				1		5	
Stabiliz/	es	No		Amount \	Water Remov	ed 9.75		Gallons
Comme				2.10.1		- 12		

Minnesota Valley Testing Laboratories, Inc. New Ulm, MN 56073 507 354 8517

Groundwa	ter Assessi	nent			Site:		Otter	Tail Power Co./ Big Stor
Sampling Per			Facility ID:					
D	will tope	1540			Date:	75201	6	
		7.				Station ID:		
			_		Sample	ID:		Well H4OX
Well Condit	tion			_				
Well Locked?	R-15	CE No			Protectiv	e Posts?	Yes	NB
Well Labeled'	?	RES NO			State ID	Tag?	Yes	(ND)
Casing Straig	ht?	Ces No			Grout Se	al Intact?	(Yes)	No
Repairs Nece					6 Laure			
Well Inform								
Well Depth:	27.	49	5			ing Elevation		1108.22
Constructed D	epth:	27.20	3.		Static Wa	ater Elevati		089.32
Casing Diame		2"	3		Previous	Static:	10	90.71
Water Level E	Before Purge:	18.90			Water Le	vel After Sa	ample:	
Well Volume:	1,40		Gallons	4	Measure	ment Metho	od: Œ	lec. Will Steel Tape
Sampling In Weather Cond Sampling Met	ditions:		(iE) (Bladder Si	Wir		/ Grab	Sky: Other:	Cloudy
Dedicated Equ		Ves No	(Diaduter of	s nish	Pumping		2.25	gpm
Well Purged D		Yes No	-			np Began:	217	am / (m)
Time Purged I		100 110				Sampling:	1340	am / m
Duplicate Sam		Yes (No	TID: -		Sample E		-	Gill 7 year
Sample Appea		General:		Cole	or: - Pha			Odor: —
Time	lpH	Specific	Temp	D.	Turbidity	Gallons	Is	E Comments:
Turis	Ipri	Specific	Temp	J.	Turbluity	Galiulis	- 1º	E Gorinients.
	_			+			2	
		_		-			3	
		-		+			4	
		101	1				. 5	
Stabilized?	¥es-	No		Amo	ount Water			Gallons
Comments:								
Exceptions to I	Protocol;		- Dedicate - Insaff. - NO	cien	t vol	loes not time to	Pul	n water column 19e/sample





Page: 27 of 27

Date Reported: 5 Oct 2016

Work Order #: 201631-0455 Account Number: 006106

PO #: 48680

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

Project Name: BIG STONE PLANT CCR

LABORATORY NARRATIVE

INORGANIC & METALS ANALYSES: Internal standard counts associated with arsenic and cadmium failed in the reporting limit checks for samples 16-A46027, 16-A46028, 16-A46030, and 16-A46032 through 16-A46034. Internal standard counts associated with arsenic, cadmium, thalium, and lead failed in the matrix spike for samples 16-A46027 through 16-A46034, and 16-A46025. Internal standard counts associated with arsenic and cadmium failed in the matrix spike duplicate for samples 16-A46027, 16-A46028, 16-A46030, 16-A46032 through 16-A46034. Data was reported based on acceptable recoveries of the reporting limit checks, matrix spike, and matrix spike duplicate.

The laboratory control spike failed high for cobalt for samples 16-A46025 through 16-A46037. Results below the reporting limit were reported.

Due to the high concentration of calcium in the unspiked sample, the matrix spike recovery did not meet acceptable limits for samples 16-A46025, 16-A46027, 16-A46028, 16-A46030, 16-A46032, and 16-A46033. Data was reported based on acceptable recoveries of the laboratory control spike and matrix spike duplicate as well as acceptable relative percent difference between the matrix spike and matrix spike duplicate.

No other problems were encountered with these analyses.

The analysis of radium-226 and radium-228 for samples 16-A46025 through 16-A46038 was subcontracted to:

Pace Analytical Services, Inc. 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone: (612) 607-1700

MVTL

1126 N. Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890
2616 E. Broadway Ave. ~ Bismarck, ND 58502 ~ 800-279-6885 ~ Fax 701-258-9724
1201 Lincoln Highway ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885
www.mvtl.com

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Page: 1 of 3

Quality Control Report Lab IDs: 16-A46025 to 16-A46039

ab IDs: 16-A46025 to 16-A46039 Project: BIG STONE PLANT CCR Work Order: 201631-0455

.ab IDs: 16-A46025 to 16-A4	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike	Matrix Spike Orig Result	Matrix Spike 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
Antimony ug/L	25.0 25.0	102 102	85-115 85-115	25.0 25.0	16A46025q a46292qc	<2.5 <0.5	26.3 26.8	105 107	75-125 75-125	26.3 26.8	26.5 27.3	106 109	0.8 1.8	10 10	100 100	90-110 90-110	< 0.5 < 0.5
Arsenic ug/L	25.0 25.0 25.0	102 105 102	85-115 85-115 85-115	25.0 25.0 25.0	16A46025q 16A46025q a46292qc	1.81 <2.5 1.51	31.2 28.6 28.9	118 114 110	75-125 75-125 75-125	31.2 28.6 28.9	31.0 28.0 29.0	117 112 110	0.6 2.1 0.3	10 10 10	104 99 98	90-110 90-110 90-110	< 0.5 < 0.5 < 0.5
Barium mg/L	1.000	104	85-115	1.00 1.00	16A46029q 16A46035q	0.032 0.052	1.130 1.140	110 109	75-125 75-125	1.130 1.140	1.160 1.140	113 109	2.6 0.0	10 10	106 101	90-110 90-110	< 0.005
Beryllium mg/L	1.000	103	85-115	1.00 1.00	16A46029q 16A46035q	< 0.005 < 0.005	1.010 1.020	101 102	75-125 75-125	1.010 1.020	1.010 1.020	101 102	0.0	10 10	104 102	90-110 90-110	< 0.005
Boron mg/L	1.000 1.000	110 105	85-115 85-115	1.00 1.00 1.00	16A46029q 16A46035q A46029qc	1.210 0.407 1.160	2.390 1.520 2.110	118 111 95	75-125 75-125 75-125	2.390 1.520 2.110	2.400 1.540 2.160	119 113 100	0.4 1.3 2.3	10 10 10	103 101 100	90-110 90-110 90-110	< 0.1 < 0.1
Cadmium ug/L	5.00 5.00 5.00	104 108 104	85-115 85-115 85-115	5.00	16A46025q 16A46025q a46292qc	0.64 0.55 < 0.1	6.18 5.88 5.19	111 107 104	75-125 75-125 75-125	5.88	6.04 5.76 5.25	108 104 105	2.3 2.1 1.1	10 10 10	108 100 98	90-110 90-110 90-110	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Calcium mg/L	50.00 50.00	102 105	85-115 85-115		16A46029q 16A46035q A46029qc 16A46035q	555.0 126.0 606.0 131.0	570.0 178.0 644.0 182.0	30 104 76 102	75-125 75-125 75-125 75-125	644.0	594.0 178.0 648.0 184.0	78 104 84 106	4.1 0.0 0.6 1.1	10 10 10 10	98 97 100 99	90-110 90-110 90-110 90-110	< 0.5
Chloride mg/L	1	1		60.0 60.0	16-A46034 16-A46405	5.3 95.2	63.7 151	97 93	85-120 85-120		63.5 152	97 95	0.3	5 5	101 98	90-110 90-110	10.00
Chromium mg/L	1.000	111	85-115	1.00	16A46029q 16A46035q	< 0.01 < 0.01	1.020 1.090	102 109	75-125 75-125		1.060 1,090	106 109	3.8 0.0	10 10	105 103	90-110 90-110	
Cobalt mg/L	1.000	116 108	85-115 85-115		16A46029q 16A46035q 16A46035q	< 0.005 < 0.005 < 0.005	1.030 1.080 1.060	103 108 106	75-125 75-125 75-125	1.080	1.050 1.080 1.030	105 108 103	1.9 0.0 2.9	10 10 10	110 108 105	90-110 90-110 90-110)

MVTL

1126 N. Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890
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Page: 2 of 3

Quality Control Report Lab IDs: 16-A46025 to 16-A46039

Lab IDs: 16-A46025 to 16-A46039 Project: BIG STONE PLANT CCR Work Order: 201631-0455

malyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike 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
Fluoride mg/L	0.200	110	85-115	0.20 0.20 0.20	16-A46034 A46038QC 16-A46307	0.400 0.090 1.05	0.590 0.290 1.27	95 100 110	75-125 75-125 75-125	0.590 0.290 1.27	0.590 0.300 1.22	95 105 85	0.0 3.4 4.0	10 10 10	101 103	90-110 90-110	< 0.02
Lead ug/L	25.0 25.0 25.0	103 104 104	85-115 85-115 85-115	25.0 25.0 25.0	16A46025q 16A46025q a46292qc	<1 <2.5 <0.5	27.5 26.9 26.0	110 108 104	75-125 75-125 75-125	27.5 26.9 26.0	26.3 26.0 26.0	105 104 104	4.5 3.4 0.0	10 10 10	100 98 96	90-110 90-110 90-110	< 0.5 < 0.5 < 0.5
Lithium mg/L	1.000	101	85-115	1.00 1.00	A46029qc 16-A46035	0.136 0.058	1.140 1.180	100 112	75-125 75-125	1.140 1.180	1.170 1.150	103 109	2.6 2.6	10 10	103 102	90-110 90-110	< 0.005
Mercury ug/L				0.10 0.10	16-A46034 16-A46215	0.013 < 0.005	0.104 0.072	91 72	67-106 67-106		0.104 0.071	91 71	0.0	9	95 88	76-113 76-113	< 0.005 < 0.005 < 0.005 < 0.005
Molybdenum mg/L	1.000	106	85-115	1.00 1.00	16A46029q 16A46035q	< 0.015 < 0.015	1.010 1.060	101 106	75-125 75-125	47.67	1.050 1.050	105 105	3.9 0.9	10 10	101 100	90-110 90-110	< 0.015
pH units			1		4	1	ŧ	9		7.3	7.3	į,	0.0	2.5	101 101	90-110 90-110	
Selenium ug/L	25.0 25.0	102 102	85-115 85-115	25.0 25.0	16A46025q a46292qc	27.2 1.38	56.3 28.9	116 110	75-125 75-125		54.5 30.0	109 114	3.2	10 10	100 97	90-110 90-110	< 0.5 < 0.5
Solids, Total Dissolved mg/L	-	i i	2	5	-	-	(4)	0.5	(0)	925 1510	940 1500	ţ	1.6 0.7	10 10	105	85-115	< 10
Sulfate mg/L				600 60.0 600 60.0	16-A46034 16-A46721 16-A46514 16-A45884	869 21.5 515 54.9	1520 85.4 1170 120	108 106 109 108	78-126 78-126 79-124 78-126	85.4 1170	1510 85.1 1150 123	107 106 106 114	0.7 0.4 1.7 2.5	5 5 5 5	101 100	90-110 90-110	1
Thallium ug/L	5.00 5.00 5.00	102 102 102	85-115 85-115 85-115	5.00	16A46025q 16A46025q a46292qc	<0.2 <0.5 <0.1	5.49 5.35 5.25	110 107 105	75-125 75-125 75-125	5.35	5.32 5.26 5.26	106 105 105	3.1 1.7 0.2	10 10 10	100 98 96	90-110 90-110 90-110	< 0.1

Page 3 of 3

The cobalt LCS recovery was above the acceptance limit, see narrative.

The calcium matrix spike recovery was outside the acceptance limit, see narrative.

Approved by:



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Date: 9/30/2016

CLIENT:

MVTL Inc

Project:

31-0455

Lab Order:

\$1609153

CASE NARRATIVE

Report ID: S1609153001

Samples A46025 H2OX, A46026 H3OX, A46027 H6, A46028 H8, A46029 H9, A46030 Slag 1, A46031 Slag 4, A46032 Slag 5, A46033 Slag 6, A46034 Slag 7, A46035 Slag 8, A46036 Slag 9, A46037 Slag 9 Deep, and A46038 Slag 2B were received on September 9, 2016.

All samples were received and analyzed within the EPA recommended holding times, except those noted below in this case narrative. Samples were analyzed using the methods outlined in the following references:

"Standard Methods For The Examination of Water and Wastewater", approved method versions Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition 40 CFR Parts 136 and 141 40 CFR Part 50, Appendices B, J, L, and O

Methods indicated in the Methods Update Rule published in the Federal Register Friday, May 18, 2012

ASTM approved and recognized standards

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Reviewed by: All

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 1



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

ANALYTICAL QC SUMMARY REPORT

CLIENT:

MVTL Inc.

Date: 9/30/2016

Work Order:

S1609153 31-0455

Report ID: S1609153001

	Report ID: 31009133001	
Sample Type MBLK	Units: pCi/L	
RunNo: 139110	PrepDate: 09/14/16 12:00 BatchID: 12333	
Result	RL Spike Ref Samp %REC % Rec Limits	Qu
ND	1	
Sample Type LCS	Units: pCl/L	
RunNo: 139110	PrepDate: 09/14/16 12:00 BatchID: 12333	
Result	RL Spike Ref Samp %REC % Rec Limits	QL
44	1 38.5 113 61.3 - 120	
Sample Type MS	Units: pCi/L	
RunNo: 139110	PrepDate: 09/14/16 12:00 BatchID: 12333	
Result	RL Spike Ref Samp %REC % Rec Limits	Qu
36	1 38.5 ND 94.6 64.3 - 120	
Sample Type MSD	Units: pCI/L	
RunNo: 139110	PrepDate: 09/14/16 12:00 BatchID: 12333	
Result	RL Conc %RPD %REC % RPD Limits	Qu
43	1 36 16.1 111 20	
Sample Type MBLK	Units: pCi/L	
RunNo: 138896	PrepDate: 09/14/16 0:00 BatchID: 12315	
Result	RL Spike Ref Samp %REC % Rec Limits	Qu
ND	0.2	
Sample Type LCS	Units: pCi/L	
RunNo: 138896	PrepDate: 09/14/16 0:00 BatchID: 12315	
Result	RL Spike Ref Samp %REC % Rec Limits	Qua
5.4	0.2 5.99 89.6 67.1 - 122	
Sample Type MS	Units: pCi/L	
RunNo: 138896	PrepDate: 09/14/16 0:00 BatchID: 12315	
Result	RL Spike Ref Samp %REC % Rec Limits (Qua
5.1	0.2 5.99 0.2 81.5 65 - 131	
Sample Type MSD	Units: pCi/L	
	RunNo: 139110 Result ND Sample Type LCS RunNo: 139110 Result 44 Sample Type MS RunNo: 139110 Result 36 Sample Type MSD RunNo: 139110 Result 43 Sample Type MBLK RunNo: 138896 Result ND Sample Type LCS RunNo: 138896 Result 5.4 Sample Type MS RunNo: 138896 Result 5.4 Sample Type MS	Sample Type MBLK

Qualifiers:

- Analyte detected in the associated Method Blank
- Holding times for preparation or analysis exceeded
- Analyzed by another laboratory

MSD-1663 (09/20/16 14:22)

Analyte

Radium 226

- Outside the Range of Ollutions
- Spike Recovery outside accepted recovery limits
- Value above quantitation range

RunNo: 138896

Result

5.7

RL

0.2

PrepDate: 09/14/16 0:00

Conc

5.1

%RPD

10.8

- Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- RPD outside accepted recovery limits
- х Matrix Effect

BatchID: 12315

% RPD Limits Qual

20

%REC

91.3

Minnesota Valley Testing Laboratories

1126 North Front Street Phone: 800 782 3557 New Ulm, MN 56003 Fax: 507 359 2890

Field Service Chain of Custody Record

This is an exact copy of the original document

By Date Suptle

Pages 1-20

Project Otter Tail Power Company	Project Type:	Big Stone Plant CCR	Name of Samplers:	Alan Gleisner
Report Otter Tail Power Company	Carbon Copy:			Pusty Farasyn
Attn: Paul Vukonich	Attn:		Quote Number:	
Address P.O. Box 496	Address:		Work Order Number:	11-ALISC
Fergus Falls, MN 56538-0496	A Comment		Lab Numbers:	1 6 122
Phone: 218-739-8349				

		Sample in	formation	1							Bott	le Ty	pe					Analysis
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	1 Gallon nom	Fillered Yor N	500 JAN.	1		Filler? Y or M		1000 Amber	500 NaOH	Other: 150 Hag	Other 150 No.	Analysis Required
A46025	H2OX		750016	1230	GW		1	1	1	N			12	1				See Attached
26	НЗОХ		1	1316	GW		1		1	N				T I	1			
	H4OX			NS	GW		1-1			N	-	3			120			
27	H-6			1418	GW		1		1	N					11.0			
28	H-8		1.5	1512	GW	1	1	- R	1 1	N		5						
	H-9			1612	GW	1	1		1 1	N		!						
	Slag 1		75-016	1208	GW	-	1		1 1	N			7		7	-	V-	
	Slag 4			1319	GW		1		1 1	N		L.				-		
	Slag 5			1725	GW	1	1		1 1	N								
	Slag 6			1354	GW		1		1 1	N			1					

Comments:

Samples Relin		No-	Samples Received By:	U nuda	
Date: 89	See 16 Time:	1055 Temp: 3.0	Ert Date: 8 Sup+ IL	Time: 1055	Temp; 3, (r
Samples Relin	quished into: Fridge	Log in Cart Of	ther:		
Samples Relin	quished By:		Samples Received By:		
Date:	Time:	Temp:	Date:	Time:	Temp:
Delivery:	Samplers Other:		Seal Number(s) - If Us	ed	
Transport:	Ambient Ce	Other:	Seals Intact?	Yes No	

Minnesota Valley Testing Laboratories 1126 North Front Street New Ulm, MN 56003 Phone: 800 782 3557 Fax: 507 359 2890

Field Service Chain of Custody Record

roject Otter Tail Power Company Report Otter Tail Power Compan								ant oc	ĸ	Quoi	e Nu	Sam Imber Ier No bers:	r: umb	_		D	us)	y F	ner ävesyn
Lab Number	Sample ID	Sample In	formation g_{q_Q}	Time	Sample Type	Sample Location	1 Gallon none	Fillered Yor N	OD none	SOO HINGS	1	Bottl POSCH 005	1	1	00 Amber	HOBN 009	Other: 150 H262	Other 150 Mc	Analysis Required
34	Slag 7	205	75ep 16	1437	GW	0 7	1		1	1	N	35	IL.	12	2 4	26	0	0	See Attached
35	Slag 8		1	1644	GW		1		1	1	N								
	Slag 9			1819	GW		1		1	1	N					ê €A			
	Slag 9 Dee	р		1827	GW		1		1	1	N				777				
38	Slag 2B		-	1852	GW		1		1	1	N								
Comme	ents: 2	imital s	sample o	n Stag	28 -)ooo No		500 H	NO3	, 3	5 0	allor	. ,;	5					

		1	1.1			A 1		
Samples Reli	nquished By:	al	-106-	_	Samples Received E	y: 11 - Kud	4)	
Date:	85016	Time:	1055	Temp:3000	San Date: 8 Sen + 16	Time	: 1055	Temp: 3 oc
Samples Reli	nquished into:	Fridge	Log in C	art Othe	r;			
Samples Reli	inquished By:				Samples Received B	By:		
Date:		Time:		Temp:	Date:	Time		Temp:
Delivery:	Samples	Other:			Seal Number(s) - if I	Jsed		
Transport:	Ambient	dee		Other:	Seals Intact?	Yes	No	

Big Stone Sampling

Site*	Parameter	Well	Diameter	Well	Sample	Dedicated?	Pump Rate	Goes	Sampling
	List	Depth	(Inches)	Elevation	Equipment	Dedicated /	(ml/minute)	Dry?	Seasons**
WELL10	A	47.43	4	1098.70	Keck/Tsunami	No	3,000	No	1,3
WELL11	A	127.22	4	1104.00	Other Pump	Yes	36,000	No	1,3
WELL12	A	112,40	4	1071.89	Other Pump	Yes	20,000	No	1,3
S1	В	32.50	2	1102.17	Bailer	Yes	N/A	Yes	1,3
S2	В	43,12	2	1102.39	Bailer	Yes	N/A	Yes	1,3
S3	В	62.50	2	1102,65	Bailer	Yes	N/A	No	4.2
54	В	27.70	2	1090.57	Baller	Yes	N/A	Yes	1,3
S5	В	46.72	2	1091.40	Bailer	Yes	N/A	Yes	1,3
S6	В	62.05	2	1090.71	Bailer	Yes	N/A	No	1,3
H1OX	CCCR	32,91	2	1115.89	Bailer	Yes	100		1,3
HINT	C	60.11	2	1115.81	Keck/Tsunami	No	1500	Yes	1,3
H2OX	C, CCR	32.20	2	1103.91	Bladder	Yes		No	1,3
H2INT	C	62,30	2 2 2 2 2 2 2 2 2	1103.91	Baller	Yes	100	Yes	1,3
H3OX	C, CCR	22,55	2	1095.19	Bladder	Yes	N/A	Yes	1,3
H3INT	C	54.31	2	1095.17	Whale		100	Yes	1,3
H4OX	C. CCR	27.20	2	1108.22	Bladder	No	2000	No	1,3
HAINT	C	80.01	2			Yes	100	No	1,3
H5	c	43.30	2	1108.61	Keck/Tsunami	No	2000	Yes	1,3
H6			2	1122.80	Whale	No	1000	No	1,3
H7	C, CCR	15,00	2 2	1097.76	Bladder	Yes	100	Yes	1,3
	C	33.20	2	1106.06	Whale	No	1000	Yes	1,3
H8	C, CCR	22.05	2	1081,23	Bladder	Yes	100	TBD	1,3
H9	CCR	30,20	2	1086.21	Bladder	Yes	100	TBD	
BC1	В	16.26	2 2 2 2	1118.46	Bailer	Yes	N/A	No	1,3
BC101	В	39.30	2	1118.70	Baller	Yes	N/A	Yes	1,3
BC2R	В	32.48	2	1115,28	Baller	Yes	N/A	No	1,3
BC3R	В	35.15	2	1114.42	Bailer	Yes	N/A	Yes	1,3
BC4R	В	34.60	2	1113.86	Bailer	Yes	NA	Yes	1,3
BC5R	В	37.32	2	1123.02	Bailer	Yes	N/A	No	1,3
BC6R	В	33.95	2	1121.58	Baller	Yes	N/A	No	1,3
SLAG1	CCR	34.90	2	TBD	LOW FLOW	No	100	TBD	1,0
SLAG2	CCR	TBD	2	4111.06	LOW FLOW	TBD	100	TBD	1,3 4,3
SLAG3	GCR	TBD	2	TBD	LOW-FLOW	TB0	100	TBC	1.0
SLAG4	CCR	39.00	2	TBD	LOW FLOW	No	100	TBD	1,3
SLAG5	CCR	38.80	2	1107.30	LOW FLOW	No	100	TBD	4,3
SLAG6	CCR	37.30	2	1111.51	LOW FLOW	No	100		1,3
SLAG7	CCR	48.70	2	1114.39	LOW FLOW	No	100	TBD	1,3
SLAG8	CCR	52.09	2	1127.26	LOW FLOW	No	100		4,3
SLAG9	CCR	49.80	2	1122.35	LOW FLOW	No		TBD	1,3
SLAG9 DEEP***	CCR	68.00	2	1121,92	LOW FLOW	No	100	TBD	
SLAG2B	CCR	40.80	2	1111.26	LOW FLOW		100	TBD	
COOLING POND	A	N/A	N/A	N/A		No	100	TBD	
EVAPORATION POND	Â				Grab	N/A	N/A	No	1,3
HOLDING POND	Â	N/A	N/A	NA	Grab	N/A	NA	No	1,3
RECLAIM POND		N/A	N/A	N/A	Grab	N/A	N/A	No	1,3
NEODAWI POND	C	N/A	N/A	N/A	Grab	N/A	N/A	No	1,3

^{*} Three additional monitoring wells will be installed the Spring of 2016. Each well will be screened approximately 35' below ground surface and will be analyzed for the "C" parameter list. In addition, a new site with 9 wells will be added and will be analyzed for CCR Parameters ONLY.

*** 1 = Spring (March 28 - April 28), 2 = Summer (July 1 - August 7), 3 = Fall (October 14- November 14)

*** Only sample for the first two CCR background sampling events.

Big Stone Plant CCR Appendix III Parameters

CCR - Appendix III Detection Monitoring Field Parameters pH*

* Field and Laboratory Measurements

Total Concentration Parameters

Boron

Calcium

Chloride

Fluoride

pH

Sulfate

Dissolved Solids, Total

Big Stone CCR Appendix IV Parameters CCR - Appendix IV - Assessment Monitoring

Total Concentration Parameters

Antimony

Arsenic

Barium

Beryllium

Cadmium

Chromium, Total

Cobalt

Fluoride

Lead

Lithium

Mercury

Molybdenum

Selenium

Thallium

Radium 226 + 228



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FINAL REPORT COMPLETION DATE: 2001014 as

Date Reported: 5 Dec 2016

1 of 30

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496 FERGUS FALLS MN 56538-0496 Work Order #: 31-0543 Account #: 006106

PO #: 48680

Project Name: BIG STONE PLANT

Field Service Manager/Date Reviewed

160cc 2016 Chemistry Manager/Date Reviewed

Quality Assurance Director/Date Reviewed

RL = Reporting Limits

NQ = Not Present, Qualitative Only

PQ = Present, Qualitative Only

ND = Not Determined



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT

Sample Description: WELL H20X

Report Date: 15 Dec 2016 Lab Number: 16-A56142 Work Order #: 31-0543 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 17 Oct 2016 18:15
Sampled By: MVTL FIELD PERSONNEL
Date Received: 18 Oct 2016 14:40

PO #: 48680

Temp at Receipt: 0.0C

	As Receiv	red		Method RL	Method Reference	77.7	te alyzed		Analyst
MS Water Digestions			_			21	Oct 16		JMS
Water Digestions						20	Oct 16		JMS
Radium 226	See Attac	hed				2	Dec 16	15:52	ABL
Radium 228	See Attac	hed			EPA M9320	2	Dec 16	15:52	ABL
pH, Field	6.54	units		1.00	I-1586-85	17	Oct 16	18:15	BMW
рН	* 7.1	units		1.0	SM 4500 H+B-96	19	Oct 16	17:21	RC
Sulfate	2360 ~	mg/L		4.0	ASTM D516-02	20	Oct 16	9:32	AKE
Chloride	3.9	mg/L		3.0	SM 4500 C1 E	21	Oct 16	9:04	MRW
Mercury	< 0.005	ug/L		0.005	EPA 245.7	21	Oct 16	11:18	TWB
Solids, Total Dissolved	3770	mg/L		10	SM 2540 C-97	20	Oct 16	15:54	RC
Calcium	299.0	mg/L		0.500	SW6010C	25	Oct 16	10:34	RMV
	See Narra				- Acces - C				
Lithium	0.436	mg/L		0.005	SW6010C	25	Oct 16	10:34	RMV
Barium	0.006	mg/L		0.005	SW6010C	25	Oct 16	10:34	RMV
Cobalt	< 0.01 ^			0.005	SW6010C	25	Oct 16	10:34	RMV
Boron	0.284	mg/L		0.100	SW6010C	14	Nov 16	14:05	RMV
Antimony	< 2.5 €	ug/L		0.5	SW6020A	3	Nov 16	17:54	RMB
Arsenic	< 2.5 €	ug/L		0.5	SW6020A	3	Nov 16	17:54	RMB
Beryllium	< 0.25 €	ug/L		0.05	SW6020A	14	Nov 16	14:11	RMB
Cadmium	< 0.5 @	ug/L		0.1	SW6020A	3	Nov 16	17:54	RMB
Chromium	< 5	ug/L		0.5	SW6020A	3	Nov 16	17:54	RMB
OH LONG CAN	^@See Nar				4644000				
Lead	< 0.5	ug/L		0.5	SW6020A	3	Nov 16	17:54	RMB
acad .	@See Narr			450	The state of the s	-	20,77, 1710	0.000	
Molybdenum	19.3 @	ug/L		0.50	SW6020A	3	Nov 16	17:54	RMB
Selenium	26.1 0	ug/L		0.50	SW6020A	3	Nov 16	17:54	RMB
Phallium	< 0.5	ug/L		0.1	SW6020A		Nov 16		RMB
a trouble will	@See Narr			7.50	E70-103-0	-			
Fluoride	0.360	mq/L		0.020	EPA 300.0	1	Nov 16	19:54	RMB



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT

Sample Description: WELL H20X

Report Date: 15 Dec 2016
Lab Number: 16-A56142
Work Order #: 31-0543
Account #: 006106
Sample Matrix: GROUNDWATER
Date Sampled: 17 Oct 2016 18:15
Sampled By: MVTL FIELD PERSONNEL
Date Received: 18 Oct 2016 14:40

PO #: 48680

Temp at Receipt: 0.0C

As Received Result Method RL Method Reference Date Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

- Sample diluted due to result above calibration of linear range.
- * The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT

Sample Description: WELL H30X

Report Date: 15 Dec 2016 Lab Number: 16-A56143 Work Order #: 31-0543 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 18 Oct 2016 8:45
Sampled By: MVTL FIELD PERSONNEL
Date Received: 18 Oct 2016 14:40
PO #: 48680

Temp at Receipt: 0.0C

	As Receiv	ved	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions			_		21 Oct 16	JMS
Water Digestions					20 Oct 16	JMS
Radium 226	See Attac	ched			2 Dec 16 15:53	ABL
Radium 228	See Attac	ched		EPA M9320	2 Dec 16 15:53	ABL
pH, Field	6.67	units	1.00	1-1586-85	18 Oct 16 8:45	BMW
pH.	* 7.0	units	1.0	SM 4500 H+B-96	19 Oct 16 17:21	RC
Sulfate	1880 ~	mq/L	4.0	ASTM D516-02	20 Oct 16 9:32	AKF
Chloride	84.2	mg/L	3.0	SM 4500 C1 E	21 Oct 16 9:04	MRW
Mercury	0.006	ug/L	0.005	EPA 245.7	21 Oct 16 12:24	TWB
Solids, Total Dissolved	3390	mg/L	10	SM 2540 C-97	21 Oct 16 18:38	RC
Calcium	420.0 ~	mg/L	0.500	SW6010C	25 Oct 16 11:01	RMV
Lithium	0.147	mg/L	0.005	SW6010C	25 Oct 16 11:01	RMV
Barium	0.017	mq/L	0.005	SW6010C	25 Oct 16 11:01	RMV
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	25 Oct 16 11:01	RMV
Boron	8.550 ~	mg/L	0.100	SW6010C	25 Oct 16 11:01	RMV
Antimony	< 2.5 @	ug/L	0.5	SW6020A	3 Nov 16 17:54	RMB
Arsenic	< 2.5 @	ug/L	0.5	SW6020A	3 Nov 16 17:54	RMB
Beryllium	< 0.25 @	ug/L	0.05	SW6020A	14 Nov 16 14:11	RMB
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	3 Nov 16 17:54	RMB
Chromium	< 2.5 @	ug/L	0.5	SW6020A	15 Nov 16 10:36	RMB
Lead	< 2.5	ug/L	0.5	SW6020A	3 Nov 16 17:54	RMB
	@See Narr			4004000	2 447 97 5474	
Molybdenum	38.8 @	ug/L	0.50	SW6020A	3 Nov 16 17:54	RMB
Selenium	< 2.5 €	ug/L	0.5	SW6020A	3 Nov 16 17:54	RMB
Thallium	< 0.5	ug/L	0.1	SW6020A	3 Nov 16 17:54	RMB
	@See Narr		7.15	EX12526	S (22 (54)22)	13100
Pluoride	0.320	mg/L	0.020	EPA 300.0	26 Oct 16 0:28	RMB

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

- Sample diluted due to result above calibration of linear range.
- * The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT

Sample Description: WELL H40X

Report Date: 15 Dec 2016 Lab Number: 16-A56144 Work Order #: 31-0543 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 18 Oct 2016 10:01 Sampled By: MVTL FIELD PERSONNEL Date Received: 18 Oct 2016 14:40

PO #: 48680

Temp at Receipt: 0.0C

	As Receiv	red	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					21 Oct 16	JMS
Water Digestions					20 Oct 16	JMS
Radium 226	See Attac	hed			2 Dec 16 15:53	ABL
Radium 228	See Attac	hed		EPA M9320	2 Dec 16 15:53	ABL
pH, Field	6.59	units	1.00	1-1586-85	18 Oct 16 10:01	BMW
pH	* 7.0	units	1.0	SM 4500 H+B-96	19 Oct 16 17:21	RC
Sulfate	1200 ~	mg/L	4.0	ASTM D516-02	20 Oct 16 9:32	AKE
Chloride	48.2	mg/L	3.0	SM 4500 C1 E	21 Oct 16 9:04	MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7	21 Oct 16 12:24	TWB
Solids, Total Dissolved	2200	mg/L	10	SM 2540 C-97	21 Oct 16 18:38	RC
Calcium	353.0	mg/L	0.500	SW6010C	25 Oct 16 11:01	RMV
ithium	0,106	mg/L	0.005	SW6010C	25 Oct 16 11:01	RMV
Barium	0.016	mg/L	0.005	SW6010C	25 Oct 16 11:01	RMV
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	25 Oct 16 11:01	RMV
Boron	0.364	mg/L	0.100	SW6010C	25 Oct 16 11:01	RMV
Antimony	< 0.5	ug/L	0.5	SW6020A	3 Nov 16 17:54	RMB
Arsenic	0.74	ug/L	0.50	SW6020A	3 Nov 16 17:54	RMB
Beryllium	< 0.25 €	ug/L	0.05	SW6020A	14 Nov 16 14:11	RMB
Cadmium	< 0.1	ug/L	0.1	SW6020A	3 Nov 16 17:54	RMB
Chromium	0.72	ug/L	0.50	SW6020A	27 Oct 16 21:32	RMB
STIL OLILL WIL	See Narra		20000	60549.03		
Lead	< 0.5	ug/L	0.5	SW6020A	3 Nov 16 17:54	RMB
Jeau	See Narra				2 341 11 21 22	Circ
folybdenum	5,24	ug/L	0.50	SW6020A	3 Nov 16 17:54	RMB
Selenium	0.60	ug/L	0.50	SW6020A	3 Nov 16 17:54	RMB
'hallium	< 0.1	ug/L	0.1	SW6020A	3 Nov 16 17:54	RMB
NOTTIME	See Narra	-ive	-14	2,122,247		4 11 11 11
Fluoride	0.440	mg/L	0.020	EPA 300.0	26 Oct 16 0:28	RMB

RI = Reporting Limit
Analyses performed under our Minnesota Department of Realth Accreditation conform to the current TNI standards.
Analyses performed under our Minnesota Department of Realth Accreditation conform to the current TNI standards.
The reporting limit was alavated for any analyte requiring a dilution as coded below:

Due to sempla matrix
Due to concentration of other analytes
Due to internal standard response

CERTIFICATION: NN LAB # 027-015-125
AND LAB # 999447680
ND MICRO # 1013-N
ND WW/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

Project Name: BIG STONE PLANT

Sample Description: WELL H40X

Account #: 006106
Sample Matrix: GROUNDWATER

Date Sampled: 18 Oct 2016 10:01 Sampled By: MVTL FIELD PERSONNEL Date Received: 18 Oct 2016 14:40

PO #: 48680

Temp at Receipt: 0.0C

Report Date: 15 Dec 2016 Lab Number: 16-A56144

Work Order #: 31-0543

As Received Result Method RL Method Reference

Date Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

~ Sample diluted due to result above calibration of linear range.

The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT

Sample Description: WELL H6

Report Date: 15 Dec 2016 Lab Number: 16-A56145 Work Order #: 31-0543 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 17 Oct 2016 16:34
Sampled By: MVTL FIELD PERSONNEL
Date Received: 18 Oct 2016 14:40

PO #: 48680

Temp at Receipt: 0.0C

	As Receiv	red	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					21 Oct 16	JMS
Water Digestions					20 Oct 16	JMS
Radium 226	See Attac	hed			2 Dec 16 15:53	ABL
Radium 228	See Attac	hed		EPA M9320	2 Dec 16 15:53	ABL
pH, Field	7.11	units	1.00	I-1586-85	17 Oct 16 16:34	DGF
pH	* 7.5	units	1.0	SM 4500 H+B-96	19 Oct 16 17:21	RC
Sulfate	72.4 @	mg/L	4.0	ASTM D516-02	20 Oct 16 10:07	AKF
Chloride	< 3	mg/L	3	SM 4500 C1 E	21 Oct 16 9:04	MRW
Mercury	0.007	ug/L	0.005	EPA 245.7	21 Oct 16 12:24	TWB
Solids, Total Dissolved	501	mg/L	10	SM 2540 C-97	20 Oct 16 15:54	RC
Calcium	58,00	mg/L	0.500	SW6010C	25 Oct 16 11:01	RMV
Lithium	0.034	mg/L	0.005	SW6010C	25 Oct 16 11:01	RMV
Barium	0.112	mg/L	0.005	SW6010C	25 Oct 16 11:01	RMV
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	25 Oct 16 11:01	RMV
Boron	4.480	mg/L	0.100	SW6010C	25 Oct 16 11:01	RMV
Antimony	< 0.5	ug/L	0.5	SW6020A	3 Nov 16 17:54	RMB
Arsenic	2.05	ug/L	0.50	SW6020A	3 Nov 16 17:54	RMB
Beryllium	< 0.25 €	ug/L	0.05	SW6020A	14 Nov 16 14:11	RMB
Cadmium	< 0.1	ug/L	0.1	SW6020A	3 Nov 16 17:54	RMB
Chromium	3.55	ug/L	0.50	SW6020A	27 Oct 16 21:32	RMB
	See Narra		2,12,1			
Lead	1.41	ug/L	0.50	SW6020A	3 Nov 16 17:54	RMB
	See Narra		40.44			
Molybdenum	20.9	ug/L	0.50	SW6020A	27 Oct 16 21:32	RMB
	See Narra		(5,0,0)	100 to 10	300 200 300 300 300	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Selenium	8.13	ug/L	0.50	SW6020A	3 Nov 16 17:54	RMB
Thallium	< 0.1	ug/L	0.1	SW6020A	3 Nov 16 17:54	RMB
And the same of th	See Narra			E-03-1-00-1-	72 24 25 25 27 25	0.0
Fluoride	0.520	mg/L	0.020	EPA 300.0	26 Oct 16 0:28	RMB

^{*} Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT

Sample Description: WELL H8

Report Date: 15 Dec 2016 Lab Number: 16-A56146 Work Order #: 31-0543 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 17 Oct 2016 17:27 Sampled By: MVTL FIELD PERSONNEL Date Received: 18 Oct 2016 14:40

PO #: 48680

Temp at Receipt: 0.0C

	As Receiv	red	Method RL	Method Reference	Date Analy:	zed	Analyst
MS Water Digestions					21 Oct	: 16	JMS
Water Digestions					20 Oct	16	JMS
Radium 226	See Attac	hed			2 Dec	16 15:53	ABL
Radium 228	See Attac	hed		EPA M9320	2 Dec	16 15:53	ABL
pH, Field	6.84	units	1.00	I-1586-85	17 Oct	16 17:27	DGF
pH	* 7.3	units	1.0	SM 4500 H+B-96	19 Oct	16 17:21	RC
Sulfate	336 ~	mg/L	4.0	ASTM D516-02	20 Oct	16 10:07	AKF
Chloride	4.2	mg/L	3.0	SM 4500 CL E	21 Oct	16 9:22	MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7	21 Oct	16 12:24	TWB
Solids, Total Dissolved	927	mg/L	10	SM 2540 C-97	20 Oct	16 15:54	RC
Calcium	136.0	mg/L	0.500	SW6010C	25 Oct	16 11:01	RMV
Lithium	0.045	mg/L	0.005	SW6010C	25 Oct	16 11:01	RMV
Barium	0.033	mg/L	0.005	SW6010C	25 Oct	16 11:01	RMV
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	25 Oct	16 11:01	RMV
Boron	4.150	mg/L	0.100	SW6010C	25 Oct	16 11:01	RMV
Antimony	< 0.5	ug/L	0.5	SW6020A	3 Nov	16 17:54	RMB
Arsenic	0.83	ug/L	0.50	SW6020A	3 Nov	16 17:54	RMB
Beryllium	< 0.25 @	ug/L	0.05	SW6020A	14 Nov	16 14:11	RMB
Cadmium	< 0.1	ug/L	0.1	SW6020A	3 Nov	16 17:54	RMB
Chromium	< 0.5	ug/L	0.5	SW6020A	27 Oct	16 21:32	RMB
	See Narra	tive					
Lead	< 0.5	ug/L	0.5	SW6020A	3 Nov	16 17:54	RMB
	See Narra	tive					
Molybdenum	14.1	ug/L	0.50	SW6020A	3 Nov	16 17:54	RMB
Selenium	8.91	ug/L	0.50	SW6020A	3 Nov	16 17:54	RMB
Thallium	< 0.1	ug/L	0.1	SW6020A	3 Nov	16 17:54	RMB
	See Narra						
Fluoride	0.590	mg/L	0.020	EPA 300.0	26 Oct	16 0:28	RMB



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT

Sample Description: WELL H8

As Received Result

Report Date: 15 Dec 2016 Lab Number: 16-A56146 Work Order #: 31-0543 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 17 Oct 2016 17:27 Sampled By: MVTL FIELD PERSONNEL Date Received: 18 Oct 2016 14:40

PO #: 48680

Temp at Receipt: 0.0C

Method Method Reference RI

Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

- ~ Sample diluted due to result above calibration of linear range.
- The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

RL - Reporting Limit RL = Reporting Limit
Analyses performed under our Minnesota Department of Sealth 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-N ND WN/DN # R-040



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT

Sample Description: WELL H9

Report Date: 15 Dec 2016 Lab Number: 16-A56147 Work Order #: 31-0543 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 17 Oct 2016 18:21
Sampled By: MVTL FIELD PERSONNEL
Date Received: 18 Oct 2016 14:40

PO #: 48680

Temp at Receipt: 0.0C

	As Receiv	red	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions		-			21 Oct 16	JMS
Water Digestions					20 Oct 16	JMS
Radium 226	See Attac	hed			2 Dec 16 15:54	ABL
Radium 228	See Attac			EPA M9320	2 Dec 16 15:54	ABL
pH, Field	6.33	units	1.00	I-1586-85	17 Oct 16 18:21	DGF
pH Field	* 6.8	units	1.0	SM 4500 H+B-96	19 Oct 16 17:21	RC
Sulfate	1550 ~	mg/L	4.0	ASTM D516-02	20 Oct 16 10:07	AKF
Chloride	17.4	mq/L	3.0	SM 4500 C1 E	21 Oct 16 9:22	MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7	21 Oct 16 12:24	TWB
Solids, Total Dissolved	2730	mg/L	10	SM 2540 C-97	20 Oct 16 15:54	RC
Calcium	580.0 ~	mg/L	0.500	SW6010C	25 Oct 16 11:01	RMV
Lithium	0.143	mg/L	0,005	SW6010C	25 Oct 16 11:01	RMV
Barium	0.021	mg/L	0.005	SW6010C	25 Oct 16 11:01	RMV
Cobalt	< 0.01 ^	mg/L	0,005	SW6010C	25 Oct 16 11:01	RMV
	1.160	mg/L	0.100	SW6010C	25 Oct 16 11:01	RMV
Boron	< 2.5 @	ug/L	0.5	SW6020A	3 Nov 16 19:23	RMB
antimony	< 2.5	ug/L	0.5	SW6020A	3 Nov 16 19:23	RMB
rsenic	0See Narr	nt-140	0.5	SWOOZON	2 001 20 22120	
Service 7 days	< 0.25 @	ug/L	0.05	SW6020A	14 Nov 16 14:37	RMB
seryllium	< 0.5 @		0.1	SW6020A	3 Nov 16 19:23	RMB
admium	< 5	ug/L ug/L	0.5	SW6020A	3 Nov 16 19:23	RMB
hromium	^@See Nar		0.5	SHOOZDA	3 100 10 13100	
A. C.	< 2.5		0.5	SW6020A	3 Nov 16 19:23	RMB
ead		ug/L	0.5	3W6020A	3 404 10 13 123	2420
The Market State of the State o	@See Narr	24 (200) 4 (2)	0.50	SW6020A	3 Nov 16 19:23	RMB
olybdenum	4.01 @	ug/L		SW6020A	3 Nov 16 19:23	RMB
elenium	3.14	ug/L	0.50	SWBUZUA	3 NOV 10 19.25	NAD
2 14 70 %	@See Narr		0.1	SW6020A	3 Nov 16 19:23	RMB
hallium	< 0.5	ug/L	0.1	SWOUZUA	3 NOV 10 15:25	1415
5.3.303	@See Narr		0.000	PD 300 0	26 Oct 16 0:28	RMB
fluoride	0.210	mg/L	0.020	EPA 300.0	26 UCC 16 0:28	MAD

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:

8 = Due to sample matrix
9 = Due to concentration of other analytes
| = Due to sample quantity
+ = Due to internal standard response

CERTIFICATION: HN LAB # 027-015-125 NI LAB # 999447680 ND MICRO # 1013-M ND WR/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

Project Name: BIG STONE PLANT

Sample Description: WELL H9

Report Date: 15 Dec 2016 Lab Number: 16-A56147 Work Order #: 31-0543 Account #: 006106 Sample Matrix: GROUNDWATER

Date Sampled: 17 Oct 2016 18:21 Sampled By: MVTL FIELD PERSONNEL Date Received: 18 Oct 2016 14:40

PO #: 48680

Temp at Receipt: 0.0C

As Received Result Method RL Method Reference

Date Analyzed

Analyst

* Rolding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

- Sample diluted due to result above calibration of linear range.
- The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.



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Date Reported: 5 Dec 2016

Work Order #: 201631-0543 Account Number: 006106

PO #: 48680

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

Project Name: BIG STONE PLANT

LABORATORY NARRATIVE

INORGANIC AND METALS ANALYSES:

Due to the sample matrix of the spiked sample, the recoveries for calcium were outside of acceptance range in the matrix spike and matrix spike duplicate for samples 16-A56133 through 16-A56142. The data was reported based on the acceptable recoveries of the laboratory control spike and relative percent difference between the matrix spikes.

Due to the sample matrix of the spiked sample, the recoveries for boron were outside of acceptance range in the matrix spike and matrix spike duplicate for samples 16-A56133, 16-A56134, 16-A56136, 16-A56137, and 16-A56141. The data was reported based on the acceptable recoveries of the laboratory control spike and relative percent difference between the matrix spikes.

The internal standard count recoveries associated with molybdenum, cadmium, antimony, thallium, and lead failed in the unspiked sample, matrix spike, and matrix spike duplicate for samples 16-A56133 and 16-A56135. The data was reported based on acceptable recoveries of the matrix spikes.

The internal standard count recoveries associated with chromium failed in the reporting limit checks for samples 16-A56133 through 16-A56139, 16-A56141, and 16-A56144 through 16-A56146. The data was reported based on the acceptable recovery of the reporting limit.

The matrix spike recoveries for selenium were above the acceptance limits for sample 16-A56135. The internal standard counts associated with selenium failed in the unspiked sample, matrix spike, and matrix spike duplicate. Data below the reporting limit was reported.

The internal standard count recoveries associated with molybdenum, thallium, and lead failed in the unspiked sample, matrix spike, and matrix spike duplicate for sample 16-A56136. The data was reported based on acceptable recoveries of the matrix spikes.

The internal standard count recoveries associated with molybdenum failed in the unspiked sample, matrix spike, and matrix spike duplicate for samples 16-A56138 and 16-A56145. The data was reported based on acceptable recoveries of the matrix spikes.

The internal standard count recoveries associated with arsenic, molybdanum, cadmium, antimony, thallium, and lead failed in the unspiked sample, matrix spike, and matrix spike duplicate for sample 16-A56141. The data was reported based on acceptable recoveries of the matrix spikes.

Internal standard counts associated with thallium and lead failed in the reporting limit checks for samples 16-A56134, 16-A56137 through 16-A56140, and 16-A56142 through 16-A56147. Data was reported based on acceptable recoveries of the reporting limit checks.

The chromium knowns were above the acceptance limits for samples 16-A56142 and 16-A56147. Results below the reporting limit were reported.

Internal standard counts associated with arsenic and selenium failed in the laboratory control spike for sample 16-A56147. Data was reported based on acceptable recoveries of the laboratory control spike.

No other problems were encountered with these analyses.

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Quality Control Report Lab IDs: 16-A56133 to 16-A56147

Project: BIG STONE PLANT CCR V

Work Order: 201631-0543

TA-OI OI CCIOCA-OI, SCII OBL	10141	711	ojece. DIC	DI CIT	DI LIMIT COL	-			01021-02								
Analyte 4	LCS Spike Amt	LCS Rec %	LCS Rec	Spike	Matrix Spike	Matrix Spike Orig Result		Spike Rec	Matrix Spike 5 % Rec Limits	Dup Orig	MSD/ Dup Result	MSD Rec •	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Antimony ug/L	25.0 25.0 25.0 25.0 25.0	107 105 105 106	85-115 85-115 85-115 85-115	25.0 25.0 25.0 25.0 25.0 25.0 25.0	16A56134q 16A56146q A56134qc A56146qc A56364qc 16A56134q	<0.5 <0.5 <2.5 <2.5 <2.5 <2.5 <2.5	27.7 28.0 27.1 27.7 27.0 25.9	111 112 108 111 108 104	75-125 75-125 75-125 75-125 75-125 75-125	27.7 28.0 27.1 27.7 27.0 25.9	27.7 28.2 27.1 27.6 27.2 26.0	111 113 108 110 109 104	0.0 0.7 0.0 0.4 0.7 0.4	10 10 10 10 10 10	106 105 104 104 106 104	90-110 90-110 90-110 90-110 90-110 90-110	<0.5 <0.5 <0.5 <0.5
Arsenic ug/L	25.0 25.0 25.0	104 107 103	85-115 85-115 85-115	25.0 25.0 25.0 25.0 25.0	16A56146q A56134qc A56146qc A56364qc	0.67 < 2.5 < 2.5 < 2.5	30.3 29.7 27.5 25.0	119 119 110 100	75-125 75-125 75-125 75-125	30.3 29.7 27.5 25.0	29.9 29.3 28.2 25.0	117 117 113 100	1.3 1.4 2.5 0.0	10 10 10 10	106 101 101 102	90-110 90-110 90-110 90-110	< 0.5 < 0.5
Barium mg/L	1.000	101	85-115	1.00 1.00	16A56142q 16A56085q	0.006 0.033	1.060 1.090	105 106	75-125 75-125	1.060 1.090	1.070 1.080	106 105	0.9	10 10	93 94	90-110 90-110	The late of the la
Beryllium ug/L	2.50 2.50 2.50	98 102 104	85-115 85-115 85-115	2.50	16-A56146 A56364qc 16A56134q 16A56134q	<0.25 <0.25 <0.25 <0.25	2.56 2.77 2.72 2.55	102 111 109 102	75-125 75-125 75-125 75-125	2.56 2.77 2.72 2.55	2.62 2.95 2.53 2.43	105 118 101 97	2.3 6.3 7.2 4.8	10 10 10 10	104 100 93	90-110 90-110 90-110	< 0.05

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Quality Control Report

ab IDS: 10-A30133 to 10-A3	0147		olect: Pic	BION	PLEMIAI				01031-034								
knälyte:	LCS Spike Amt	LCS Rec %	LCS % Rec	Spike	Matrix Spike ID	Matrix Spike Orig? Result	Matrix Spike Result	Spike	% Rec	Dup	What the share the 42	AND SHIP SHIP SHIPS SHIP	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Rec	Known % Rec Limits	Method Blank
Boron mg/L	1.000 1.000 1.000	105 102 106	85-115 85-115 85-115	1.00 1.00 1.00 1.00 1.00 1.00	16A56142q 16A56085q 16A56142q 16A56085q 16A60703q 16A58194q	<0.8 0.194 0.254 0.187 8.940 0.109	1.340 1.270 1.360 1.260 10.10 1.160	134 108 111 107 116 105	75-125 75-125 75-125 75-125 75-125 75-125	1.340 1.270 1.360 1.260 10.10 1.160	1.400 1.280 1.380 1.270 10.20 1.190	140 109 113 108 126 108	4.4 0.8 1.5 0.8 1.0 2.6	10 10 10 10 10 10	100 94 100 96	90-110 90-110 90-110 90-110	<0.1 <0.1 <0.1
Cadmium ug/L	5.00 5.00 5.00	106 104 102	85-115 85-115 85-115	5.00 5.00 5.00 5.00 5.00	16A56134q 16A56146q A56134qc A56146qc A56364qc	0.25 < 0.1 < 0.5 < 0.5 < 0.5	5.61 5.44 5.53 5.18 5.19	107 109 111 104 104	75-125 75-125 75-125 75-125 75-125	5.61 5.44 5.53 5.18 5.19	5.52 5.42 5.55 5.04 5.03	105 108 111 101 101	1.6 0.4 0.4 2.7 3.1	10 10 10 10 10	106 104 102 100 99	90-110 90-110 90-110 90-110 90-110	
Calcium mg/L	50.00	104	85-115	50.0 50.0	16A56142q 16A56085q	299.0 102.0	494.0 150.0	390 96	75-125 75-125	494.0 150.0	547.0 154.0	496 104	10.2 2.6	10 10	99 100	90-110 90-110	
Chloride mg/L			1000	60.0 60.0 60.0 60.0 60.0	16-A56135 16-A56145 16-A56147 16-A54878 16-A54786	10.0 <3 17.4 19.4 17.8	72.8 64.1 78.4 83.5 78.4	105 107 102 107 101	85-120 85-120 85-120 88-117 85-120	72.8 64.1 78.4 83.5 78.4	75.1 64.4 78.4 82.1 79.4	108 107 102 104 103	3.1 0.5 0.0 1.7 1.3	5 5 5 5	98 98 98	90-110 90-110 90-110	<3

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Quality Control Report
Lab IDs: 16-A56133 to 16-A56147

Project: BIG STONE PLANT

Work Order: 201631-0543

ab IDs: 16-A36133 to 16-A3	06147	Pro	lect: BIG	PLONE	PLANT			Order: 2									
nalyte	LCS Spike Amt	LCS. Rec	% Rec	Matrix	The Strategic of the Low Co. I E. B. Ford	Matrix Spike Origi Result	Matrix Spike Result	To the second second	1. 多数化数据 英语电影发展	Dup Orig	MSD/ Dup Result	MSD Rec.	MSD/ Dup RPD	MSD/ Dup RPD Limit (<	Known Rec (%)	Known % Rec Limits	Method Blank
Chromium ug/L	25.0 25.0 25.0 25.0 25.0	102 98 99 113	85-115 85-115 85-115 85-115	25.0 25.0 25.0 25.0 25.0 25.0 25.0	16A56134q 16A56146q A56146qc A56364qc 16A56134q 16A56134q	2.16 <0.5 <5 <5 2.85 <2.5	23.1 19.6 28.0 26.9 28.0 24.9	84 78 112 108 101 100	75-125 75-125 75-125 75-125 75-125 75-125	23.1 19.6 28.0 26.9 28.0 24.9	21.6 20.7 29.7 26.9 28.0 24.5	78 83 119 108 101 98	6.7 5.5 5.9 0.0 0.0 1.6	10 10 10 10 10 10	98 105 102 111 94	90-110 90-110 90-110 90-110 90-110	<0.5 <0.5 <0.5
Cobalt mg/L	1.000	107	85-115	1.00 1.00	16A56142q 16A56085q	< 0.01 < 0.01	0.985 1.030	98 103	75-125 75-125	0.985 1.030	0.990 1.040	99 104	0.5 1.0	10 10	98 97	90-110 90-110	< 0.005
Fluoride mg/L	0.200 0.200	105 105	85-115 85-115	0.20 0.20	16-A56678 16-A56141	0.210 0.110	0.400 0.290	95 90	75-125 75-125	0.400 0.290	0.420 0.280	105 85	4.9 3.5	10 10	104 99	90-110 90-110	< 0.02
Lead ug/L	25.0 25.0 25.0	100 100 98	85-115 85-115 85-115	25.0 25.0 25.0 25.0 25.0 25.0	16A56134q 16A56146q A56134qc A56146qc A56364qc	0.72 < 0.5 < 2.5 < 2.5 < 2.5	27.9 26.2 26.9 25.8 24.8	109 105 108 103 99	75-125 75-125 75-125 75-125 75-125	10.75%	27.3 25.9 26.7 25.3 24.5	106 104 107 101 98	2.2 1.2 0.7 2.0 1.2	10 10 10 10 10	100 100 101 100 99	90-110 90-110 90-110 90-110 90-110	< 0.5 < 0.5 < 0.5
Lithium mg/L	1.000	105	85-115	1.00 1.00	16-A56142 a56085qc	0.436 0.008	1.600 1.110	116 110	75-125 75-125	The second second	1.620 1.120	118 111	1.2 0.9	10 10	97 99	90-110 90-110	< 0.005

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Quality Control Report

Project: BIG STONE PLANT

Work Order: 201631-0543

ab IDs: 16-A56133 to 16-A56147 Project: BIG STONE PLANT						Work Order: 201631-0543											
Analyte	LCS Spike Amt	LCS Rec %	1 - N 1951	Spike	Matrix Spike:	ALCOHOLD STREET, WASHINGTON, WHICH	Spike	Spike		Dup Orig	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ ; Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Mercury ug/L				0.10 0.10	16-A56142 16-A56126	< 0.005 0.005	0.096 0.097	96 92	67-106 67-106	0.096 0.097	0.096 0.097	96 92	0.0	9	101 99	76-113 76-113	< 0.005 < 0.005 < 0.005 < 0.005
Molybdenum ug/L	25.0 25.0 25.0	101 102 94	85-115 85-115 85-115	25.0 25.0 25.0 25.0 25.0 25.0	16A56134q 16A56146q A56134qc A56146qc A56364qc	1.41 14.5 <2.5 14.3 <2.5	25.8 39.7 26.6 38.6 23.9	98 101 106 97 96	75-125 75-125 75-125 75-125 75-125	25.8 39.7 26.6 38.6 23.9	25.1 39.4 26.3 38.1 24.1	95 100 105 95 96	2.8 0.8 1.1 1.3 0.8	10 10 10 10 10	100 98 99 96 95	90-110 90-110 90-110 90-110 90-110	< 0.5 < 0.5 < 0.5
pH units						:			•	7.2 6.8	7.2 6.8	•	0.0	2.5 2.5	101 101	90-110 90-110	
Selenium ug/L	25.0 25.0 25.0 25.0 25.0	103 110 100 100	85-115 85-115 85-115 85-115	25.0 25.0 25.0 25.0 25.0 25.0	16A56134q A56134qc A56146qc A56364qc 16A56134q	0.78 <2.5 8.31 <2.5 <2.5	40.5 31.1 35.9 27.4 26.7	159 124 110 110 107	75-125 75-125 75-125 75-125 75-125	40.5 31.1 35.9 27.4 35.2	37.9 29.9 36.9 27.2 35.5	148 120 114 109 106	6.6 3.9 2.7 0.7 0.8	10 10 10 10 10	107 102 102 104 100	90-110 90-110 90-110 90-110 90-110	< 0.5 < 0.5 < 0.5



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Quality Control Report

Lab IDS: 16-A30133 to 16-A	00147	PIC	lect: Dic	PION	EPLANI		MOLK	Jruer: 2	01021-02	43			and the second		-		_
Analyte .	LCS Spike Amt	LCS Rec %	LCS % Rec. Limits	Spike	Matrix Spike ID	Matrix Spike Orig Result	I De Berthingt and	Spike Rec	Matrix Spike %Rec; Limits	Dup Orig	MSD/ Dup Result	Rec	from the street of	MSD/ Dup RPD * Limit (<	Rec	Control of the	Method
Solids, Total Dissolved mg/L	1		1111					1001	5	1700 933 1240 182	1750 954 1270 184		2.9 2.2 2.4 1.1	10 10 10 13	90 86	85-115 85-115	< 10 < 10
Sulfate mg/L		1811		600 600 600 60.0	16-A56134 16-A56144 16-A56147 16-A55115	1400 1200 1550 127	2000 1920 2200 186	100 120 108 98	78-126 78-126 78-126 78-126	2000 1920 2200 186	2010 1890 2280 194	102 115 122 112	0.5 1.6 3.6 4.2	5 5 5 5	94 100 105	90-110 90-110 90-110	<4 <4 <4
Thallium ug/L	5.00 5.00 5.00	101 101 100	85-115 85-115 85-115	5.00 5.00 5.00 5.00 5.00	16A56134q 16A56146q A56134qc A56146qc A56364qc	<0.1 <0.1 <0.5 <0.5 <0.5	5.72 5.38 5.47 5.29 4.98	114 108 109 106 100	75-125 75-125 75-125 75-125 75-125	5.72 5.38 5.47 5.29 4.98	5.62 5.32 5.39 5.17 4.93	112 106 108 103 99	1.8 1.1 1.5 2.3 1.0	10 10 10 10 10	99 102 102 100 100	90-110 90-110 90-110 90-110 90-110	< 0.1 < 0.1

The boron matrix spike recoveries were outside the acceptance limits, see narrative.



The calcium matrix spike recoveries were outside the acceptance limits, see narrative.

The selenium matrix spike recoveries were outside the acceptance limits, see narrative.

The calcium duplicate RPD was outside the 10% limit at 10.2%. This result would be rounded down to 10% and meet the limit.

The chromium known recovery was outside the acceptance limits, see narrative.



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Date: 11/30/2016

CLIENT:

MVTL Inc

Project:

WO # 31-0543

Lab Order:

\$1610332

CASE NARRATIVE

Report ID: S1610332001

Samples A56133 Slag 1, A56134 Slag 4, A56135 Slag 5, A56136 Slag 6, A56137 Slag 7, A56138 Slag 8, A56139 Slag 9, A56140 Slag 9 deep, A56141 Slag 2B, A56142 H2OX, A56143 H3OX, A56144 H4OX, A56145 H6, A56146 H8, and A56147 H9 were received on October 21, 2016.

All samples were received and analyzed within the EPA recommended holding times, except those noted below in this case narrative. Samples were analyzed using the methods outlined in the following references:

"Standard Methods For The Examination of Water and Wastewater", approved method versions
Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition
40 CFR Parts 136 and 141
40 CFR Part 50, Appendices B, J, L, and O
Methods indicated in the Methods Update Rule published in the Federal Register Friday, May 18, 2012
ASTM approved and recognized standards

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Reviewed by: All Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 1



Inter-Mountain Labs

1673 Terra Avenue, Sherldan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName: Lab ID:

WO#31-0543

ClientSample ID: A56142 H2OX COC:

S1610332-010

WO #31-0543

Date Reported 11/30/2016

Report ID

S1610332001

WorkOrder:

S1610332

CollectionDate: 10/17/2016 6:15:00 PM 10/21/2016 2:23:00 PM

DateReceived:

FieldSampler:

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nlt
Radionuclides - Total						4 10 10 10	
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	11/01/2016 824	ME
Radium 226 Precision (±)	NA	pCI/L			SM 7500 Ra-B	11/01/2016 824	ME
Radium 228	ND	pCI/L		2	Ga-Tech	11/18/2016 1018	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	11/18/2016 1018	MB

These results apply only to the samples tested.

Qualiflers:

Analyte detected in the associated Method Blank

Value above quantitation range

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions 0

Matrix Effect

RL - Reporting Limit

Calculated Value

Holding times for preparation or analysis exceeded

Analyzed by another laboratory

ND Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 10 of 15



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

WO # 31-0543

Lab ID:

S1610332-011 ClientSample ID: A56143 H3OX

COC:

WO #31-0543

Date Reported 11/30/2016

Report ID

S1610332001

WorkOrder:

S1610332

CollectionDate: 10/18/2016 8:45:00 AM

DateReceived: 10/21/2016 2:23:00 PM

FieldSampler:

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nlt
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	11/01/2016 824	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	11/01/2016 824	MB
Radium 228	ND	pCi/L		2	Ga-Tech	11/18/2016 1322	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	11/18/2016 1322	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL.

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

Calculated Value

Holding times for preparation or analysis exceeded Analyzed by another laboratory

Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 11 of 15



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

WO # 31-0543

Lab ID:

S1610332-012 ClientSample ID: A56144 H4OX

COC:

WO #31-0543

Date Reported 11/30/2016

Report ID

S1610332001

WorkOrder:

S1610332

CollectionDate: 10/18/2016 10:01:00 AM

DateReceived: 10/21/2016 2:23:00 PM

FleidSampler:

Matrix:

Water

Result	Units	Qual	RL	Method	Date Analyzed/I	nlt
ND	pCI/L		-1	SM 7500 Ra-B	11/01/2016 824	MB
NA	pCI/L			SM 7500 Ra-B	11/01/2016 824	MB
ND	pCI/L		2	Ga-Tech	11/27/2016 1232	MB
NA	pCi/L			Ga-Tech	11/27/2016 1232	MB
	ND NA ND	ND pCI/L NA pCI/L ND pGI/L	ND pCI/L NA pCI/L ND pCI/L	ND pCI/L 1 NA pCI/L ND pCI/L 2	ND pCl/L 1 SM 7500 Ra-B NA pCl/L SM 7500 Ra-B ND pCl/L 2 Ga-Tech	ND pCI/L 1 SM 7500 Ra-B 11/01/2016 824 NA pCI/L SM 7500 Ra-B 11/01/2016 824 ND pCI/L 2 Ga-Tech 11/27/2016 1232

These results apply only to the samples tested.

Qualiflers:

Analyte detected in the associated Method Blank

Value above quantilation range Analyte detected below quantilation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

Calculated Value C

Holding times for preparation or analysis exceeded Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by: Alk

Wade Nieuwsma, Assistant Laboratory Manager

Page 12 of 15



1873 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

MVTL Inc Company:

1126 N Front St

New Ulm, MN 56073

ProjectName: Lab ID:

WO#31-0543 S1610332-013

ClientSample ID: A56145 H6 COC:

WO#31-0543

Report ID

Date Reported 11/30/2016

\$1610332001

WorkOrder:

S1610332

CollectionDate: 10/17/2016 4:34:00 PM

DateReceived: 10/21/2016 2:23:00 PM

FieldSampler:

Matrix: Water

Commonto

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
	11123011		77.	-	method	18.800.000.000	3011
Radionuclides - Total							
Radium 226	ND	pCI/L		1	SM 7500 Ra-B	11/01/2016 824	ME
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	11/01/2016 824	ME
Radium 228	ND	pCI/L		2	Ga-Tech	11/27/2016 1536	ME
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	11/27/2016 1536	ME

These results apply only to the samples tested.

Qualifiers:

В Analyte delected in the associated Method Blank

Value above quantitation range

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

Calculated Value

Holding times for preparation or analysis exceeded Analyzed by another laboratory H

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 13 of 15



1673 Terra Avenue, Sherldan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName; Lab ID:

WO #31-0543 S1610332-014

ClientSample ID: A56146 H8 COC:

WO #31-0543

Report ID

Date Reported 11/30/2016

S1610332001

WorkOrder:

S1610332

CollectionDate: 10/17/2016 5:27:00 PM

DateReceived: 10/21/2016 2:23:00 PM

FieldSampler:

Matrix:

Water

Date Analyzed/Init				
01/2016 824		N		
01/2016 824		M		
7/2016 1841		M		
7/2016 1841		M		
12	1/01/2016 824 1/01/2016 824 1/27/2016 1841 1/27/2016 1841	/01/2016 824 /27/2016 1841		

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

o Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

C Calculated Value

Holding times for preparation or analysis exceeded Analyzed by another laboratory H

L

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 14 of 15



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph; (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

WO # 31-0543

Lab ID: ClientSample ID:

S1610332-015 A56147 H9

COC:

WO #31-0543

11/30/2016

Date Reported Report ID

51610332001

WorkOrder:

S1610332

CollectionDate: 10/17/2016 6:21:00 PM 10/21/2016 2:23:00 PM

DateReceived: FieldSampler:

Matrix:

Water

Analyses	Result		Result Units Qual				Method	Date Analyzed/I	nit
Radionuclides - Total									
Radium 226	ND	pCI/L		1	SM 7500 Ra-B	11/01/2016 824	MB		
Radium 226 Precision (±)	NA	pCI/L			SM 7500 Ra-B	11/01/2016 824	MB		
Radlum 228	2.9	pCI/L		2	Ga-Tech	11/27/2016 2145	MB		
Radium 228 Precision (±)	3.4	pCi/L			Ga-Tech	11/27/2016 2145	MB		

These results apply only to the samples tested.

Qualiflers:

Analyte detected in the associated Method Blank

Value above quantitation range

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

0 Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

C Calculated Value

Holding times for preparation or analysis exceeded

Analyzed by another laboratory

ND Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 15 of 15



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

ANALYTICAL QC SUMMARY REPORT

CLIENT:

Project:

Work Order:

MVTL Inc

\$1610332

WO # 31-0543

Date: 11/30/2016

Report ID: S1610332001

Radium 228 by Ga/Tech	Sample Type MBLK	1	Units: pCi/L			
MB-397 (11/15/16 14:37)	RunNo: 141068		: 11/02/16 14:00		tchID: 12558	
Analyte	Result	RL S	Spike Ref Sam	p %REC	% Rec Limits	Qua
Total Radium 228	ND	1				
Radlum 228 by Ga/Tech	Sample Type LCS		Units: pCVL			
LCS-397 (11/15/16 17:41)	RunNo: 141068	PrepDate	11/02/16 14:00	Bat	chID: 12558	
Analyte	Result	RL S	Spike Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	39	1 :	39.1	98.6	61.3 - 120	
Radium 228 by Ga/Tech	Sample Type MS		Units: pCI/L			
MS-397 (11/15/16 23:50)	RunNo: 141068	PrepDate:	11/02/16 14:00	Bat	chID: 12558	
Analyte	Result	RL S	plke Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	43	1 3	9.1 ND	110	61.3 - 120	
Radium 228 by Ga/Tech	Sample Type MSD		Units: pCi/L			
MSD-397 (11/16/16 02:55)	RunNo: 141068	PrepDate:	11/02/16 14:00	Bate		
Analyte	Result	RL C	onc %RPD	%REC	% RPD Limits	Qual
Total Radium 228	41	1	43 5.30	104	20	
Radium 226 in Water - Total by SM7500RA_B	Sample Type MBLK		Units: pCi/L			
MB-1680 (10/31/16 23:07)	RunNo: 140413	PrepDate:	10/26/16 0:00	Bato		
Analyte	Result	RL S	pike Ref Samp	%REC	% Rec Limits	Qual
Radium 226	ND	0.2				
Radium 226 In Water - Total by SM7500RA_B	Sample Type LCS	1	Jnits: pCi/L			
LCS-1680 (10/31/16 23:07)	RunNo: 140413	PrepDate:	10/26/16 0:00	Bato	hID: 12484	
Analyte	Result	RL S	oike Ref Samp	%REC	% Rec Limits	Qual
Radium 226	5.4	0.2 5	.99	90.6	67.1 - 122	
adlum 226 In Water - Total by SM7500RA_B	Sample Type LCSD	1	Jnits: pCi/L			
LCSD-1680 (10/31/16 23:07)	RunNo: 140413	PrepDate:	10/26/16 0:00	Bato	hID: 12484	
Analyte	Result	RL C	onc %RPD	%REC	% RPD Limits	Qual
Radium 228	6.2	0.2 5	.4 13.7	104	20	
adium 226 in Water - Total by SM7500RA_B	Sample Type MS		Inits: pCi/L			
S1610228-007AMS (10/31/16 23:07)	RunNo: 140413	PrepDate:	10/26/16 0:00	Batc	hID: 12484	7-1
Analyte	Result	RL Sp	ike Ref Samp	%REC	% Rec Limits	Qual
Radlum 226	11.0	0.2 1	2 1.0	83.2	65 - 131	

Qualifiers:

B

- Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- L Analyzed by another laboratory
- O Outside the Range of Dilutions
- Splke Recovery outside accepted recovery limits S
- E Value above quantitation range
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- RPD outside accepted recovery limits R
- Matrix Effect X

Minnesota Valley Testing Laboratories

1126 North Front Street Phone: 800 782 3557 New Ulm, MN 56003 Fax: 507 359 2890

Field Service Chain of Custody Record

Project Otter Tail Power Company	Project Type:	Big Stone Plant CCR	Name of Samplers: Alan Gleisner, Dusty Faresyn
Report Otter Tail Power Company	Carbon Copy:	and the same of th	Bon Walf
Attn: Paul Vukonich	Attn:		Quote Number:
Address P.O. Box 496	Address:		Work Order Number:
Fergus Falls, MN 56538-0496			Lab Numbers:
Phone: 218-739-8349			

-		Sample In	formation		- 1	-	7		-	-	E	3ott	е Ту	pe	-	-	-		Analys
Lab Number	Sample ID	Unique Station ID	Date	Тіте	Sample Type	Sample Location	1000 HINO3	Fillered Yor N	1000 none	500 HIVO3	Filter? Y or M		Filter? Y or N	1000 Amber no	1000 Amber	500 NaOH	Other: 150 Hoog	Other 150 No.	Analysis Required
A56147	H2OX	1 1 1 1	170c+16	1815	GW		2	N	1	1	N	75					100		See Attached
43	НЗОХ	111-	180c+16	845	GW		2	N	1	1	N				1				
44	H4OX		1	1001	GW		2	N	1	1	N					1.0	100	1	
	H-6	1	170c+16	1634	GW		2	N	1	1	N						12		
	H-8			1727	GW		2	N	1	1	N					100			
47	H-9			1821	GW		2	N	1	1	N								
46133	Slag 1			1426	GW		2	N	1	1	N					iii			
34	Slag 4		-	1528	GW		2	N	1	1	N								
35	Slag 5		180416		GW		2	N	1	1	N								
30	Slag 6		170416	1602	GW		2	N	1	1	N								

WORK ORDER #2

		1/	0		0 1		
Samples Relin	quished By:	Masta	•	Samples Received By:	U-7000	al	
Date: 180	of16	Time: 1440	Temp: C.O.	25 Date: 180ef 16	Time	1440	Temp:0_0C
Samples Relin	quished into:	Eridge Log in	Cart Othe	er:			
Samples Relin	quished By:			Samples Received By:			
Date:		Time:	Temp:	Date:	Time		Temp:
Delivery:	Samplers	Other:		Seal Number(s) - If Us	ed		
Transport:	Ambient	toe	Other:	Seals Intact?	Yes	No	

Minnesota Valley Testing Laboratories

1126 North Front Street Phone: 800 782 3557 New Ulm, MN 56003 Fax: 507 359 2890

Field Service Chain of Custody Record

Project Otter Tail Power Company	Project Type:	Big Stone Plant CCR	Name of Samplers:	Alen Gloisnor, Dusty Foregon
Report Otter Tail Power Company	Carbon Copy:			Benwolf
Attn: Paul Vukonich	Attn:		Quote Number:	*
Address P.O. Box 496 Fergus Falls, MN 56538-0496	Address:		Work Order Number: Lab Numbers:	
Phone: 218-739-8349			Lab Nombers.	

		Sample In	formation	-						-		Bott	le T	ype					Analysi
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	1000 HNO3	Filtered Yor M	1000 none	500 HNO3	15	18	Filter? Y or M	1000 Amber p.	1000 Amber	500 NaOH	Other: 150 Haz	Other 150 Mg	Analysis Required
37	Slag 7		170ct16	1645	GW		2	N	1	1	N			-10	7				See Attached
	Slag 8		+	1815	GW		2	N	1	1	N								
	Slag 9		180c+16	941	GW		2	N	1	1	N		16						
	Slag 9 Dec	ep		1023	GW		2	N	1	1	N					100			
	Slag 2B		1	1059	GW		2	N	1	1	N								
-3														16					

Comments:

WORK ORDER #2

Samples Reli	nquished By:	hh	12/-		Samples Received	By: (3'-	Free	Lero	
Date: /8	outle	Time:	1440	Temp:0000	Date: 17 Oct 16		Time:	1440	Temp: O. C
Samples Reli	nquished into:	€ridae)	Log in Car	t Other:	4				
Samples Reli	nquished By:				Samples Received	By:			
Date:		Time:		Temp:	Date:		Time:		Temp:
Delivery:	Samplers	Other:		Carlo Carlo	Seal Number(s) - If	Used	-		
Transport:	Ambient	tce		Other:	Seals Intact?	Yes		No	

Both cert Robbine

Big Stone Sampling

	Site*	Parameter List	Well Depth	Diameter (Inches)	Well Elevation	Sample Equipment	Dedicated?	Pump Rate (ml/minute)	Goes Dry?	Sampling Seasons**	
	WELL10	A	47.43	4	1098.70	Keck/Tsunami	No	3,000	No	1,3	
	WELL11	Α	127.22	4	1104.00	Other Pump	Yes	36,000	No	1,3	
	WELL12	A	112.40	4	1071.89	Other Pump	Yes	20,000	No		
	S1	В	32.50	2	1102.17	Bailer	Yes	N/A	Yes	1,3	
	S2	В	43.12	2	1102.39	Bailer	Yes	N/A	Yes	1,3	
	S3	В	62.50	2	1102.65	Bailer	Yes	N/A	No	1,3	
	S4	В	27.70	2	1090.57	Bailer	Yes	N/A	Yes	1,3	
	S5	В	46.72	2	1091.40	Bailer	Yes	N/A	Yes	1,3 1,3	
	S6	8	62.05	2	1090.71	Bailer	Yes	N/A	No	1,3	
	H1OX	C,-CCR	32.91	2	1115.89	Bailer	Yes	100	Yes	1,3	
	HIINT	C	60.11	2	1115.81	Keck/Tsunami	No	1500	No	1,3	
	H2OX	C, CCR	32.20	2	1103.91	Bladder	Yes	100	Yes	1,3	
	H2INT	C	62.30	2	1103.91	Bailer	Yes	N/A	Yes	1,3	
	H3OX	C, CCR	22.55	2	1095.19	Bladder	Yes	100	Yes	1,3	
	H3INT	C	54.31	2	1095.17	Whale	No	2000	No	1,3	
*	H4OX	C, CCR	27.20	2	1108.22	Bladder	Yes	100	No	1,3	
	H4INT	C	60.01	2	1108.61	Keck/Tsunami	No	2000	Yes	1,3	
	H5	C	43.30	2	1122.80	Whale	No	1000	No	1,3	
	H6	C, CCR	15.00	2	1097.76	Bladder	Yes	100	Yes	1,3	
	H7	C	33.20	2	1106.06	Whale	No	1000	Yes	1,3	
	H8	C, CCR	22.05	2	1081,23	Bladder	Yes	100	TBD	1,3	
	H9	CCR	30.20	2	1086.21	Bladder	Yes	100	TBD	1,3	
	BC1	В	16.26	2	1118.46	Bailer	Yes	N/A	No	1,3	
	BC101	В	39.30	2	1118.70	Bailer	Yes	N/A	Yes	1,3	
	BC2R	В	32.48	2	1115.28	Bailer	Yes	N/A	No	1,3	
	BC3R	В	35.15	2	1114.42	Bailer	Yes	N/A	Yes	1,3	
	BC4R	В	34.60	2	1113.86	Bailer	Yes	N/A	Yes	1,3	
	BC5R	В	37.32	2	1123.02	Bailer	Yes	N/A	No	1,3	
	BC6R	В	33.95	2	1121.58	Bailer	Yes	N/A	No	1,3	
	SLAG1	CCR	34.90	2	TBD	LOW FLOW	No	100	TBD	1,3	

1

SLAG2	SCR	TBD	2	1111,06	LOW FLOW	TBD	100	TBD	1,3
SLAG3	CCR	TBD	2	TED	LOW-FLOW	TBD	100	TBD	1,3
SLAG4	CCR	39.00	2	TBD	LOW FLOW	No	100	TBD	1,3
SLAG5	CCR	38.80	2	1107.30	LOW FLOW	No	100	TBD	4,3
SLAG6	CCR	37.30	2	1111.51	LOW FLOW	No	100	TBD	1,3
SLAG7	CCR	48.70	2	1114.39	LOW FLOW	No	100	TBD	4,3
SLAG8	CCR	52.09	2	1127.26	LOW FLOW	No	100	TBD	4,3
SLAG9	CCR	49.80	2	1122.35	LOW FLOW	No	100	TBD	
SLAG9 DEEP***	CCR	68.00	2	1121.92	LOW FLOW	No	100	TBD	
SLAG2B	CCR	40.80	2	1111.26	LOW FLOW	No	100	TBD	
COOLING PONE	A	N/A	N/A	NA	Grab	N/A	N/A	No	1,3
EVAPORATION	A	N/A	N/A	N/A	Grab	N/A	N/A	No	1,3
HOLDING PONE	A	N/A	N/A	N/A	Grab	N/A	N/A	No	1,3
RECLAIM POND	C	N/A	N/A	N/A	Grab	N/A	N/A	No	1,3

^{*} Three additional monitoring wells will be installed the Spring of 2016. Each well will be screened approximately 35' below ground surface and will be analyzed for the "C" parameter list. In addition, a new site with 9 wells will be added and will be analyzed for CCR Parameters ONLY.

^{** 1 =} Spring (March 28 - April 28), 2 = Summer (July 1 - August 7), 3 = Fall (October 14- November 14)

^{***} Only sample for the first two CCR background sampling events.

Big Stone Plant CCR Appendix III Parameters

CCR - Appendix III Detection Monitoring Field Parameters pH*

* Field and Laboratory Measurements

Total Concentration Parameters

Boron

Calcium

Chloride

Fluoride

pH

Sulfate

Dissolved Solids, Total

600 HN03

Big Stone CCR Appendix IV Parameters

CCR - Appendix IV - Assessment Monitoring

Total Concentration Parameters

Antimony

Arsenic

Barium

Beryllium

Cadmium

Chromium, Total

Cobalt

Fluoride

Lead

Lithium

Mercury

Molybdenum Selenium

Thallium

Radium 226 + 228

500 No-e 500 HNO3 2-1000 HNO3

Groundwater Assessment		Site:	Otter Tail Po	ower Co./ Big Stone
Sampling Personnel:		Facility ID:	1/	
Ben wolf		Date: 17 Oct	-16	
		Unique Station ID:		
		Sample ID:	V	/ell H2OX
Well Condition		deline alle delegan	L	5
Well Locked? Yes No		Protective Posts?	Yes	(No/
Well Labeled? Yes No Casing Straight? Yes No		State ID Tag? Grout Seal Intact?	Yes (Yes)	No
Repairs Necessary:		Crout Sear Intact	(res)	NO
Well Information				
Well Depth: 32.83		Well Casing Elevation		1103.91
Constructed Depth: 32.20		Static Water Elevation	on: 1094.	60
Casing Diameter: 2"		Previous Static:	1095.25	
Water Level Before Purge: 9.3		Water Level After Sa	ample: Be	ION PULSO
100	ons	Measurement Metho		
Sampling Information				
Weather Conditions: Temp: 65	Wind:	V	Sky: Cloc	w/x
Sampling Method: Grundfos Pla	er SS/T) Disp. Bailer	Whale Grab	Other:	
Dedicated Equipment: (es No		Pumping Rate:	, 25	gpm
Well Purged Dry? (Yes) No		Time Pump Began:	1754	am / pm
Time Purged Dry? 1810		Time of Sampling:	1816	am / 🕅
Duplicate Sample? Yes (No) ID	_	Sample EH: 151.	7	
Sample Appearance: General:	ar Color: No	Phase: //	ne	Odor: Noze
Ma Specific Te	p D.O.	Turbidity Gallons	SEQ	
Time pH Specific oc	30.00	NTU Remov	100	Comments:
	88 NA	NA 4	1	
	22 1	1		D have
1813 6.07 7771 10	~~		2	Recharge
			3	
			4	
			5	
Stabilized? Yes	Amount Wate	r Removed: 4		Gallons
Comments.	Turiount vote	Tionorou.		Culture

New Ulm, MN 56073

			Power Co./ Big Stone
Sampling Personnel:	Facility ID:		
Ben Wolf	Date: 18 00	+ 16	
The second secon	Unique Station ID		
	Sample ID:		Well H3OX
Well Condition Well Locked? Well Labeled? (Yes) No Casing Straight? Well Condition Wes No	Protective Posts? State ID Tag? Grout Seal Intact?	Yes Yes Yes	(0) (0)
Repairs Necessary;			
Well Information Well Depth: 22.68	Well Casing Eleva	ition:	1095.19
Constructed Depth: 22.55	Static Water Eleva	ation: 108	9.79
Casing Diameter: 2"	Previous Static: /	696.07	
Water Level Before Purge: 5.40	Water Level After	Sample: B	clow pind
Well Volume: 2-82 Gallons	Measurement Met		c. WL) Steel Tap
Sampling Information	, 1		
Weather Conditions: Temp: ((C) W	16V	Sky: C/	cur
Sampling Method: Grundfos Bladder SSD Dis	ler Whale Grab	Other:	
Dedicated Equipment: No No	Pumping Rate:	e 25	gpm
Well Purged Dry? (es No	Time Pump Began	: 878	and pm
Time Purged Dry? 840	Time of Sampling:	845	am/ pm
Duplicate Sample? Yes No ID:	Sample EH: 14	3.5	
Sample Appearance: General: Clear Co	NOつと Phase: /	1050	Odor. NOTC
Fime 12 pH Specific Temp D. Cond. Cond.	Turbidity Gallo	The second secon	Comments:
	+ NA 3	3 1	-1/
845 667 4704 13.08	-	2	Recharge
0 0,07		3	100
		4	
		5	
Stabilized? Yes (No) An	Water Removed:	5	Gallons

Groundwater Asse	essment			Site:	Otte	er Tail Po	ower Co./ Big Stone
Sampling Personnel:				Facility ID			
	1 Note	2		Date: /	R oct	16	
				Unique St	ation ID:		
				Sample ID);	٧	Vell H4OX
Well Condition Well Locked? Well Labeled? Casing Straight? Repairs Necessary:	(Yes No Yes) No Yes No			Protective State ID T Grout Sea	ag? Yeş		No
Well Information		_				_	
Well Depth:	27,48	_		Well Casir	ng Elevation:		1108.22
Constructed Depth:	27.20			Static Wat	er Elevation:	1089	.71
Casing Diameter:	2"			Previous S	Static: 1080	1.32	
Water Level Before Pur	ge: 18,5			Water Lev	el After Sample	e: 25.	42
Well Volume: 1,4	6	Gallons		P 400 - 1 1 1 1	ent Method:	Elec.	
Sampling Information Weather Conditions:	n Temp: 4	1	Wind: L	lu	Sky:	cle	car
Sampling Method:	Grundfos	Bladder SS	Disp. Bailer	Whale	Grab Other		
Dedicated Equipment:	Yes No			Pumping F	Rate: _ 18	5	gpm
Well Purged Dry?	(Yes) No	3		Time Pum	p Began: 95	50	an / pm
Time Purged Dry?	956			Time of Sa	impling: 10	01	am pm
Duplicate Sample?	Yes No	ID:		Sample El-	1: 123.3		
Sample Appearance:	General:	lightlychy	Color. No	γ~ Pha	se: None		Odor: Noje
Time 6 pH	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
956 6.76	3188	9.86	NA	NH	1.5	1	
1001 6.59	3125	9,88	11	1	1-	2	Recharge
100.		1				3	To the go
			-	-	-	4	
	9				1	5	
Stabilized? Yes (No)		Amount Wa	ter Removed	: 45		Gallons
Comments:							

Groundwater Assessment			Site:	Otte	er Tail P	ower Co./ Big Stone
Sampling Personnel:			Facility ID:	-		
Dusty Forasyon			Date:	1700tic		
			Unique Sta	ation ID:		
			Sample ID			Well H6
Well Condition						77.0
Well Locked? Yes No			Protective			No
Well Labeled? (es No Casing Straight? (Yes No			State ID To			(ND)
	_		Grout Sea	intact? Tes	-	CNO
Repairs Necessary: Well Information						
Well Depth: 7.92			Well Casin	g Elevation:	٨	JA .
Constructed Depth: 17.70	2		Static Water	er Elevation:		
Casing Diameter: 2"			Previous S	tatic:	لم	
Water Level Before Purge: 15	80.		Water Leve	el After Sample	e: Bel	ou Parmo
Well Volume: 0.35	Gallons	_	Measurem	ent Method:	Elec	. WLD Steel Tape
Sampling Information	100					
Weather Conditions: Temp:	63	Wind:	une @ 16	Sky:	Mo	ofly Clady
Sampling Method: Grundfos	Madder SS/T	Disp. Baller	Whale	Grab Other	:	, ,
Dedicated Equipment: (6) No			Pumping R	ate: O.	35	gpm
Well Purged Dry?			Time Pump	Began: 16	27	am / 🚳
Time Purged Dry? 1629			Time of Sa		34	am / pm
Duplicate Sample? Yes No) ID:		Sample EH			
Sample Appearance: General:	Char	Color: 1	long Phas	se: Nonc		Odor: None
Time pH Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
1629 7.06 1047	12.64	NA	NA	05	1	
		1	1		2	
					3	
					4	
1634 711 1026	12.30		1	0.5	5	Reclaring
Stabilized? Yes No		Amount W	ater Removed			Gallons
Comments:		2.002.8070.50.40				
Comments:	* 5/0W	reche	ge			

Groundwater	Assessment			Site:	Otte	er Tail F	Power Co./ Big Stone
Sampling Personn	el:			Facility ID	-		
Desty	Fangsyn	_		Date:	170416		
		_		Unique St	ation ID;	-	
				Sample ID);		Well H8
Well Condition Well Locked? Well Labeled? Casing Straight?	(es No (yes No (es No			Protective State ID T Grout Sea	ag? Yes		No No
Repairs Necessary							
Well Information Well Depth:	22.33				ng Elevation:		1081.23
Constructed Depth	22.05			Static Wat	er Elevation:	072	.98
Casing Diameter:	2"			Previous S		73,0E	
Water Level Before	Purge: 81	25		Water Lev	el After Sample	e: 9,	1)
Well Volume:	2.30	Gallons			ent Method:		Steel Tape
Sampling Inform Weather Condition		67	Wind: N	@ 18	Sky:	PH	1. Gordy
Sampling Method:	Grundfos	Bladder SS/T	Disp. Bailer	Whale	Grab Other	_	
Dedicated Equipme				Pumping F	Rate: 0.25		gpm
Well Purged Dry?	Yes (No)	_		Time Pum		57	am / 📆
Time Purged Dry?		-		Time of Sa		27	am / pm
Duplicate Sample?	Yes (No)	_ID:		Sample El	1: 56.8		
Sample Appearance	e: General:	Cleas	Color: Ner	e Pha	se: Ubre		Odor: Usine
Time pH	Specific Cond.	Temp ^o C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
1707 G.8	5 1462	11.04	NA	NA	25	1	
1717 68		11.04	1	1	5	2	1
1727 Gen 8		10.92			75	3	
		1 1 1 1 1 1 1 1 1				4	1
			1	11		5	
Stabilized? (6s)	No	1	Amount Wa	ter Removed	7.5	0	Gallons
Comments:	114		. manne such		117		Juliono

Groundwater Assessment			Site:	Otte	Tail Po	wer Co./ Big Sto
Sampling Personne			Facility ID	: -		
Dusty Folgsyn			Date:	1700f1	6	
127			Unique St		-	
	-		Sample II):	W	ell H9
Well Condition				W / 25 W		
Well Locked? (765 No			Protective	Posts Yes		No
Well Labeled? (193 No			State ID T	ag? Yes		NO
Casing Straight? (es No			Grout Sea	Intagres		No
Repairs Necessary:						
Well Information						
Well Depth: 30.71				ng Elevation		1086.21
Constructed Depth: 30.20			Static Wa	er Elevation	1: [07:	539
Casing Diameter: 2"			Previous S	Static: 10	75:44	
Water Level Before Purge: 10	.82		Water Lev	el After Sar	n [3.12
Well Volume: 3, 24	Gallons		Measurem	ent Method	Elec. V	VID Steel To
			1		7	
Sampling Information Weather Conditions Temp:	5	Wind: N	@16	Sky:	Pthy	Chudu
Sampling Method: Grundfos	Bladder SSFT	Disp. Bailer	Whale	Grab Other:	1	
Dedicated Equipme (es) No		1	Pumping F	Rate: C.	15	gpm
Well Purged Dry? Yes (NO			Time Pum	p Beg 17	42	am / (p
Time Purged Dry?			Time of Sa	amplin 18	21	am / 6
Duplicate Sample? Yes (No	ID:		Sample El	1: 124.	1	
Sample Appearance General:	Cleat	Color: Alt	Dh	ase: Nene		Odor: None
Contributed the production of the control of the co		COIOI.	espe FII	doc. /ocay		
estimple of production of the state of the s		COIOI. N	one Ph	asc. Acer		
(3)	Temp	D. O.	774 Y	Gallons		
(3)	Temp	D. O.	Turbidity NTU	Gallons		Comments:
Time pH Specific Cond.	lemp °C	D. O. mg/L	Turbidity NTU	Gallons Removed		Comments:
(3) Time pH Specific Cond.	lemp	D. O.	Turbidity	Gallons Removed	SEQ#	Comments:
(3) Time pH Specific Cond. 1753 6.33 3316 1808 6.34 3315	lemp o. o.5 lo. o.5	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ#	Comments:
Time pH Specific Cond.	lemp	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ#	Comments:
(3) Time pH Specific Cond. 1753 6.33 3316 1808 6.34 3315	lemp o. o.5 lo. o.5	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ# 1 2 3	Comments:
(3) Time pH Specific Cond. 1753 6.33 3316 1808 6.34 3315	lemp o. o.5 lo. o.5	D. O. mg/L	Turbidity NTU	Gallons Removed 3.25 6.50 9.75	SEQ#	Comments:

Exceptions to Protocol:



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FINAL REPORT COMPLETION DATE: 12 Jan 17 ax

Date Reported: 11 Jan 2017

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496 FERGUS FALLS MN 56538-0496 Work Order #: 31-0620 Account #: 006106 PO #: 48680

Project Name: BIG STONE PLANT CCR

Field Service Manager/Date Reviewed

Chemistry Lab Manager/Date Reviewed

Quality Assurance Director/Date Rev Wed

RL = Reporting Limits

NQ = Not Present, Qualitative Only

PQ = Present, Qualitative Only

ND = Not Determined



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT CCR

Sample Description: WELL H20X

Report Date: 11 Jan 2017 Lab Number: 16-A63071 Work Order #: 31-0620 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 21 Nov 2016 11:18 Sampled By: MVTL FIELD PERSONNEL Date Received: 22 Nov 2016 14:00

PO #: 48680

Temp at Receipt: 0.6C

	As Recei	ved	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions		_			23 Nov 16	JMS
Water Digestions					23 Nov 16	JMS
Radium 226	See Atta	ched			10 Jan 17 11:	14 ABL
Radium 228	See Atta	ched		EPA M9320	10 Jan 17 11:	14 ABL
pH, Field	6.35	units	1.00	I-1586-85	21 Nov 16 11:	18 BWW
Hq	* 6.9	units	1.0	SM 4500 H+B-96	22 Nov 16 14;	O DK
Sulfate	2430 -	mg/L	4.0	ASTM D516-02	1 Dec 16 7:	1 AKE
Chloride	3.4	mq/L	3.0	SM 4500 C1 E	1 Dec 16 9:	
Mercury	< 0.005	ug/L	0.005	EPA 245.7	5 Dec 16 10:	
	See Narra	ative				
Solids, Total Dissolved	3940	mq/L	10	SM 2540 C-97	23 Nov 16 10:3	O RC
Calcium	499.0 ~	mg/L	0.500	SW5010C	29 Nov 16 13:	2 RMV
Lithium	0.411	mq/L	0.005	SW6010C	29 Nov 16 13:	
Barium	0.007	mg/L	0.005	SW6010C	29 Nov 16 13:	
Cobalt	< 0.005	mg/L	0.005	SW6010C	29 Nov 16 13:	2 RMV
Boron	0.249	mg/L	0.100	SW6010C	29 Nov 16 13:5	2 RMV
Antimony	< 2.5 €	uq/L	0.5	SW6020A	7 Dec 16 14:0	2 RMB
Arsenic	< 2.5	ug/L	0.5	SW6020A	7 Dec 16 14:0	2 RMB
	@See Narr			1.12.10.217		7.44
Beryllium	< 0.25	ug/L	0.05	SW6020A	7 Dec 16 14:0	2 268
	@See Narr	ative		2000	A STATE OF STATE	7 1 (555)
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	9 Dec 16 9:1	O RMV
Chromium	< 2.5 €	ug/L	0.5	SW6020A	9 Dec 16 9:1	O RMV
Lead	< 2.5	ug/L	0.5	SW6020A	7 Dec 16 14:0	2 RME
	@See Narr	ative				
Molybdenum	8.87 @	ug/L	0.50	SW6020A	9 Dec 16 9:1	D RMV
Selenium	24.0	ug/L	0.50	SW6020A	9 Dec 16 9:1	
	@"See Nar		19. 5.4	20,760,75	4 200 000	11 430
Thallium	< 0.5	uq/L	0.1	SW6020A	7 Dec 16 14:0	2 RME
	@See Narr			26.01.200		and the same of
Fluoride	0.170	mg/L	0.020	EPA 300.0	25 Nov 16 10:4	O RMB



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT CCR

Sample Description: WELL H20X

Report Date: 11 Jan 2017
Lab Number: 16-A63071
Work Order #: 31-0620
Account #: 006106
Sample Matrix: GROUNDWATER
Date Sampled: 21 Nov 2016 11:18
Sampled By: MVTL FIELD PERSONNEL
Date Received: 22 Nov 2016 14:00

Temp at Receipt: 0.6C

As Received Result Method

Method Reference

PO #: 48680

Date Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

~ Sample diluted due to result above calibration of linear range.

The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

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

8 = Due to sample matrix

9 = Due to concentration of other analytes

1 = Due to sample quantity

4 = Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND MW/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

Project Name: BIG STONE PLANT CCR

Sample Description: WELL H30X

Report Date: 11 Jan 2017 Lab Number: 16-A63072 Work Order #: 31-0620 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 21 Nov 2016 11:54 Sampled By: MVTL FIELD PERSONNEL Date Received: 22 Nov 2016 14:00

PO #: 48680

Temp at Receipt: 0.60

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					23 Nov 16	JMS
Water Digestions					23 Nov 16	JMS
Radium 226	See Attac	ched			10 Jan 17 11:0	ABL ABL
Radium 228	See Attac			EPA M9320	10 Jan 17 11:0	ABL
pH, Field	6.49	units	1.00	I-1586-85	21 Nov 16 11:5	4 BMW
Hq	* 7.0	units	1.0	SM 4500 H+B-96	22 Nov 16 14:0	
Sulfate	2010 ~	mq/L	4.0	ASTM D516-02	1 Dec 16 7:5	
Chloride	80.9	mg/L	3.0	SM 4500 CL E	1 Dec 16 9:0	
Mercury	< 0.005	ug/L	0,005	EPA 245,7	5 Dec 16 10:3	
	See Narra				7, 5,5	4,114
Solids, Total Dissolved	3470	mg/L	10	SM 2540 C-97	23 Nov 16 10:30	RC
Calcium	428.0 ~	mq/L	0.500	SW6010C	29 Nov 16 13:52	
Lithium	0.141	mg/L	0.005	SW6010C	29 Nov 16 13:52	
Barium	0.016	mq/L	0.005	SW6010C	29 Nov 16 13:52	
Cobalt	< 0.005	mg/L	0.005	SW6010C	29 Nov 16 13:52	
Boron	8.790 ~	mq/L	0.100	SW6010C	29 Nov 16 13:52	RMV
Antimony	< 2.5 @	ug/L	0.5	SW6020A	7 Dec 16 14:02	RMB
Arsenic	< 2.5	ug/L	0.5	SW6020A	7 Dec 16 14:02	RMB
	@See Narr					
Beryllium	< 0.25	ug/L	0.05	SW6020A	7 Dec 16 14:02	RMB
	@See Nari	ative			10 355 35 60 131	
Cadmium	< 0.5 @	uq/L	0.1	SW6020A	9 Dec 16 9:10	RMV
Chromium	< 2.5 @	ug/L	0.5	SW6020A	9 Dec 16 9:10	RMV
Lead	< 2.5	ug/L	0.5	SW6020A	7 Dec 16 14:02	RMB
	@See Narr	ative				
Molybdenum	41.4 @	ug/L	0.50	SW6020A	9 Dec 16 9:10	RINV
Selenium	< 2.5	ug/L	0.5	SW6020A	7 Dec 16 14:02	RMF
	@See Narr	ative			11 100 10 101 101 101 101	
Thallium	< 0.5	ug/L	0.1	SW6020A	7 Dec 16 14:02	RMB
	@See Narr					
Fluoride	0.300	mq/L	0.020	EPA 300.0	25 Nov 16 10:40	RMB

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

- Sample diluted due to result above calibration of linear range.

RL - Seporting Limit 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

1 = Due to concentration of other analy

1 = 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

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

Project Name: BIG STONE PLANT CCR

Sample Description: WELL H40X

Report Date: 11 Jan 2017 Lab Number: 16-A63073 Work Order #: 31-0620 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 21 Nov 2016 12:19 Sampled By: MVTL FIELD PERSONNEL Date Received: 22 Nov 2016 14:00

PO #: 48680

Temp at Receipt: 0.60

*	As Receiv	ved	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					23 Nov 16	JMS
Water Digestions					23 Nov 16	JMS
Radium 226	See Attac	ched			10 Jan 17 11:04	ABL
Radium 228	See Attac	hed		EPA M9320	10 Jan 17 11:05	APL
pH, Field	6.52	units	1.00	1-1586-85	21 Nov 16 12:19	BMM
PH	* 7.0	units	1.0	SM 4500 H+B-96	22 Nov 16 14:00	DK
Sulfate	1220 ~	mg/L	4.0	ASTM D516-02	1 Dec 16 8:09	AKF
Chloride	48.1	mg/L	3.0	SM 4500 C1 E	1 Dec 16 9:25	KCJ
Mercury	< 0.005	ug/L	0.005	EPA 245.7	5 Dec 16 10:36	TWB
	See Narra	tive			and order of the content	
Solids, Total Dissolved	2250	mg/L	10	SM 2540 C-97	23 Nov 16 10:30	RC
Calcium	336.0	mg/L	0.500	SW6010C	29 Nov 16 13:52	RMV
Lithium	0.100	mg/L	0.005	SW6010C	29 Nov 16 13:52	RMV
Barium	0.025	mg/L	0.005	SW6010C	29 Nov 16 13:52	RMV
Cobalt	< 0.005	mg/L	0.005	SW6010C	29 Nov 16 13:52	RMV
Boron	0.410	mg/L	0.100	SW6010C	29 Nov 16 13:52	RMV
Antimony	< 2.5 @	ug/L	0.5	SW6020A	7 Dec 16 15:02	RMB
Arsenic	< 2.5 @	ug/L	0.5	SW6020A	7 Dec 16 15:02	RMB
Beryllium	< 0.25	ug/L	0.05	SW6020A	7 Dec 16 15:02	RMB
	@See Narr	ative				
Cadmium	< 0.5	ug/L	0.1	SW6020A	9 Dec 16 10:01	RMV
Chromium	3.14 @	ug/L	0.50	SW6020A	9 Dec 16 10:01	RMV
Lead	< 2.5 €	ug/L	0.5	SW6020A	7 Dec 16 15:02	RMB
olybdenum	5.95	ug/L	0.50	SW6020A	9 Dec 16 10:01	RMV
elenium	< 5	ug/L	0.5	SW6020A	9 Dec 16 10:01	RMV
	@^See Nar	rative		The second second second	7,000	
hallium	< 0.5 @	ug/L	0.1	SW6020A	7 Dec 16 15:02	RME
Fluoride	0.420	mq/L	0.020	EPA 300.0	25 Nov 16 10:50	RME

RL = Reporting Limit

= Due to concentration of other analytes
= Due to internal standard response
ND MICRO # 1013-M ND MW/DW # R-040



1126 North Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2 North German St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2616 East Broadway Ave. ~ Bismarck, ND 58501 ~ 800-279-6885 ~ Fax 701-258-9724 1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885 www.mvtl.com



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT CCR

Sample Description: WELL H40X

Report Date: 11 Jan 2017
Lab Number: 16-A63073
Work Order #: 31-0620
Account #: 006106
Sample Matrix: GROUNDWATER
Date Sampled: 21 Nov 2016 12:19

Sampled By: MVTL FIELD PERSONNEL Date Received: 22 Nov 2016 14:00

PO #: 48680

Temp at Receipt: 0.6C

As Received Result Method RL Method Reference Date Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

~ Sample diluted due to result above calibration of linear range.

^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.



1126 North Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2 North German St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2616 East Broadway Ave. ~ Bismarck, ND 58501 ~ 800-279-6885 ~ Fax 701-258-9724 1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885 www.mvtl.com



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT CCR

Sample Description: WELL H6

Report Date: 11 Jan 2017 Lab Number: 16-A63074 Work Order #: 31-0620 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 21 Nov 2016 12:46
Sampled By: MVTL FIELD PERSONNEL
Date Received: 22 Nov 2016 14:00

PO #: 48680

Temp at Receipt: 0.60

	As Recei	ved	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					23 Nov 16	JMS
Water Digestions					23 Nov 16	JMS
Radium 226	See Attac	ched			10 Jan 17 11:05	ABL
Radium 228	See Attac	ched		EPA M9320	10 Jan 17 11:05	ABL
pH, Field	7.06	units	1.00	1-1586-85	21 Nov 16 12:46	BMW
pH	* 7.2	units	1.0	SM 4500 H+B-96	22 Nov 15 14:00	Dic
Sulfate	345 ~	mg/L	4.0	ASTM D516-02	1 Dec 16 8:09	AKF
Chloride	3.8	mg/L	3.0	SM 4500 C1 E	1 Dec 16 9:25	KCJ
Mercury	< 0.005	ug/L	0.005	EPA 245.7	5 Dec 16 10:36	TWB
	See Narra					
Solids, Total Dissolved	918	mq/L	10	SM 2540 C-97	23 Nov 16 10:30	RC
Calcium	135.0	mg/L	0.500	SW6010C	29 Nov 16 13:52	RMV
Lithium	0.042	mg/L	0.005	SW6010C	29 Nov 16 13:52	RMV
Barium	0.034	mg/L	0.005	SW6010C	29 Nov 16 13:52	RMV
Cobalt	< 0.005	mg/L	0.005	SW6D10C	29 Nov 16 13:52	RMV
Boron	4.280	mg/L	0.100	SW6010C	29 Nov 16 13:52	RMV
Antimony	< 2.5 €	ug/L	0.5	SW6020A	7 Dec 16 15:02	RMB
Arsenic	< 2.5 €	ug/L	0.5	SW6020A	7 Dec 16 15:02	RMB
Beryllium	< 0.25	ug/L	0.05	SW6020A	7 Dec 16 15:02	RMB
0.18/20020	@See Narr	ative				
admium	< 0.5 @	ug/L	0.1	SW6020A	9 Dec 16 10:01	RMV
Chromium	< 2.5 €	ug/L	0.5	SW6020A	9 Dec 16 10:01	RMV
ead	< 2.5 @	ug/L	0.5	SW6020A	7 Dec 16 15:02	RMB
folybdenum	14.4 @	ug/L	0.50	SW6020A	9 Dec 16 10:01	RMV
elenium	< 10	ug/L	0.5	SW6020A	12 Dec 16 13:46	RMB
	@^See Nar					
hallium	< 0.5 €	ug/L	0.1	SW6020A	7 Dec 16 15:02	RME
Fluoride	0.630	mg/L	0.020	EPA 300.0	25 Nov 16 10:40	RMB

RE = Reporting Limit
Analyses performed under our Minnesota Department of Health Accreditation conform to the current INI standards.
The recognizing limit was elevated for any analyse requiring a dilution as coded below:

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



1126 North Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2 North German St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2616 East Broadway Ave. ~ Bismarck, ND 58501 ~ 800-279-6885 ~ Fax 701-258-9724 1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885 www.mvtl.com



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT CCR

Sample Description: WELL H6

Report Date: 11 Jan 2017
Lab Number: 16-A63074
Work Order #: 31-0620
Account #: 006106
Sample Matrix: GROUNDWATER
Date Sampled: 21 Nov 2016 12:46
Sampled By: MVTL FIELD PERSONNEL
Date Received: 22 Nov 2016 14:00

PO #: 48680

Temp at Receipt: 0.6C

As Received Result Method RL Method Reference Date Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

~ Sample diluted due to result above calibration of linear range.

^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.



1126 North Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2 North German St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2616 East Broadway Ave. ~ Bismarck, ND 58501 ~ 800-279-6885 ~ Fax 701-258-9724 1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885 www.mvtl.com



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CERTIFICATE of ANALYSIS - CCR

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: BIG STONE PLANT CCR

Sample Description: WELL H8

Report Date: 11 Jan 2017 Lab Number: 16-A63075 Work Order #: 31-0620 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 21 Nov 2016 13:22 Sampled By: MVTL FIELD PERSONNEL Date Received: 22 Nov 2016 14:00

PO #: 48680

Temp at Receipt: 0.60

	As Receiv	ved	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					23 Nov 16	JMS
Water Digestions					23 Nov 16	JMS
Radium 226	See Attac	ched			10 Jan 17 11:05	ABL
Radium 228	See Attac	ched		EPA M9320	10 Jan 17 11:05	ABL
pH, Field	6.77	units	1.00	I-1586-85	21 Nov 16 13:22	BMW
рН	+ 7.2	units	1.0	SM 4500 H+B-96	22 Nov 16 14:00	DK
Sulfate	339 ~	mg/L	4.0	ASTM D516-02	1 Dec 16 8:09	AKF
Chloride	3.9	mg/L	3.0	SM 4500 C1 E	1 Dec 16 9:25	KCJ
Mercury	< 0.005	ug/L	0.005	EPA 245.7	15 Dec 16 9:09	TWB
Solids, Total Dissolved	937	mg/L	10	SM 2540 C-97	23 Nov 16 10:30	RC
Calcium	135.0	mg/L	0.500	SW6010C	29 Nov 16 13:52	RMV
Lithium	0.045	mg/L	0.005	SW6010C	29 Nov 16 13:52	RMV
Barium	0.033	mg/L	0.005	SW6010C	29 Nov 16 13:52	RMV
Cobalt	< 0.005	mg/L	0.005	SW6010C	29 Nov 16 13:52	RMV
Boron	4.320	mg/L	0.100	SW6010C	29 Nov 16 13:52	RMV
Antimony	< 2.5 @	ug/L	0.5	SW6020A	7 Dec 16 15:02	RMB
Arsenic	< 2.5 0	ug/L	0.5	SW6020A	7 Dec 16 15:02	RMB
Beryllium	< 0.25	ug/L	0.05	SW6020A	7 Dec 16 15:02	RMB
	@See Narr				2.27.7.00.20.	
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	9 Dec 16 10:01	RMV
Chromium	< 2.5 @	ug/L	0.5	SW6020A	9 Dec 16 10:01	RMV
Lead	< 2.5 @	ug/L	0.5	SW6020A	7 Dec 16 15:02	RMB
Molybdenum	14.6 @	ug/L	0.50	SW6020A	9 Dec 16 10:01	RMV
Selenium	< 10	ug/L	0.5	SW6020A	12 Dec 16 13:46	RMB
1200.00	@^See Nar			ACCUSTANCE.	The state of the s	
Challium	< 0.5 @	ug/L	0.1	SW6020A	7 Dec 16 15:02	RMB
Fluoride	0.590	mg/L	0.020	EPA 300.0	25 Nov 16 10:40	RMB

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

- Sample diluted due to result above calibration of linear range.
- ^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

RL - Reporting Limit RL = Reporting limit
Analyses performed under our Minnesota Department of Realth 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 internal standard response

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



1126 North Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2 North German St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2616 East Broadway Ave. ~ Bismarck, ND 58501 ~ 800-279-6885 ~ Fax 701-258-9724 1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT CCR

Sample Description: WELL H9

Report Date: 11 Jan 2017 Lab Number: 16-A63076 Work Order #: 31-0620 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 21 Nov 2016 14:04 Sampled By: MVTL FIELD PERSONNEL Date Received: 22 Nov 2016 14:00

PO #: 48680

Temp at Receipt: 0.60

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					23 Nov 16	JMS
Water Digestions					23 Nov 16	JMS
Radium 226	See Atta	ched			10 Jan 17 11:05	ABL
Redium 228	See Atta	ched		EPA M9320	10 Jan 17 11:05	ABL
pH, Field	6.34	units	1.00	1-1586-85	21 Nov 16 14:04	BMW
На	* 6.8	units	1.0	SM 4500 H+B-96	22 Nov 16 14:00	DK
Sulfate	1660 ~	mg/L	4.0	ASTM D516-02	1 Dec 16 8:09	AKF
Chloride	17.6	mg/L	3.0	SM 4500 C1 E	1 Dec 16 9:25	KCJ
Mercury	< 0.005	ug/L	0.005	EPA 245.7	15 Dec 16 9:09	TWB
Solids, Total Dissolved	2840	mg/L	10	SM 2540 C-97	23 Nov 16 10:30	RC
Calcium	626.0 ~	mq/L	0.500	SW6010C	29 Nov 16 13:52	RMV
Lithium	0.138	mg/L	0.005	SW6010C	29 Nov 16 13:52	RMV
Barium	0.030	mg/L	0.005	SW6010C	29 Nov 16 13:52	RMV
Cobalt	< 0.005	mg/L	0.005	SW6010C	29 Nov 16 13:52	RMV
Boron	1.210	mg/L	0.100	SW6010C	29 Nov 16 13:52	RMV
Antimony	< 2.5 @	ug/L	0.5	SW6020A	7 Dec 16 15:02	RMB
Arsenic	< 2.5 €	ug/L	0.5	SW6020A	7 Dec 16 15:02	RMB
Beryllium	< 0.25	ug/L	0.05	SW6020A	7 Dec 16 15:02	RMB
	@See Narz		21.22	60,54551	1 200 20 20100	
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	9 Dec 16 10:01	RMV
Chromium	< 2.5 @	ug/L	0.5	SW6020A	9 Dec 16 10:01	RMV
Lead	< 2.5 @	ug/L	0.5	SW6020A	7 Dec 16 15:02	RMB
Molybdenum	3,31 @	ug/L	0.50	SW6020A	9 Dec 16 10:01	RMV
Selenium	< 5	ug/L	0.5	SW6020A	9 Dec 16 10:01	RMV
	@^See Nar			10.000	7,505,55,54,75	
Challium	< 0.5 €	ug/L	0.1	SW6020A	7 Dec 16 15:02	RMB
Fluoride	0.200	mg/L	0.020	EPA 300.0	25 Nov 16 10:40	RMB

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

- ~ Sample diluted due to result above calibration of linear range.
- ^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.



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Date Reported: 11 Jan 2017

Work Order #: 201631-0620 Account Number: 006106

PO #: 48680

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

Project Name: BIG STONE PLANT CCR

LABORATORY NARRATIVE

INORGANIC AND METALS ANALYSES:
The matrix spike recoveries for mercury associated with samples 16-A63071
through 16-A63074, 16-A63077 and 16-A63078 were above the acceptance limits.
Only results less than the reporting limit were reported.

The knowns were above the acceptance limits for beryllium for samples 16-A63071 through 16-A63079 and 16-A63081. Data below the reporting limit was reported.

The matrix spike recoveries for beryllium, arsenic, thallium, and lead were above the acceptance limits for sample 16-A63071. Data below the reporting limit was reported.

The matrix spike recoveries for beryllium, arsenic, selenium, thallium, and lead were above the acceptance limits for sample 16-A63072. Data below the reporting limit was reported.

Due to the sample matrix of the spiked sample, the matrix spike duplicate recovery for selenium was outside of acceptance range for sample 16-A63071. Data was reported based on the acceptable recoveries of the blank spike and relative percent difference between the matrix spikes.

Due to the sample matrix of the spiked sample, the matrix spike and matrix spike duplicate recoveries for selenium were above of acceptance range for samples 16-A63073 through 16-A63076, and 16-A63078 through 16-A63081. Data below reporting limit was reported.

The matrix spike recovery for selenium was above the acceptance limits for sample 16-A63077. Data was reported based on acceptable matrix spike duplicate recovery and acceptable relative percent difference between the matrix spike and matrix spike duplicate.

The relative standard deviation between readings for selenium failed in the known for sample 16-A63077. Data was reported based on the acceptable recovery of the known.

No other problems were encountered with these analyses.



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Date: 1/10/2017

CLIENT:

MVTL Inc.

Project:

Big Stone Plant CCR

Lab Order:

S1611451

CASE NARRATIVE

Report ID: S1611451001

Samples H-6-A63074, H-8-A63075, H-9-A63076, H20X-A63071, H30X-A63072, H40X-A63073, Slag 1-A63077, Slag 2B-A63084, Slag 4-A63078, Slag 5-A63079, Slag 6-A63080, Slag 7-A63081, Slag 8-A63082, and Slag 9-A63083 were received on November 29, 2016.

All samples were received and analyzed within the EPA recommended holding times, except those noted below in this case narrative. Samples were analyzed using the methods outlined in the following references:

"Standard Methods For The Examination of Water and Wastewater", approved method versions
Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition
40 CFR Parts 136 and 141
40 CFR Part 50, Appendices B, J, L, and O
Methods indicated in the Methods Update Rule published in the Federal Register Friday, May 18, 2012
ASTM approved and recognized standards

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Reviewed by: all

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 1



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Big Stone Plant CCR

Lab ID: ClientSample ID:

S1611451-001 H20X-A63071

MOH 04 0000

COC:

WEB

Date Reported 1/10/2017

Report ID

\$1611451001

WorkOrder:

S1611451

CollectionDate: 11/21/2016 11:18:00 AM

DateReceived: 11/29/2016 12:30:00 PM

FleidSampler:

TP

Matrix:

Water

Comments VVO# 31-062	0						
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionucildes - Total							
Radium 226	ND	pCl/L		1	SM 7500 Ra-B	12/13/2016 1302	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	12/13/2016 1302	MB
Radium 228	ND	pCi/L		2	Ga-Tech	12/29/2016 2242	MB
Radium 228 Precision (±)	NA	pCI/L			Ga-Tech	12/29/2016 2242	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

RL - Reporting Limit

Calculated Value

н Holding times for preparation or analysis exceeded

Analyzed by another laboratory

ND Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

Reviewed by: all

Wade Nieuwsma, Assistant Laboratory Manager

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Sample Analysis Report

Company:

MVTL Inc.

1126 N Front St

New Ulm, MN 56073

ProjectName:

Big Stone Plant CCR

Lab ID: ClientSample ID:

S1611451-002 H30X-A63072

COC:

WEB

Date Reported 1/10/2017

Report ID

S1611451001

WorkOrder:

S1611451

CollectionDate: 11/21/2016 11:54:00 AM

DateReceived: 11/29/2016 12:30:00 PM

FieldSampler: TP Matrix:

Water

MO# 31-0620

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	12/13/2016 1303	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	12/13/2016 1303	MB
Radlum 228	ND	pCi/L		2	Ga-Tech	12/30/2016 144	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	12/30/2016 144	MB

These results apply only to the samples tested.

Qualiflers:

Analyte detected in the associated Method Blank

Value above quantilation range

Analyle detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

Calculated Value

Holding times for preparation or analysis exceeded

Analyzed by another laboratory

ND Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

Reviewed by: all

Wade Nieuwsma, Assistant Laboratory Manager

Page 2 of 14



Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Big Stone Plant CCR

Lab ID: ClientSample ID:

S1611451-003 H40X-A63073

COC:

WEB

Date Reported

1/10/2017

Report ID

\$1611451001

WorkOrder:

S1611451

DateReceived:

CollectionDate: 11/21/2016 12:19:00 PM

FieldSampler:

11/29/2016 12:30:00 PM

TP

Matrix:

Water

MAN 24 ACOA

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	ND	pCl/L		1.	SM 7500 Ra-B	12/13/2016 1303	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	12/13/2016 1303	MB
Radium 228	ND	pCI/L		2	Ga-Tech	12/30/2016 446	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	12/30/2016 446	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

Calculated Value

Holding times for preparation or analysis exceeded H

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by: all

Wade Nieuwsma, Assistant Laboratory Manager

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Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Big Stone Plant CCR

Lab ID: ClientSample ID: S1611451-004 H-6-A63074

COC:

WEB

Date Reported 1/10/2017

Report ID

\$1611451001

WorkOrder:

S1611451

DateReceived:

CollectionDate: 11/21/2016 12:46:00 PM 11/29/2016 12:30:00 PM

FieldSampler:

Matrix:

Water

MON 24 DESD

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/i	nlt
Radionuciides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	12/13/2016 1303	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	12/13/2016 1303	MB
Radium 228	ND	pCI/L		2	Ga-Tech	12/30/2016 1209	MB
Radium 228 Precision (±)	NA	pCI/L			Ga-Tech	12/30/2016 1209	MB

These results apply only to the samples tested.

RL - Reporting Limit

Qualiflers:

Analyte detected in the associated Method Blank

Value above quantitation range
Analyte detected below quantitation limits
Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Calculated Value

Analyzed by another laboratory
Not Detected at the Reporting Limit
Spike Recovery outside accepted recovery limits H

ND

Reviewed by: All

Wade Nieuwsma, Assistant Laboratory Manager

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Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Big Stone Plant CCR

Lab ID: ClientSample ID:

S1611451-005 H-8-A63075

COC:

WEB

Date Reported

1/10/2017

Report ID

S1611451001

WorkOrder:

S1611451

CollectionDate: 11/21/2016 1:22:00 PM

11/29/2016 12:30:00 PM

DateReceived: FieldSampler:

Matrix:

Water

MO# 24 0820

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuciides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	12/13/2016 1303	MB
Radium 226 Precision (±)	NA.	pCi/L			SM 7500 Ra-B	12/13/2016 1303	MB
Radium 228	ND	pCI/L		2	Ga-Tech	12/30/2016 1511	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	12/30/2016 1511	MB

These results apply only to the samples tested.

Qualiflers:

Analyte detected in the associated Method Blank

Value above quantitation range Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

Calculated Value

Holding times for preparation or analysis exceeded Analyzed by another laboratory Not Detected at the Reporting Limit H

ND

Spike Recovery outside accepted recovery limits

Reviewed by: all

Wade Nieuwsma, Assistant Laboratory Manager

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Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Big Stone Plant CCR

Lab ID: ClientSample ID:

\$1611451-006 H-9-A63076

COC:

WEB

Date Reported 1/10/2017

Report ID

\$1611451001

WorkOrder:

S1611451

CollectionDate: 11/21/2016 2:04:00 PM

DateReceived: 11/29/2016 12:30:00 PM

FieldSampler: Matrix:

TP Water

WO# 31-0820

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nlt
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	12/13/2016 1303	ME
Radium 226 Precision (±)	NA	pCi/L			SM 7600 Ra-B	12/13/2016 1303	ME
Radium 228	ND	pCi/L		2	Ga-Tech	12/30/2016 1813	ME
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	12/30/2016 1813	ME

These results apply only to the samples tested.

Qualifiers: Analyte detected in the associated Method Blank

Value above quantitation range

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions 0

Matrix Effect

RL - Reporting Limit

Calculated Value

Holding times for preparation or analysis exceeded

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

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Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

ANALYTICAL QC SUMMARY REPORT

CLIENT:

MVTL Inc

Date: 1/10/2017

Work Order:

13.6

82.1

Project:

S1611451

Big Stone Plant CCR

Report ID: S1611451001

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Radium 228 by Ga/Tech	Sample Type MBLK	Units: pCi/L
TAP-407 (12/27/16 12:03)	RunNo: 142210	PrepDate: 12/05/16 12:00 BatchID: 12690
Analyte	Result	RL Splke Ref Samp %REC % Rec Limits Qu
Total Radium 228	2	4
MB-408 (01/03/17 17:40)	RunNo: 142312	PrepDate: 12/12/16 14:00 BatchID: 12727
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Qui
Total Radium 228	ND	1
Radlum 228 by Ga/Tech	Sample Type LCS	Units: pCl/L
LCS-407 (12/27/16 15:05)	RunNo: 142210	PrepDate: 12/05/16 12:00 BatchID: 12690
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Qua
Total Radium 228	33	1 39.1 83.5 65.9 - 132
LCS-408 (01/03/17 14:38)	RunNo: 142312	PrepDate: 12/12/16 14:00 BatchID: 12727
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Qua
Total Radium 228	39	1 39.1 99.5 65.9 - 132
adium 228 by Ga/Tech	Sample Type MS	Units: pCi/L
MS-407 (12/27/16 21:08)	RunNo: 142210	PrepDate: 12/05/16 12:00 Batch/D: 12690
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Qua
Total Radium 228	39	1 39.1 2 94.8 50 - 139
MS-408 (01/03/17 20:42)	RunNo: 142312	PrepDate: 12/12/16 14:00 BatchID: 12727
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Qual
Total Radium 228	48	1 39.1 2 119 50 - 139
adium 228 by Ga/Tech	Sample Type MSD	Units: pCI/L
MSD-407 (12/28/16 00:10)	RunNo: 142210	PrepDate: 12/05/16 12:00 BatchID: 12690
Analyte	Result	RL Conc %RPD %REC % RPD Limits Qual

Qualifiers:

Analyte detected in the associated Melhod Blank

Total Radium 228

- Holding times for preparation or analysis exceeded
- Analyzed by another laboratory
- Outside the Range of Dilutions Spike Recovery outside accepted recovery limits
- Value above quantitation range
- Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- RPD outside accepted recovery limits
- Matrix Effect



ANALYTICAL QC SUMMARY REPORT

CLIENT:

MVTL Inc

Work Order: Project:

S1611451

Big Stone Plant CCR

Date: 1/10/2017

Report ID: S1611451001

Radio	ım 226 in Water -	Sample Type	MBLK		Unit	s: pCVL			
	MB-1700 (12/13/16 13:02)	F	RunNo: 141804	Prepi	Date: 12/	07/16 0:00	Bat	chID: 12653	
	Analyte		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
	Radium 226		ND	0.2					
Radlu	m 226 in Water -	Sample Type	LCS		Units	: pCi/L			
	LCS-1700 (12/13/16 13:02)	R	unNo: 141804	Prept	Date: 12/0	07/16 0:00	Bate	ohID: 12653	
	Analyte		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
	Radium 226		6.0	0.2	5.89		101	67.1 - 122	
Radiu	m 226 in Water -	Sample Type	LCSD		Units	: pCi/L			
	LCSD-1700 (12/13/16 13:02)	R	unNo: 141804	PrepD	Date: 12/0	7/16 0:00	Bato	hID: 12653	
	Analyte		Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
	Radium 226		6.2	0.2	6,0	4.62	106	20	
Radiu	m 226 in Water -	Sample Type	MS		Units	: pCi/L	22.		
	S1611451-001AMS (12/13/16 13:03)	Ri	InNo: 141804	PrepD	ate: 12/0	7/16 0:00	Bato	hID: 12653	
	Analyte		Resulf	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
	Radium 226		13	1	11.8	ND	112	65 - 131	

Qualifiers:

- Analyte delected in the associated Method Blank
- Holding times for preparation or analysis exceeded
- Analyzed by another laboratory
- Outside the Range of Dilutions 0
- Spike Recovery outside accepted recovery limits
- Value above quantitation range
- Analyte detected below quantitation limits
- Not Detected at the Reporting Limit ND
- RPD putside accepted recovery limits
- Matrix Effect



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Quality Control Report
Lab IDs: 16-A63071 to 16-A63084

ab IDs: 16-A63071 to 16-A6	53084	Pro	ject: BIG	STONE	PLANT CCF	(Work (Order: 2	01631-06	20							
nalyte	LCS a Spike Amt	LCS Rec	% Rec	Matrix Spike Amt s	Matrix Spike	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	Dup	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Antimony ug/L	25.0 25.0 25.0	106 106 104	85-115 85-115 85-115	25.0 25.0 25.0 25.0	16A63072q 16A63081q A63082qc 16A63082q	<2.5 <2.5 <2.5 <2.5	30.8 26.3 27.7 28.4	123 105 111 114	75-125 75-125 75-125 75-125	30.8 26.3 27.7 28.4	30.7 26.4 30.4 27.5	123 106 122 110	0.3 0.4 9.3 3.2	10 10 10 10	103 103 102 102	90-110 90-110 90-110 90-110	< 0.5 < 0.5 < 0.5
Arsenic ug/L	25.0 25.0	106 106	85-115 85-115	25.0 25.0 25.0	16A63072q 16A63081q 16A63082q	<2.5 <2.5 <2.5	32.7 30.8 28.7	131 123 115	75-125 75-125 75-125	32.7 30.8 28.7	32.3 29.3 27.6	129 117 110	1.2 5.0 3.9	10 10 10	102 102 102	90-110 90-110 90-110	< 0.5 < 0.5
Barium mg/L	1.000 1.000	102 102	85-115 85-115	1.00 1.00	16A63079q 16A63112q	0.105 0.059	1.190 1.050	108 99	75-125 75-125		1.140 1.050	104 99	4.3	10 10	100 96	90-110 90-110	< 0.005
Beryllium ug/L	2.50 2.50 2.50	131 99 95	85-115 85-115 85-115	2.50	16A63072q 16A63081q a63081qc 16A63082q	<0.25 <0.25 <0.25 <0.25	3.40 3.09 2.42 2.62	136 124 97 105	75-125 75-125 75-125 75-125	3.09 2.62	3.34 3.07 2.64	134 123 106	1.8 0.6 0.8	10 10 10	120 124 92 100	90-110 90-110 90-110 90-110	< 0.05
Boron mg/L	1.000 1.000	102 100	85-115 85-115		16A63079q 16A63112q	0.112 < 0.1	1.220 1.040	111 104	75-125 75-125		1.180 1.070	107 107	3.3 2.8	10 10	101 100	90-110 90-110	1 2 2 2
Cadmium ug/L	5.00 5.00	107 98	85-115 85-115		16A63072q a63081qc 16A63082q	< 0.5 0.81 < 0.5	5.51 6.08 5.03	110 105 101	75-125 75-125 75-125	6.08	5.37 5.93 5.27	107 102 105	2.6 2.5 4.7	10 10 10	98 95 94	90-110 90-110 90-110	< 0.1
Calcium mg/L	50.00 50.00	105 106	85-115 85-115		16A63079q 16A63112q	132.0 97.10	186.0 144.0	108 94	75-125 75-125		185.0 146.0	106 98	0.5 1.4	10 10	102 102	90-110 90-110	
Chloride mg/L	1		i	60.0 60.0 60.0 60.0	16-A63072 16-A63082 16-A63115 16-A63637	80.9 38.5 <2 24.6	142 101 63.1 87.9	102 104 105 106	85-120 85-120 85-120 88-11	0 101 0 63.1	139 99.9 61.8 85.9	97 102 103 102	2.1 1.1 2.1 2.3	5 5 5 5	100 100 101	90-110 90-110 90-110	< 3

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Quality Control Report Lab IDs: 16-A63071 to 16-A63084

Project: BIG STONE PLANT CCR

Work Order: 201631-0620

nälyte	LCS Spike Amt	LCS Rec J	% Rec	Matrix Spike :) Amt	Matrix Spike ID		Matrix Spike - Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/. Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dap s RPD Limit (<)	Known Rec (%)		Method Blank
Chromium ug/L	25.0 25.0 25.0 25.0 25.0 25.0	112 108 111 110 102	85-115 85-115 85-115 85-115 85-115	25.0 25.0 25.0 25.0 25.0 25.0 25.0	16A63072q a63081qc A63082qc 16-A63082 A63081qc A65485qc	<2.5 7.86 <2.5 <2.5 7.91 45.5	24.3 32.4 25.6 25.6 33.0 72.6	97 98 102 102 100 108	75-125 75-125 75-125 75-125 75-125 75-125	24.3 32.4 25.6 25.6 33.0 72.6	25.0 32.6 28.0 27.6 32.6 67.4	100 99 112 110 99 88	2.8 0.6 9.0 7.5 1.2 7.4	10 10 10 10 10 10	101 100 100 110	90-110 90-110 90-110 90-110	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5
Cobalt mg/L	1.000 1.000	106 106	85-115 85-115	1.00	16A63079q 16A63112q	< 0.005 < 0.01	1.050 0.979	105 98	75-125 75-125	1.050 0.979	1.040 0.997	104 100	1.0 1.8	10 10	104 102	90-110 90-110	< 0.005
Fluoride mg/L	0.200	100	85-115	0.20 0.20 0.20	16-A63080 A63084qc 16-A63125	0.600 0.090 0.680	0.800 0.260 0.880	100 85 100	75-125 75-125 75-125	0.800 0.260 0.880	0.800 0.260 0.880	100 85 100	0.0 0.0 0.0	10 10 10	98 102	90-110 90-110	< 0.02
Lead ug/L	25.0 25.0	108 106	85-115 85-115	25.0 25.0 25.0	16A63072q 16A63081q 16A63082q	<2.5 <2.5 <2.5	32.1 29.4 28.0	128 118 112	75-125 75-125 75-125		31.3 29.6 26.9	125 118 108	2.5 0.7 4.0	10 10 10	105 104 99	90-110 90-110 90-110	< 0.5 < 0.5
Lithium mg/L	1.000 1.000	104 106	85-115 85-115	1.00 1.00	16-A63079 a63112qc	0.026 < 0.01	1.120 1.030	109 103	75-125 75-125	Annual Company	1.080 1.010	105 101	3.6 2.0	10 10	103 100	90-110 90-110	< 0.005
Mercury ug/L				0.10 0.10 0.10	16-A63071 16-A63933 16-A64471	<0.005 <0.005 <0.005	0.112 0.106 0.088	112 106 88	67-106 67-106	0.106	0.112 0.100 0.091	112 100 91	0.0 5.8 3.4	9 9 9	112 110 100	76-113 76-113 76-113	<0.005 <0.005 <0.005 <0.005 <0.005 <0.005
Molybdenum ug/L	25.0 25.0	103 95	85-115 85-115		16A63072q a63081qc 16A63082q	41.4 4.99 8.81	66.6 28.9 31.6	101 96 91	75-125 75-125 75-125	28.9	66.7 28.7 32.5	101 95 95	0.2 0.7 2.8	10 10 10	98 92 90	90-110 90-110 90-110	
pH units	2	:		1		3		1	:	7.2 7.2	7.2 7.2	1	0.0	2.5 2.5	101 101	90-110 90-110	



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Quality Control Report

Lab IDs: 16-A63071 to 16-A63084 Project: BIG STONE PLANT CCR Work Order: 201631-0620

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix - Spike Orig Result	Matrix Spike 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
Selenium ug/L	25.0	113	85-115	25.0	16A63072q	< 2.5	31.4	126	75-125	31.4	31.9	128	1.6	10	100	90-110	< 0.5
	25.0	98	85-115	25.0	16A63072q	< 5	31.3	125	75-125	31.3	34.0	136	8.3	10	109	90-110	< 0.5
	25.0	102	85-115	25.0	a63081qc	< 5	31.4	126	75-125	31.4	31.5	126	0.3	10	96	90-110	< 0.5
	25.0	109	85-115	25.0	A63365qc	< 2.5	28.7	115	75-125	28.7	30.0	120	4.4	10	97	90-110	< 0.5
	25.0	108	85-115	25.0	A63081qc	< 10	32.7	131	75-125	33.9	31.4	127	7.7	10	104	90-110	< 0.5
	25.0	108	85-115	25.0	A63081qc	< 2.5	32.8	131	75-125	51.4	49.8	121	3.2	10	1 10		< 0.5
			100	25.0	A65485qc	< 0.5	30,9	124	75-125	51.1	49.4	116	3.4	10			< 0.5
Solids, Total Dissolved mg/L			-	-	-					918	914		0.4	10	109	85-115	< 10
							*	-		1380	1370	-	0.7	10			
Sulfate mg/L		-	+	60.0	16-A62947	64.0	132	113	78-126	132	130	110	1.5	5	103	90-110	<4
		No.		600	16-A63082	292	974	114	78-126	974	977	114	0.3	5	95	90-110	<4
		-	-	600	16-A63084	745	1400	109	78-126	1400	1420	112	1.4	5	99	90-110	<4
	2	-		60.0	16-A62306	68.9	139	117	78-126	139	142	122	2.1	5		12.7.3	
	-	140	-	60.0	16-A62134	42.3	111	114	78-126	111	110	113	0.9	5			
Thallium ug/L	5.00	106	85-115	5.00	16A63072q	< 0.5	6.55	131	75-125	6.55	6.37	127	2.8	10	104	90-110	< 0.1
()	5.00	108	85-115	5.00	16A63081q	< 0.5	5.68	114	75-125		5.70	114	0.4	10	104	90-110	< 0.1
	5.00	102	85-115	5.00	A63082qc	< 0.5	5,52	110	75-125		6.10	122	10.0	10	100	90-110	A 100 V 900
Q.	1	2,55		5.00	16A63082q		5.74	115	75-125	2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	5.52	110	3.9	10	100	90-110	

The arsenic matrix spike recoveries were outside the acceptance range, see narrative.

The beryllium LCS recovery was outside the acceptance limits, see narrative.

The beryllium matrix spike recoveries were outside the acceptance limits, see narrative.

The beryllium known recoveries were above the acceptance limits, see narrative.

The lead matrix spike recovery was above the acceptance limits, see narrative.

The selenium matrix spike recoveries were outside the acceptance limits, see narrative,

The thallium matrix spike recoveries were outside the acceptance limits, see narrative.

The mercury matrix spike recoveries were outside the acceptance limits, see narrative.

Approved by:

Minnesota Valley Testing Laboratories 1126 North Front Street New Ulm, MN 56003

Phone: 800 782 3557

Fax: 507 359 2890

Field Service Chain of Custody Record

This is an	exact copy of
	al document
By as	Date 22 Nov16
	ges 1-23

Project	Otter Tail I	Power Comp	any	Project Ty	pe:	Big Ston	e Pla	ant C	CR	Nam	e of	Sam	plen	s: C	ر اندار		-05%		Box Wet	
Attn: Address	Paul Vuko P.O. Box 4	196 Ils, MN 565		Attn: Address:						Name of Samplers: Dusty Faceyn, Ben Welf Quote Number: Work Order Number: 31-0620 Lab Numbers:								p. 17 5041		
		Sample In	formation	1			Bottle Type											Analysis		
Lab Number	Sample ID	Unique Station ID	Dafe	Time	Sample Type	Sample Location	1000 HNO3	Fillered Yor N	1000 none	500 HIVO3	Filler? Y Or M.	500 H2SO4	Filler? Y or M	1000 Amber m	1000 Amber	500 NaOH	Other: 150 Has	Other 150 M.	Analysis Required	
3071	H2OX		21 12016	1118	GW		2	N	1	1	N								See Attached	
72	НЗОХ			1154	GW	12	2	N	1	1	N							13.5		
73	H4OX			1129	GW		2	N	1	1	N					7.1				
	H-6			1246	GW		2	N	1	1	N					7				
	H-8		1, 4	1327	GW		2	N	1	1	N				-	100	lic:			
	H-9			1404	GW		2	N	1	1	N									
77	Slag 1		7 -	1123	GW	1	2	N	1	1	N					1.				
78	Slag 4			1236	GW		2	N	1	1	N				7					
	Slag 5			1453	GW		2	N	1	1	N		10.00			16				
80	Slag 6		1	1319	GW		2	N	1	1	N				1,4					

WORK ORDER #2

Comments:

Samples Reli	nquished By:	Let 19	7		Samples Received By:	19-510	dn	
Date: 22	Nov16	Time:	1400	Temp: O. G	Date: 22 Nov 16	Time	1400	Temp: 0 . 6 C
Samples Reli	nquished into:	Fridge	Cog in C	art Other:				
Samples Reli	nquished By:		115		Samples Received By:			
Date:		Time:		Temp:	Date:	Time	:	Temp:
Delivery:	Samplers	Other:			Seal Number(s) - If Us	sed		
Transport:	Ambient	(ce		Other:	Seals Intact?	Yes	No	

Minnesota Valley Testing Laboratories

1126 North Front Street Phone: 800 782 3557

New Ulm, MN 56003 Fax: 507 359 2890

Field Service Chain of Custody Record

Project	Otter Tail I	Power Comp	any	Project T	/pe:	Big Stor	ne Pla	ant C	CR	Nam	e of	Sami	plers:	Dust		arsyn	0	hen Welf
Attn: Address	Paul Vuko P.O. Box 4	496 Ills, MN 565		Carbon Co Attn: Address:	_					Quot	te Nu	mber		DUSH	<i>f</i> 1	للمهمي	, 5	Ett Melt
		Sample In								Bottl	е Ту	ре				Analysis		
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	1000 HIVO3	Filtered Yor N	1000 none	500 HIVO3	Filler? Y or M	304	Filler? Y or N	1000 Amber none	500 NaOu	Other: 150 Has	Other 150 AL	Analysis Required
	Slag 7		21 12016	1409	GW	100	2	N	1	1	N				(10)			See Attached
82	Slag 8			1533	GW		2	N	1	1	N							
83	Slag 9	1		1647	GW		2	N	1	1	N							
	Slag 9 De	ер		-	GW		2	N	1	1	N					1		

2 N

GW

1 N

1

Comments:

54 Slag 2B

WORK ORDER #2

Samples Relin	nquished By:	LIT Fin		Samples Received E	By: (1. Muder)	
Date: 22	Nort G	Time: 1400	Temp:⊘、6	Date: 22 Noull.	Time: (400)	Temp: 0.60
Samples Reli	nquished into:	Fridge cog	in Cart Other:			
Samples Reli	nquished By:			Samples Received E	By:	
Date:		Time:	Temp:	Date:	Time:	Temp:
Delivery:	Samplers	Other:		Seal Number(s) - If I	Jsed	
Transport:	Ambient	TOP	Other:	Seals Intact?	Yes No	

Big Stone Sampling

Site*	Parameter List	Well Depth	Diameter (Inches)	Well Elevation	Sample Equipment	Dedicated?	Pump Rate (ml/minute)	Goes Dry?	Sampling Seasons**
WELL10	A	47.43	4	1098.70	Keck/Tsunami	No	3,000		
WELL11	A	127.22	4	1104.00	Other Pump	Yes		No	1,3
WELL12	A	112.40	4	1071.89	Other Pump	Yes	36,000 20,000	No	1,3
S1	В	32.50	2	1102.17	Bailer	Yes	20,000 N/A	No	1,3
S2	В	43.12	2	1102.39	Bailer	Yes	NA	Yes	1,3
S3	В	62.50	2	1102.65	Bailer	Yes		Yes	1,3
S4	В	27.70	2	1090.57	Bailer	Yes	N/A	No	1,3
S5	В	46.72	2	1091.40	Bailer	Yes	N/A	Yes	1,3
S6	В	62.05	2	1090.71	Bailer	Yes	N/A	Yes	1,3
H1OX	C,-CCR	32.91	2	1115.89	Bailer	Yes	N/A	No	1,3
HIINT	C	60.11	2	1115.81	Keck/Tsunami	No	100	Yes	1,3
H2OX	C, CCR	32.20	2	1103.91	Bladder	Yes	1500 100	No	1,3
HZINT	C	62.30	2	1103.91	Bailer	Yes	N/A	Yes	1,3
H3OX	C, CCR	22.55	2	1095.19	Bladder	Yes		Yes	1,3
HSINT	C	54.31	2	1095.17	Whale	No	100 2000	Yes	1,3
H4OX	C, CCR	27.20	2	1108.22	Bladder	Yes	100	No	1,3
H4INT	C	60.01	2	1108.61	Keck/Tsunami	No	2000	No	1,3
H5	C	43.30	2	1122.80	Whale	No		Yes	1,3
H6	C, CCR	15.00	2	1097.76	Bladder	Yes	1000	No	1,3
H7	C	33.20	2	1106.06	Whale	No	100	Yes	1,3
H8	C, CCR	22.05	2	1081.23	Bladder	Yes	1000	Yes	1,3
H9	CCR	30.20	2	1086.21	Bladder		100	TBD	1,3
BC1	В	16.26	2	1118.46	Bailer	Yes	100	TBD	
BC101	В	39.30	2	1118.70	Bailer	Yes	N/A	No	1,3
BC2R	В	32.48	2	1115.28	Baller	Yes Yes	N/A	Yes	1,3
BC3R	В	35.15	2	1114.42	Bailer	Yes	N/A N/A	No	1,3
BC4R	В	34.60	2	1113.86	Bailer	Yes		Yes	1,3
BC5R	В	37.32	2	1123.02	Bailer	Yes	N/A	Yes	1,3
BC6R	В	33.95	2	1121.58	Bailer	Yes	N/A	No	1,3
SLAG1	CCR	34.90	2	TBD	LOW FLOW	No	N/A 100	No TBD	1,3 1,3

1

CCR	TBD	2	1111.06	LOW-FLOW	TBD	100	TBD	1,3
CCR	TBD	2	TBD	LOW FLOW	TBD	100	TBD	4,3
CCR	39.00	2	TBD	LOW FLOW	No	100	TBD	4,3
CCR	38.80	2	1107.30	LOW FLOW	No	100	TBD	1,3
CCR	37.30	2	1111.51	LOW FLOW	No	100	TBD	1,3
CCR	48.70	2	1114.39	LOW FLOW	No	100	TBD	1,3
CCR	52.09	2	1127.26	LOW FLOW	No	100	TBD	1,3
CCR	49.80	2	1122.35	LOW FLOW	No	100	TBD	
CCR	68.00	2	1121.92	LOW FLOW	No	100	TBD	
CCR	40.80	2	1111.26	LOW FLOW	No	100	TBD	
A	N/A	N/A	N/A	Grab	N/A	N/A	No	1,3
A	N/A	N/A	N/A	Grab	N/A	N/A	No	1,3
A	N/A	N/A	N/A	Grab	N/A	N/A	No	1,3
C	N/A	N/A	N/A	Grab	N/A	N/A	No	1,3
	CCR CCR CCR CCR CCR CCR CCR CCR A A	CCR 78D CCR 39.00 CCR 38.80 CCR 37.30 CCR 48.70 CCR 52.09 CCR 49.80 CCR 68.00 CCR 40.80 A N/A A N/A	CCR TBD 2 CCR 39.00 2 CCR 38.80 2 CCR 37.30 2 CCR 48.70 2 CCR 52.09 2 CCR 49.80 2 CCR 68.00 2 CCR 40.80 2 A N/A N/A A N/A N/A A N/A N/A	CCR TBD 2 TBD CCR 39.00 2 TBD CCR 38.80 2 1107.30 CCR 37.30 2 1111.51 CCR 48.70 2 1114.39 CCR 52.09 2 1127.26 CCR 49.80 2 1122.35 CCR 68.00 2 1121.92 CCR 40.80 2 1111.26 A N/A N/A N/A A N/A N/A N/A A N/A N/A N/A A N/A N/A N/A	CCR TBD 2 TBD LOW FLOW CCR 39.00 2 TBD LOW FLOW CCR 38.80 2 1107.30 LOW FLOW CCR 37.30 2 1111.51 LOW FLOW CCR 48.70 2 1114.39 LOW FLOW CCR 52.09 2 1127.26 LOW FLOW CCR 49.80 2 1122.35 LOW FLOW CCR 68.00 2 1121.92 LOW FLOW CCR 40.80 2 1111.26 LOW FLOW A N/A N/A N/A Grab A N/A N/A N/A Grab A N/A N/A N/A Grab	CCR TBD 2 TBD LOW FLOW TBD CCR 39.00 2 TBD LOW FLOW No CCR 38.80 2 1107.30 LOW FLOW No CCR 37.30 2 1111.51 LOW FLOW No CCR 48.70 2 1114.39 LOW FLOW No CCR 52.09 2 1127.26 LOW FLOW No CCR 49.80 2 1122.35 LOW FLOW No CCR 68.00 2 1121.92 LOW FLOW No CCR 40.80 2 1111.26 LOW FLOW No A N/A N/A N/A Grab N/A A N/A N/A N/A Grab N/A A N/A N/A N/A Grab N/A	CCR TBD 2 TBD LOW FLOW TBD 100 CCR 39.00 2 TBD LOW FLOW No 100 CCR 38.80 2 1107.30 LOW FLOW No 100 CCR 37.30 2 1111.51 LOW FLOW No 100 CCR 48.70 2 1114.39 LOW FLOW No 100 CCR 52.09 2 1127.26 LOW FLOW No 100 CCR 49.80 2 1122.35 LOW FLOW No 100 CCR 68.00 2 1121.92 LOW FLOW No 100 CCR 40.80 2 1111.26 LOW FLOW No 100 CCR 40.80 2 1111.26 LOW FLOW No 100 A N/A N/A N/A N/A N/A A N/A N/A N/A N/A A N/A	CCR TBD 2 TBD LOW FLOW TBD 100 TBD CCR 39.00 2 TBD LOW FLOW No 100 TBD CCR 38.80 2 1107.30 LOW FLOW No 100 TBD CCR 37.30 2 1111.51 LOW FLOW No 100 TBD CCR 48.70 2 1114.39 LOW FLOW No 100 TBD CCR 48.70 2 1127.26 LOW FLOW No 100 TBD CCR 52.09 2 1127.26 LOW FLOW No 100 TBD CCR 49.80 2 1122.35 LOW FLOW No 100 TBD CCR 68.00 2 1121.92 LOW FLOW No 100 TBD CCR 40.80 2 1111.26 LOW FLOW No 100 TBD A N/A N/A N/A

^{*} Three additional monitoring wells will be installed the Spring of 2016. Each well will be screened approximately 35' below ground surface and will be analyzed for the "C" parameter list. In addition, a new site with 9 wells will be added and will be analyzed for CCR Parameters ONLY.

^{** 1 =} Spring (March 28 - April 28), 2 = Summer (July 1 - August 7), 3 = Fall (October 14- November 14)

^{***} Only sample for the first two CCR background sampling events.

Big Stone Plant CCR Appendix III Parameters

CCR - Appendix III Detection Monitoring Field Parameters pH*

* Field and Laboratory Measurements

Total Concentration Parameters

Boron

Calcium

Chloride

Fluoride

pH

Sulfate

Dissolved Solids, Total

500 HN03

Big Stone CCR Appendix IV Parameters

CCR - Appendix IV - Assessment Monitoring

Total Concentration Parameters

Antimony

Arsenic

Barlum Beryllium

Cadmium

Chromium, Total

Cobalt

Fluoride

Lead

Lithium

Mercury

Molybdenum Selenium

Thallium

Radium 226 + 228

500 No-e 500 HNGZ 2-1000 HNOZ

Big Stone Parameter List "A"

Field Parameters

Field pH Field Temperature Field Conductivity

Lab Parameters

Lab pH
Lab Conductivity
Total Alkalinity
Chloride
Hardness, Calcium
Hardness, Total
Nitrate-Nitrite as N
Potassium - Total
Sodium - Total
Sulfate

500 H2504 1000 No-e

Big Stone Parameter List "B"

Field Parameters

Field pH Field Temperature Field Conductivity

Lab Parameters

Lab pH
Lab Conductivity
Total Alkalinity
Chlorlde
Hardness, Calcium
Hardness, Total
Nitrate-Nitrite as N
Potassium - Total
Sodium - Total
Sulfate
Arsenic - dissolved
Boron - dissolved
Cadmium - dissolved
Lead - dissolved
Manganese - dissolved

Strontium - dissolved

(1995)

1000 NO-E 500 HNOZ 500 HNOZ Filter 500 H2504

Big Stone Parameter List "C"

Field Parameters

Field pH

Field Temperature

Field Conductivity

Lab Parameters

Lab pH

Lab Conductivity

Total Alkalinity

Chloride

Hardness, Calcium

Hardness, Total

Nitrate-Nitrite as N

Potassium - Total

Sodium - Total

Sulfate

Arsenic - Dissolved

Arsenic - Total **

Barium - Dissolved

Barium - Total **

Boron - Dissolved

Boron - Total **

Cadmium - Dissolved

Cadmium - Total **

Chromium - Dissolved

Chromium - Total **

Copper - Dissolved

Copper - Total **

Lead - Dissolved

Lead - Total **

Manganese - Dissolved

Manganese - Total **

Mercury - Dissolved

Mercury - Total **

Selenium - Dissolved

Selenium - Total **

Silver - Dissolved

Silver - Total **

Strontium - Dissolved

Strontium - Total **

Vanadium - Dissolved

Vanadium - Total **

Zinc - Dissolved

Zinc - Total **

1000 NO-1 1000 NO-1 500 HZ504 500 HNOS

100 ovor 500 Hravy Filter

^{**} NOTE: ONLY Reclaim Pond is required to have Total metals run. The groundwater samples are required to have the Dissolved metals run only.

Groundwater Assessment	Site:	Otter Tail F	Power Co./ Big Stone				
Sampling Personnel:	Facility ID:	Facility ID:					
Ber volf	Date: 21	Nov 16					
	Unique Star	tion ID:					
	Sample ID:		Well H2OX				
Well Condition Well Locked? (res No Well Labeled? (res No Casing Straight? (res No Repairs Necessary:	Protective F State ID Ta Grout Seal	g? Yes	(No) (No) No				
Well Information Well Depth: 32. 以3	Well Casing		1103.91				
Constructed Depth: 32.20	Static Water	r Elevation: 109	1476				
Casing Diameter: 2"	Previous Sta	atic: 1094.66					
Water Level Before Purge: 9,15	Water Level	Water Level After Sample: Below Funf					
Well Volume: 3.86 Gallor	Measureme	,	. WL) Steel Tape				
Sampling Information	. 0	,	17/2				
Weather Conditions: Temp: 27	Wind: 50 10	Sky: Cle	:41				
Sampling Method: Grundfos Bladder	S/7 Disp. Bailer Whale	Grab Other:					
Dedicated Equipment: Yes No	Pumping Ra	ite: , 25	gpm				
Well Purged Dry? Yes No	Time Pump	Began: 1057	(am)/ pm				
Time Purged Dry? 1113	Time of San	npling: 1/18	(am) / pm				
Duplicate Sample? Yes (No) ID:	Sample EH:	196,2					
Sample Appearance: General: Cleur	Color: No y Phase	: NOTE	Odor: Now				
Time PH Specific Temp Cond. C	D. O. Turbidity mg/L NTU	Gallons SEQ Removed #	Comments:				
1113 6.31 4548 9.8	Mt NA	4 1					
1118 6.35 4600 9.4		- 2	Recharge				
	1 1	3	1.0				
		4					
	1/2	5					
Stabilized? Yes No	Amount Water Removed:	4	Gallons				
Comments:	3,112-113-113-113-113-113-113-113-113-113-		2,000,10				

New	Ulm.	MN	560	73

Groundwater Assessment	Site:	Otter Ta	il Power Co./ Big Stone				
Sampling Personnel:	Facility ID:	Facility ID:					
Ben Wolf	Date: 2/ 1/0	00 110					
	Unique Station	Unique Station ID:					
	Sample ID:		Well H3OX				
Well Condition	10.00						
Well Locked? Yes No	Protective Pos	sts? Yes	(No)				
Well Labeled? Yes No	State ID Tag?	Yes	910				
Casing Straight? Yes No	Grout Seal Int		NO				
Repairs Necessary:							
Well Information							
Well Depth: 2268	Well Casing E	levation:	1095.19				
Constructed Depth: 22.55	Static Water E	levation: 1089	7.77				
Casing Diameter: 2"	Previous Station						
Water Level Before Purge: 5.42	Water Level A	fter Sampl Be	edge fum				
Well Volume: 7 82 Gallons	Measurement	Method: €lec.					
	V						
Sampling Information	-0						
Weather Conditions: Temp: 28	Wind: 500 10	Sky: C	clear				
Sampling Method: Grundfos Bladder S	Disp. Bailer Whale G	rab Other:					
Dedicated Equipment: (res) No	Pumping Rate	, 25	gpm				
Well Purged Dry? (Yes) No	Time Pump Be		(am) pm				
Time Purged Dry? 1149_	Time of Sampl		(am)/ pm				
Duplicate Sample? Yes (No) ID:		163.4					
Sample Appearance: General: Clear	Color: No you Phase:		Odor: Non				
i z Specific Temp	D. O. Turbidity G	allons SEQ					
Time pH Cond. °C		temoved #	Comments:				
1144 6.52 4684 11.78	AN AN	3 1					
1154 6.49 4665 11.85		- 2	Recharge				
The state of the s	1 1	3					
		4					
		5					
Stabilized? Yes (No)	Amount Water Remover	3	Gallons				

New Ulm, M	N 56073
------------	---------

Groundwa	Groundwater Assessment Sampling Personnel:				Site:	0	tter Ta	il Power Co./ Big Stor			
Sampling Pers					Facility I	D:					
	Ben La	orf			Date: 2	I NOU 16	-				
					Unique :	Station ID:					
					Sample	ID:		Well H4OX			
Well Condit	ion	-	-								
Well Locked?		(es)No	11.0		Protectiv	re Posts? Y	es	NO			
Well Labeled?		(es No			State ID	Tag? Y	es	(AHO)			
Casing Straigh	nt?	Xes) No	C.		Grout Se	eal Intact? (Y	es	No			
Repairs Neces	ssary:	0				-	-				
Well Informa	ation										
Well Depth:		27.48			Well Cas	sing Elevation:		- 1108.22			
Constructed D		27.20	7			ater Elevation:	10				
Casing Diame		2"			Previous Static: 1089-71						
Water Level B		18.23	_		Water Level After Sample: 25 /2						
Well Volume:	1.51		Gallons			ment Method:		c. WL) Steel Tape			
					1						
Sampling In	formation										
Weather Cond		Temp:	29_	Win	d: 500	16 SH	v: C	lear			
Sampling Meth		Grundfos	Bladder S	Disn	EWhale		ner:				
Dedicated Equ		Kes Me	BU AND	1	Pumping	7. 170.00	and the second	gpm			
Well Purged D		(YES) No	Bry will	6			207	am / pm)			
Time Purged D		124	-				219	am Moin			
Duplicate Sam		Yes No	ID:			131,3					
Sample Appea				M.Colo		se: NOTE		Odor: MUNE			
			3.7.1.1.	1	1						
5		Specific	Temp	D.	Turbidity	Gallons	SE				
Time /	pH	Cond.	°C	0.	NTU	Removed		Comments:			
1214	6.47	3174	8.69	MA	MA	1.75	1				
1219	6.52	3124	8.66	11	17		2	Recharge			
15.1	12.30		1	I	1		3	0			
							4				
		-					5				
Stabilized?	Yes	(No)	-	Amo	unt Water	1-25		Gallons			
Comments:		0		-							

Groundwater As	ssessmen		Site: Otter Tail Power Co./ Big Sto						
Sampling Personnel			Facility ID						
Ben	WOLF			Date: 21 NOV 16					
100				Unique Station ID:					
		=		Sample II	Sample ID: Well H6				
Well Condition	6				~	-			
Well Locked?	Yes) No			Protective			No		
Well Labeled?	XED No			State ID T			(NO)		
Casing Straight?	Yes) No			Grout Sea	Intact? Yes		(No)		
Repairs Necessary:	0						1		
Well Information									
Well Depth:	17.92			Well Casin	ng Elevation:	N	A		
Constructed Depth:				er Elevation:	1				
Casing Diameter:	2"			Previous S	Static:	1			
Water Level Before F	Purge: 15	.83		Water Lev	el After Samp	e: Re	Now func		
Well Volume:	34	Gallons		Measurem	ent Method:	Elec	. WLD Steel Tape		
			7	1					
Sampling Informa	tion					- U			
Weather Conditions:		78	Wind:	5010	Sky:	cle	cer		
Sampling Method:	Grundfos	Bladder SS/	Disp. Bailer		Grab Other:				
Dedicated Equipmen				Pumping F	Rate: . 2,	5	gpm		
Well Purged Dry?	(Yes) No			Time Pum		239	am / pm		
Time Purged Dry?	7341-	_		Time of Sa		146	am / (pm)		
Duplicate Sample?	Yes No) ID: -		Sample El-					
Sample Appearance:		Clear	Color: N		se: NO x		Odor: None		
2	Specific	lemp	D, O.	Turbidity	Gallons	SEQ			
Time pH	Cond.	°C	mg/L	NTU	Removed	#	Comments:		
1241 7.14	1088	11.42	NA	NA	v5	1			
1246 7.06	1031	11.30			7	2	Rechange		
		Chronical Co.	1	1		3			
No.		1				4			
	1					5	The second		
Stabiliz Yes	No)		Amount V	Vater Remove	d: ,5		Gallons		
Comments:	-								

Groundwater Assessment	Site:	Otter Tail Power Co./ Big Stone			
Sampling Personnel:	Facility ID:				
Bes Wolf	Date: 21 No	1 16			
	Unique Station I				
	Sample ID:	Well H8			
Well Condition	4.5754 - 110	NO A COMPANY			
Well Locked? Yes No	Protective Posts				
Well Labeled? (es) No	State ID Tag?	Yes (No)			
Casing Straight? (Yes) No	Grout Seal Intac	t? (res) No			
Repairs Necessary:		9			
Well Information					
Well Depth: 22.33	Well Casing Elev				
Constructed Depth: 22.05	Static Water Ele	vation: 1072.73			
Casing Diameter: 2"	Previous Static:	1012-98			
Water Level Before Purge: 8.50	Water Level After	r Sample: 9_04			
Well Volume: 7, 25 Gallons	Measurement M	ethod: Elec. WD Steel Tape			
Sampling Information	- 0				
Weather Conditions: Temp: 27	Wind: S(C) 10	sky: Clear			
Sampling Method: Grundfos Bladder S					
Dedicated Equipment: Yes No	Pumping Rate:	,25 gpm			
Well Purged Dry? Yes No	Time Pump Bega				
Time Purged Dry?	Time of Sampling				
Duplicate Sample? Yes (o) ID:	Sample EH: -/				
Sample Appearance: General: Cleur	Color: NUつい Phase:				
G Specific Temp	D. O. Turbidity Ga	llons SEQ			
Time pH Cond. C		moved # Comments:			
1304 6.87 1581 10.1		25 1			
1313 6.78 583 10-9		50 2			
1322 10.77 1584 10.1	1 1 1 6	75 3			
13 611 1941 1611		4			
		5			
Stabilized Yes No	Amount Water Remove	6.75 Gallons			
- constitution of the					

Grou	ındwater	Assessment			Site:	Otte	r Tail Po	ower Co./ Big Ston
Samp	ling Person	ge	y.		Facility ID	:		
-	(gen Wolf			Date: 21 NOV 16			
					Unique S	tation I		
			-		Sample II		W	/ell H9
Well	Condition	<u>a</u>						
Well L	ocked?	Yes No			Protective	Posts Yes		No
Well L	abeled?	(Yes No			State ID T	ag? Yes		NO
Casin	Straight?	(Yes) No	-		Grout Sea	intac/Yes		No
Repai	rs Necessar	y:						
Well	Informatio				SCA.			
Well D		30.71				ng Elevation		1086.21
Const	ructed Dept				Static Wa	ter Elevation	1: 107	15.16
	Diameter:	2"				Static: 1025		
Water	Level Befor	e Purge: 11, 0	5			el After Sar		
Well V	olume:	3.21	Gallons	3	Measuren	nent Method	Elec. V	NDI Steel Ta
Weath	ling Information of Condition of Method:	Grundfos	Eladder SS/	Wind: S	Whale	Grab Other:		
	ted Equipm				Pumping I			gpm
	urged Dry?				Time Pum		325	am / on
	urged Dry?				Time of Sa		164	am / pr
Duplica	ate Sample?	Yes (No)	ID:		Sample El			
Sample	e Appearan	c(General: C/	car	Color: A	Ph UTU Ph	ase: NO'S	-	Odor: word
. 13			Temp	D. O.	Turbidity	Gallons		
Time	pH		°C	mg/L	NTU	Removed	SEQ#	Comments:
1338	6.33	3564	4,78	NA	NA	3.15	1	
1351		3563	979			6.50	2	
1404	6.34	3 5 5 5	9.67	1	11	9.75	3	
		1				1	4	
1,7-1	6						5	
Stabiliz	Yes	No		Amount V	later Remove	9.75		Gallons
Comm	ents:							



1126 North Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2 North German St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2616 East Broadway Ave. ~ Bismarck, ND 58501 ~ 800-279-6885 ~ Fax 701-258-9724 1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885 www.mvtl.com



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FINAL REPORT COMPLETION DATE: 7

Aprit ax

Date Reported: 4 Apr 2017

Work Order #: 31-0070 Account #: 006106

PO #: 48680

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

Project Name: BIG STONE PLANT CCR

> Certici) Field Service Manager/Date Reviewed

Chemisury Lab Manager/Date Reviewed

lup for Quality Assurance Director/Date Reviewed

RL = Reporting Limits

NQ = Not Present, Qualitative Only

PQ = Present, Qualitative Only

ND = Not Determined



MINNESOTA VALLEY TESTING LABORATORIES, INC. 1126 North Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2 North German St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2616 East Broadway Ave. ~ Bismarck, ND 58501 ~ 800-279-6885 ~ Fax 701-258-9724 1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885 www.mvtl.com



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT CCR

Sample Description: H20X

Report Date: 4 Apr 2017 Lab Number: 17-A6378 Work Order #: 31-0070 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 27 Feb 2017 11:03 Sampled By: MVTL FIELD PERSONNEL Date Received: 27 Feb 2017 19:06

PO #: 48680

Temp at Receipt: 0.0C

	As Receiv	red	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					28 Feb 17	JMS
Water Digestions					28 Feb 17	JMS
Radium 226	SEE ATTAC	HED			3 Apr 17 8:39	ABL
Radium 228	SEE ATTAC	HED		EPA M9320	3 Apr 17 8:39	ABI.
pH, Field	6.57	units	1.00	I-1586-85	27 Feb 17 11:03	PAN
pH	* 7.1	units	1.0	SM 4500 H+B-96	28 Feb 17 9:20	CEH
	See Narra	tive				
Sulfate	1790 ~	mg/L	4.0	ASTM D516-02	9 Mar 17 9:29	KC-J
Chloride	3.7	mg/L	3.0	SM 4500 C1 E	2 Mar 17 9:29	KCJ
Mercury	< 0.005	ug/L	0.005	EPA 245.7	1 Mar 17 9:30	TWB
Solids, Total Dissolved	3800	mq/L	10	SM 2540 C-97	28 Feb 17 13:24	RC
Calcium	522.0 ~	mg/L	0.500	SW6010C	3 Mar 17 11:15	RMB
Lithium	0.465	mg/L	0.005	SW6010C	2 Mar 17 12:23	RMB
Barium	0.008	mg/L	0.005	SW6010C	2 Mar 17 12:23	RMB
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	2 Mar 17 12:23	RMB
Boron	0.270	mg/L	0.100	SW6010C	3 Mar 17 11:15	RMB
Antimony	< 2.5 @	ug/L	0.5	SW6020A	3 Mar 17 15:38	RMV
Arsenic	< 2.5 €	ug/L	0.5	SW6020A	3 Mar 17 15:38	RMV
Beryllium	< 0.25 @	ug/L	0.05	SW6020A	3 Mar 17 15:38	RMV
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	3 Mar 17 15:38	RMV
Chromium	< 2.5 @	ug/L	0.5	SW6020A	3 Mar 17 15:38	RMV
Lead	< 2.5 €	ug/L	0.5	SW6020A	3 Mar 17 15:38	RMV
Molybdenum	3.66 @	ug/L	0.50	SW6020A	3 Mar 17 15:38	RMV
Selenium	20.4 @	ug/L	0.50	SW6020A	3 Mar 17 15:38	RMV
Thallium	< 0.5 @	ug/L	0.1	SW6020A	3 Mar 17 15:38	RMV
Fluoride	0.150	mg/L	0.020	EPA 300,0	1 Mar 17 12:34	RMB

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

- ~ Sample diluted due to result above calibration of linear range
- ^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

RL = Reporting Limit CERTIFICATION: MN LAB # 027-015-125



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT CCR

Sample Description: H30X

Report Date: 4 Apr 2017 Lab Number: 17-A6379 Work Order #: 31-0070 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 27 Feb 2017 11:29
Sampled By: MVTL FIELD PERSONNEL
Date Received: 27 Feb 2017 19:06

PO #: 48680

Temp at Receipt: 0.0C

	As Receiv	As Received Result		Method Reference	Date Analy	Analyst	
MS Water Digestions					28 Fe	5 17	JMS
Water Digestions					28 Fe	0 17	JMS
Radium 226	SEE ATTAC	HED			3 Ap		39 ABL
Radium 228	SEE ATTAC	HED		EPA M9320	З Ар		39 ABL
pH, Field	6.67	units	1.00	1-1586-85		17 11:	
рН	* 7.0	units	1.0	SM 4500 H+B-96	28 Fe		20 CEH
	See Narra	tive					
Sulfate	1940 ~	mg/L	4.0	ASTM D516-02	9 Ma	17 9:	29 KCJ
Chloride	75.9	mg/L	3.0	SM 4500 C1 E	2 Ma		29 KCJ
Mercury	< 0.005	ug/L	0.005	EPA 245.7			30 TWB
Solids, Total Dissolved	3320	mg/L	10	SM 2540 C-97		17 13:	
Calcium	432.0 ~	mg/L	0.500	SW6010C	3 Ma:	17 11:	15 RMB
Lithium	0.155	mg/L	0.005	SW6010C		17 12:	
Barium	0.017	mg/L	0.005	SW6010C	2 Max	17 12:	23 RMB
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	2 Max	17 12:	
Boron	8.290 ~	mg/L	0,100	SW6010C		17 11:	
Antimony	< 2.5 @	ug/L	0.5	SW6020A	3 Max	17 15:	38 RMV
Arsenic	< 2.5 @	ug/L	0.5	SW6020A	3 Max	17 15:	38 RMV
Beryllium	< 0.25 @	ug/L	0.05	SW6020A	3 Max	17 15:	
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	3 Max	17 15:	
Chromium	< 2.5 @	ug/L	0.5	SW6020A	3 Man	17 15:	38 RMV
Lead	< 2.5 @	ug/L	0.5	SW6020A		17 15:	State of the state
Molybdenum	37.0 @	ug/L	0.50	SW6020A	3 Mar	17 15:	
Selenium	< 2.5 €	ug/L	0.5	SW6020A		17 15:	
Thallium	< 0.5 @	ug/L	0.1	SW6020A		17 15:	
Fluoride	0.280	mg/L	0.020	EPA 300.0	2 2020	17 12:	7.0

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

- ~ Sample diluted due to result above calibration of linear range.
- The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

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
1 = Due to sample quantity
+ = Due to internal standard response
CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DM # 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: BIG STONE PLANT CCR

Sample Description: H40X

Report Date: 4 Apr 2017
Lab Number: 17-A6380
Work Order #: 31-0070
Account #: 006106
Sample Matrix: GROUNDWATER
Date Sampled: 27 Feb 2017 11:55
Sampled By: MVTL FIELD PERSONNEL

Date Received: 27 Feb 2017 19:06 PO #: 48680

Temp at Receipt: 0.0C

	As Receiv	red	Method	Method	Date	
	Result		RL	Reference	Analyzed	Analyst
MS Water Digestions					28 Feb 17	JMS -
Water Digestions					28 Feb 17	JMS
Radium 226	SEE ATTAC	HED			3 Apr 17 8:39	ABL
Radium 228	SEE ATTAC	HED		EPA M9320	3 Apr 17 8:39	ABL
pH, Field	6.73	units	1.00	1-1586-85	27 Feb 17 11:55	HMW
pH	* 6.9	units	1.0	SM 45CO H+B-96	28 Feb 17 9:20	CEH
	See Narra	tive				
Sulfate	1200 ~	mg/L	4.0	ASTM D516-02	9 Mar 17 9:29	KCJ
Chloride	45.5	mq/L	3.0	SM 4500 C1 E	2 Mar 17 9:29	KCJ
Mercury	< 0.005	ug/L	0.005	EPA 245.7	1 Mar 17 9:30	TEB
Solids, Total Dissolved	2220	mg/L	10	SM 2540 C-97	28 Feb 17 13:24	KC
Calcium	343.0	mg/L	0.500	SW6010C	2 Mar 17 12:23	RMB
Lithium	0.112	mg/L	0.005	SW6010C	2 Mar 17 12:23	RMB
Barium	0.019	mg/L	0.005	SW6010C	2 Mar 17 12:23	RMB
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	2 Mar 17 12:23	RMB
Boron	0.374	mg/L	0.100	SW6010C	3 Mar 17 11:15	RMB
Antimony	< 2.5 €	ug/L	0.5	SW6020A	3 Mar 17 15:38	RMV
Arsenic	< 2.5 @	ug/L	0.5	SW6020A	3 Mar 17 15:38	RMV
Beryllium	< 0.25 @	ug/L	0.05	SW6020A	3 Mar 17 15:38	RMV
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	3 Mar 17 15:38	RMY
Chromium	< 2.5 @	ug/L	0.5	SW6020A	3 Mar 17 15:38	RMV
Lead	< 2,5 @	ug/L	0.5	SW6020A	3 Mar 17 15:38	RMV
Molybdenum	5.61 @	ug/L	0.50	SW6020A	3 Mar 17 15:38	RMV
Selenium	< 2.5 €	ug/L	0.5	SW6020A	3 Mar 17 15:38	RMV
Thallium	< 0.5 @	ug/L	0.1	SW6020A	3 Mar 17 15:38	RMV
Fluoride	0.410	mg/L	0.020	EPA 300.0	1 Mar 17 12:34	RME

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

- ~ Sample diluted due to result above calibration of linear range.
- ^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.



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CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH
OTTER TAIL POWER CO
PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: BIG STONE PLANT CCR

Sample Description: H-6

Report Date: 4 Apr 2017
Lab Number: 17-A6381
Work Order #: 31-0070
Account #: 006106
Sample Matrix: GROUNDWATER
Date Sampled: 27 Feb 2017 12:11
Sampled By: MVTL FIELD PERSONNEL
Date Received: 27 Feb 2017 19:06
PO #: 48680

Temp at Receipt: 0.0C

	As Receiv	red.	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					28 Feb 17	JMS
Water Digestions					28 Feb 17	JMS
Radium 226	SEE ATTAC	CHED			3 Apr 17 8:39	ABL
Radium 228	SEE ATTAC	HED		EPA M9320	3 Apr 17 8:39	ABL
pH, Field	7.00	units	1.00	I-1586-85	27 Feb 17 12:11	BMW
pH	* 6.9	units	1.0	SM 4500 H+B-96	28 Feb 17 9:20	CEH
	See Narra	tive				
Sulfate	1180 ~	mg/L	4.0	ASTM D516-02	9 Mar 17 12:41	KCJ
Chloride	45.4	mg/L	3.0	SM 4500 Cl E	2 Mar 17 9:47	KCJ
Mercury	< 0.005	ug/L	0.005	EPA 245.7	1 Mar 17 9:30	TWB
Solids, Total Dissolved	2220	mg/L	10	SM 2540 C-97	28 Feb 17 13:24	RC
Calcium	330.0	mg/L	0.500	SW6010C	2 Mar 17 12:23	RMB
Lithium	0.107	mg/L	0.005	SW6010C	2 Mar 17 12:23	RMB
Barium	0.034	mg/L	0.005	SW6010C	2 Mar 17 12:23	RMB
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	2 Mar 17 12:23	RMB
Boron	0.381	mg/L	0.100	SW6010C	3 Mar 17 11:15	RMB
Antimony	< 2.5 @	ug/L	0.5	SW6020A	3 Mar 17 15:38	RMV
Arsenic	< 2.5 €	ug/L	0.5	SW6020A	3 Mar 17 15:38	RMV
Beryllium	< 0.25 @	ug/L	0.05	SW6020A	3 Mar 17 15:38	RMV
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	3 Mar 17 15:38	RIV
Chromium	2.81 @	ug/L	0.50	SW6020A	3 Mar 17 15:38	RMV
Lead	< 2.5 @	ug/L	0.5	SW6020A	3 Mar 17 15:38	RMV
Molybdenum	4.72 @	ug/L	0.50	SW6020A	3 Mar 17 15:38	RMV
Selenium	< 2,5 @	ug/L	0.5	SW6020A	3 Mar 17 15:33	RMV
Thallium	< 0.5 @	uq/L	0.1	SW6020A	3 Mar 17 15:38	RMV
Fluoride	0.410	mg/L	0.020	EPA 300.0	1 Mar 17 12:34	RMB

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

- ~ Sample diluted due to result above calibration of linear range.
- The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

RL = Reporting Limit
Analyses performed under our Minnesots Department of Health Accreditation conform to the current TNI standards.
The reporting limit was elevated for any shalyte requiring a dilution as coded below:

8 = Due to sample patrix

9 = Due to sample patrix

1 = Due to sample quantity

CERTIFICATION: NN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DN # 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: BIG STONE PLANT CCR

Sample Description: H-8

Report Date: 4 Apr 2017 Lab Number: 17-A6382 Work Order #: 31-0070 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled; 27 Feb 2017 12:50
Sampled By: MVTL FIELD PERSONNEL
Date Received: 27 Feb 2017 19:06

PO #: 48680

Temp at Receipt: 0.0C

	As Receiv Result	/ed	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					28 Feb 17	JMS
Water Digestions					28 Feb 17	JMS
Radium 226	SEE ATTAC	CHED			3 Apr 17 8:40	ABL
Radium 228	SEE ATTAC	HED		EPA M9320	3 Apr 17 8:40	ABL
pH, Field	6.93	units	1,00	1-1586-85	27 Feb 17 12:50	W148
PH	* 7.2	units	1.0	SM 4500 H+B-96	28 Feb 17 9:20	CEH
	See Narra	tive				
Sulfate	539 ~	mg/L	4.0	ASTM D516-02	9 Mar 17 12:41	KCJ
Chloride	4.0	mg/L	3.0	SM 4500 C1 E	2 Mar 17 9:47	KCJ
Mercury	< 0.005	ug/L	0.005	EPA 245.7	1 Mar 17 9:30	TWB
Solids, Total Dissolved	903	mg/L	10	SM 2540 C-97	28 Feb 17 13:24	RC
Calcium	134.0	mg/L	0.500	SW6010C	2 Mar 17 12:23	RMB
Lithium	0.046	mg/L	0.005	SW6010C	2 Mar 17 12:23	RMB
Barium	0.033	mg/L	0.005	SW6010C	2 Mar 17 12:23	RMB
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	2 Mar 17 12:23	RMB
Boron	4.130 ^	mg/L	0.100	SW6010C	2 Mar 17 12:23	RMB
Antimony	< 2.5 @	ug/L	0.5	SW6020A	3 Mar 17 15:38	RMV
Arsenic	< 2.5 €	ug/L	0.5	SW6020A	3 Mar 17 15:38	RMV
Beryllium	< 0.25 @	ug/L	0.05	SW6020A	3 Mar 17 15:38	RMV
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	3 Mar 17 15:38	RMV
Chromium	< 2.5 @	ug/L	0.5	SW6020A	3 Mar 17 15:38	RMV
Lead	< 2.5 @	ug/L	0.5	SW6020A	3 Mar 17 15:38	RMV
Molybdenum	13.4 @	ug/L	0.50	SW6020A	3 Mar 17 15:38	RMV
Selenium	8.27 @	ug/L	0.50	SW6020A	3 Mar 17 15:38	RMV
Phallium	< 0.5 @	ug/L	0.1	SW6020A	3 Mar 17 15:38	RMV
Fluoride	0.530	mq/L	0.020	EPA 300.0	1 Mar 17 12:34	RMS

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

- ~ Sample diluted due to result above calibration of linear range.
- ^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

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:

8 = Due to sample matrix
1 = Due to concentration of other analytes
1 = Due to sample quantity
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

Project Name: BIG STONE PLANT CCR

Sample Description: H-9

Report Date: 4 Apr 2017 Lab Number: 17-A6383 Work Order #: 31-0070 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 27 Feb 2017 13:40
Sampled By: MVTL FIELD PERSONNEL
Date Received: 27 Feb 2017 19:06

PO #: 48680

Temp at Receipt: 0.0C

	As Receiv	red	Method RL	Method Reference	Date Analyzed		Analyst
MS Water Digestions					28 Feb 1	7	JMS
Water Digestions					28 Feb 1		JMS
Radium 226	SEE ATTAC	HED			3 Apr 1	7 8:40	ABL
Radium 228	SEE ATTCH	ED		EPA M9320	3 Apr 1		ABL
pH, Field	6.52	units	1.00	1-1586-85	27 Feb 1		BMW
PH	* 6.8	units	1.0	SM 4500 H+B-96	28 Feb 1	9:20	CEH
200	See Narra	tive				10.00	
Sulfate	1490 -	mg/L	4.0	ASTM D516-02	9 Mar 1	12:41	KCJ
Chloride	11.6	mg/L	3.0	SM 4500 C1 E	2 Mar 1	9:47	KCJ
Mercury	0.007	ug/L	0.005	EPA 245.7	1 Mar 1	9:30	TWB
Solids, Total Dissolved	2670	mg/L	10	SM 2540 C-97	28 Feb 1		RC
Calcium	620.0 -	mg/L	0.500	SW6010C	3 Mar 1	11:15	RMB
Lithium	0.140	mg/L	0.005	SW6010C	2 Mar 1'	12:23	RMB
Barium	0.051	mg/L	0.005	SW6010C	2 Mar 17		RMB
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	2 Mar 17	12:23	RMB
Boron	1.150 ^	mg/L	0.100	SW6010C	2 Mar 17	12:23	RMB
Antimony	< 2.5 @	ug/L	0.5	SW6020A	3 Mar 17	15:38	RMV
Arsenic	< 2.5 €	ug/L	0.5	SW6020A	3 Mar 17	15:38	RMV
Beryllium	< 0.25 €	ug/L	0.05	SW6020A	3 Mar 17	15:38	RMV
Cadmium	< 0.5 €	ug/L	0.1	SW6020A	3 Mar 17	15:38	RMV
Chromium	4.04 @	ug/L	0.50	SW6020A	3 Mar 17	15:38	RMV
Lead	< 2.5 @	ug/L	0.5	SW6020A	3 Mar 17	15:38	RMV
Molybdenum	2.53 @	ug/L	0.50	SW6020A	3 Mar 17		RMV
Selenium	< 2.5 @	ug/L	0.5	SW6020A	3 Mar 17	15:38	RMV
Phallium	< 0.5 @	ug/L	0.1	SW6020A	3 Mar 17		RMV
Fluoride	0.210	mg/L	0.020	EPA 300.0	1 Mar 17		RMB

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

~ Sample diluted due to result above calibration of linear range.

^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

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 MI LAB # 999447680 ND MICRO # 1013-M ND WM/DW # R-040



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INORGANIC & METALS ANALYSES:

The pH sample set that included samples 17-A6378 through 17-A6387 contained 11 samples before a duplicate. Data was reported based on acceptable knowns, duplication, and ample QC for the entire worklist.

The boron matrix spike recovery did not meet acceptable limits for samples 17-A6388 through 17-A6391. Data was reported based on acceptable blank spike and matrix spike duplicate recoveries and acceptable relative percent difference between the matrix spike and matrix spike duplicate.

Due to the high concentration of calcium in the unspiked sample, the matrix spike duplicate recovery did not meet acceptable limits for sample 17-A6390. Data was reported based on acceptable blank spike and matrix spike recoveries and acceptable relative percent difference between the matrix spike and matrix spike duplicate.

No other problems were encountered with these analyses.

MVTL

MINNESOTA VALLEY TESTING LABORATORIES, INC.

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Quality Control Report Lab IDs: 17-A6378 to 17-A6391

Project: BIG STONE PLANT CCR Work Order: 201731-0070

ab IDS: 17-A63/8 to 17-A6	371	FI	olect: Di	SIONI	PLANTICU		MOLK	Fraer: 2				-					
malyle	LCS Spike Amt	LCS Rec %	UCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike d 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
Antimony ug/L	25.0 25.0	97 104	85-115 85-115	25.0 25.0	17A6386q 17A6391q	<2.5 <2.5	25.7 25.8	103 103	75-125 75-125	25.7 25.8	26.1 25.8	104	1.5 0.0	10 10	94 94	90-110 90-110	< 0.5 < 0.5
Arsenic ug/L	25.0 25.0	96 105	85-115 85-115	25.0 25.0 25.0	17A6386q 17A6391q 17A6310q	<2.5 <2.5 6.68	26.5 26.4 34.0	106 106 109	75-125 75-125 75-125	26.5 26.4 34.0	26.7 27.2 33.7	107 109 108	0.8 3.0 0.9	10 10 10	92 93	90-110 90-110	< 0.5 < 0.5
Barium mg/L	1.000	104	85-115	1.00 1.00	17A6387q 17A6390q	0.107 0.026	1.210 1.140	110 111	75-125 75-125		1.220 1.150	111 112	0.8	10 10	98 96	90-110 90-110	< 0.005
Beryllium ug/L	2.50 2.50	100 114	85-115 85-115	2.50 2.50	17A6386q 17A6391q	< 0.25 < 0.25	2.50 2.38	100 95	75-125 75-125		2.41 2.56	96 102	3.7 7.3	10 10	94 98	90-110 90-110	< 0.05 < 0.05
Boron mg/L	1.000 1.000	105 103	85-115 85-115		17A6387q A6387qc A6390qc	2.630 2.570 < 0.5	3.700 3.500 1.280	107 93 128	75-125 75-125 75-125	3.500	3.810 3.630 1.200	118 106 120	2.9 3.6 6.5	10 10 10	100 98 98	90-110 90-110 90-110	< 0.1 < 0.1
Cadmium ug/L	5.00 5.00	101 109	85-115 85-115	1.4.4.4.4	17A6386q 17A6391q	<0.5 <0.5	5.35 5.52	107 110	75-125 75-125		5.45 5.37	109 107	1.9 2.8	10 10	98 100	90-110 90-110	
Calcium mg/L	50.00 50.00	109 107	85-115 85-115		17A6387q 17A6390q A6387qc A6390qc	162.0 394.0 167.0 412.0	212.0 436.0 214.0 460.0	100 84 94 96	75-125 75-125 75-125 75-125	436.0 5 214.0	220.0 439.0 220.0 435.0	116 90 106 46	3.7 0.7 2.8 5.6	10 10 10 10	101 98 102 101	90-110 90-110 90-110 90-110	< 0.5
Chloride mg/L	1		1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	60.0 60.0 60.0 60.0	17-A6380 17-A6390 17-A6391 17-A6607	45.5 6.3 30.9 <3	103 61.6 85.1 54.7	96 92 90 91	85-12 85-12 85-12 85-12	61.6	99.3 62.8 84.6 53.7	90 94 90 90	3.7 1.9 0.6 1.8	5 5 5 6	95 92 92	90-110 90-110 90-110	<3
Chromium ug/L	25.0 25.0	95 103	85-11: 85-11:		17A6386q 17-A6390	<2.5 <2.5	22.4 23.1	90 92	75-12 75-12		21.6	86 94	3.6 1.7	10 10	91 102	90-110 90-110	

MVTL

MINNESOTA VALLEY TESTING LABORATORIES, INC.

1126 N. Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2616 E. Broadway Ave. ~ Bismarck, ND 58502 ~ 800-279-6885 ~ Fax 701-258-9724 1201 Lincoln Highway ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885 www.mvtl.com

MEMBER ACIL

Page: 2 of 3

Quality Control Report
Lab IDs: 17-A6378 to 17-A6391

b IDs: 17-A6378 to 17-A6391 Project: BIG STONE PLANT CCR Work Order: 201731-0070

ab IDs: 17-A63/8 to 17-A6	391	Pr	olect: BIC	2 2 1 O W	E PLANT CC	(WORK	Urder: 2	01731-00	70							
malyte	LCS Spike Amt	LCS Rec	LCS % Rec Limits	Matrix Spike Amt	A STATE OF THE PARTY OF THE PAR	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec % ee	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
Cobalt mg/L	1.000 1.000	107 110	85-115 85-115	1.00 1.00	17A6387q A6390qc	< 0.01 < 0.05	1.020 1.010	102 101	75-125 75-125	1.020 1.010	1.020 0.953	102 95	0.0 5.8	10 10	102 104	90-110 90-110	< 0.005
Fluoride mg/L	0.200 0.200	105 100	85-115 85-115	0.20 0.20 0.20	17-A6387 17-A6390 A6359qc	0.740 0.220 0.020	0.920 0.390 0.210	90 85 95	75-125 75-125 75-125	0.920 0.390 0.210	0.930 0.400 0.220	95 90 100	1.1 2.5 4.7	10 10 10	102 98	90-110 90-110	< 0.02 < 0.02
Lead ug/L	25.0 25.0	102 107	85-115 85-115	25.0 25.0	17A6386q 17A6391q	<2.5 <2.5	25.6 25.0	102 100	75-125 75-125	25.6 25.0	25.7 25.4	103 102	0.4 1.6	10 10	95 96	90-110 90-110	< 0.5 < 0.5
Lithium mg/L	1.000	102	85-115	1.00 1.00	17-A6387 17-A6390	0.113 0.135	1.220 1.270	111 114	75-125 75-125		1.240 1.290	113 116	1.6 1.6	10 10	95 93	90-110 90-110	< 0.00
Mercury ug/L	:	:	1. 1.	0.10 0.10	17-A6378 17-A6244	<0.005 0.016	0.086 0.099	86 83	63-111 63-111	0.086 0.099	0.087 0.101	87 85	1.2 2.0	18 18	86 103	76-113 76-113	< 0.00 < 0.00 < 0.00 < 0.00
Molybdenum ug/L	25.0 25.0	98 104	85-115 85-115		17A6386q 17A6391q	11.8 5.08	37.7 30.2	104 100	75-125 75-125	The second secon	38.1 30.2	105 100	1.1	10 10	96 96	90-110 90-110	< 0.5 < 0.5
pH units	1	:		:		1	:			7.2 7.7	7.2 7.7	:	0.0	2.5 2.5	101 101	90-110 90-110	
Selenium ug/L	25.0 25.0	96 105	85-115 85-115		17A6386q 17A6391q	<2.5 <2.5	24.0 26.6	96 106	75-125 75-125		22.2 26.9	89 108	7.8 1.1	10 10	93 92	90-110 90-110	
Solids, Total Dissolved mg/L	1.2		1.			1:		-	1	903 1830	912 1900	•	1.0 3.8	8	89	85-115	< 10
Sulfate mg/L			, e	500 500 50.0 500	17-A6390 17-A6391 17-A6689 17-A6380	1050 743 12.1 1200	1480 1170 70.6 1640	86 85 117 88	74-128 74-128 74-128 74-128	8 1170 8 70.6	1460 1170 71.2 1660	82 85 118 92	1.4 0.0 0.8 1.2	5 5 5 5	106 104 111	80-120 80-120 80-120	< 5

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Page: 3 of 3

Quality Control Report Lab IDs: 17-A6378 to 17-A6391

Project: BIG STONE PLANT CCR

Work Order: 201731-0070

Analyte	1-652-64-150110	LCS Rec.	LCS % Rec Limits	Spike	Matrix Spike ID	Orig	Matrix	Spike Rec	Matrix Spike % Rec Limits	Dup Orig	MSD/ Dup Result	MSD Rec.	E BOAG SUBS	MSD/ Dup RPD Limit (<	Known Rec (%)	Known % Rec Limits	Method Blank
Thallium ug/L	5.00 5.00	103 107	85-115 85-115	1 7 6 36 7	17A6386q 17A6391q	< 0.5 < 0.5	5.30 5.18	106 104	75-125 75-125	5.30 5.18	5.30 5.20	106 104	0.0 0.4	10 10	96 96	90-110 90-110	< 0.1 < 0.1

The boron matrix spike recovery was outside the acceptance limits, see narrative.

The calcium matrix spike duplicate recovery was outside the acceptance limits, see narrative.

Approved by

Your Environmental Monltoring Partner

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Date: 3/31/2017

CLIENT:

MVTL Inc

CASE NARRATIVE

Project:

Ottertail Power Big Stone

Lab Order:

S1703017

Report ID: S1703017001

Samples H-6-A6381, H-8-A6382, H-9-A6383, H2OX-A6378, H3OX-A6379, H4OX-A6380, Slag 2B A6391, Slag-1-A6384, Slag-4-A6385, Slag-5-A6386, Slag-6-A6387, Slag-7-A6388, Slag-8-A6389, and Slag-9-A6390 were received on March 2, 2017.

All samples were received and analyzed within the EPA recommended holding times, except those noted below in this case narrative. Samples were analyzed using the methods outlined in the following references:

"Standard Methods For The Examination of Water and Wastewater", approved method versions
Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition
40 CFR Parts 136 and 141
40 CFR Part 50, Appendices B, J, L, and O
Methods indicated in the Methods Update Rule published in the Federal Register Friday, May 18, 2012
ASTM approved and recognized standards

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Reviewed by: All

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 1



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Big Stone

Lab ID: ClientSample ID:

S1703017-001 H2OX-A6378

COC:

WEB

Date Reported

3/31/2017

Report ID

S1703017001

WorkOrder:

\$1703017

CollectionDate: 2/27/2017 11:03:00 AM

DateReceived:

3/2/2017 10:11:00 AM

FieldSampler: Matrix:

DF Water

WO# 24 0070

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/i	nit
Radionuclides - Total					1000		
Radium 226	ND	pCI/L		4	SM 7500 Ra-B	03/21/2017 1151	MB
Radium 226 Precision (±)	NA.	pCi/L			SM 7500 Ra-B	03/21/2017 1151	MB
Radium 228	ND	pCi/L		2	Ga-Tech	03/19/2017 2014	MB
Radium 228 Precision (±)	NA	pCl/L			Ga-Tech	03/19/2017 2014	MB

These results apply only to the samples tested.

Qualiflers:

Analyte detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded

Analyzed by another laboratory

Not Detected at the Reporting Limit Spike Recovery outside accepted recovery limits RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by: all

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 14



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Big Stone

Lab ID:

S1703017-002 ClientSample ID: H3OX-A6379

COC:

WEB

Date Reported

3/31/2017

Report ID

51703017001

WorkOrder:

S1703017

CollectionDate: 2/27/2017 11:29:00 AM DateReceived:

3/2/2017 10:11:00 AM

FieldSampler: Matrix:

DF Water

Commente

WO# 31-0070

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionucildes - Total					1		
Radium 226	ND	pCI/L		1	SM 7500 Ra-B	03/21/2017 1151	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	03/21/2017 1151	MB
Radium 228	ND	pCi/L		2	Ga-Tech	03/19/2017 2319	MB
Radium 228 Precision (±)	NA	pCI/L			Ga-Tech	03/19/2017 2319	MB

These results apply only to the samples tested.

Qualiflers:

Analyte detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded

Analyzed by another laboratory

Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is lass than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by: all

Wade Nieuwsma, Assistant Laboratory Manager

Page 2 of 14



1673 Terra Avenue, Sheridan, Wyomlng 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Big Stone

Lab ID: ClientSample ID: S1703017-003 H4OX-A6380

COC:

WEB

Date Reported

3/31/2017

Report ID

\$1703017001

WorkOrder:

\$1703017

CollectionDate: 2/27/2017 11:55:00 AM

3/2/2017 10:11:00 AM

DateReceived: FieldSampler:

DF

Matrix:

Water

Comments

WO# 31-0070

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionucildes - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	03/21/2017 1524	MB
Radium 226 Precision (±)	NA	pCI/L			SM 7500 Ra-B	03/21/2017 1524	MB
Radium 228	ND	pCI/L		2	Ga-Tech	03/20/2017 224	MB
Radium 228 Precision (±)	NA.	pCi/L			Ga-Tech	03/20/2017 224	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded

Analyzed by another laboratory

Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 3 of 14



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St New Ulm, MN 56073

ProjectName:

Ottertail Power Big Stone

Lab ID: ClientSample ID:

\$1703017-004 H-6-A6381

COC:

WEB

Report ID

3/31/2017

Date Reported

S1703017001

WorkOrder:

\$1703017

CollectionDate: 2/27/2017 12:11:00 PM DateReceived:

3/2/2017 10:11:00 AM

FieldSampler:

DF

Matrix:

Water

WO# 31-0070

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Ir	
Radionucildes - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	03/21/2017 1524	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	03/21/2017 1524	MB
Radium 228	ND	pCI/L		2	Ga-Tech	03/20/2017 530	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	03/20/2017 530	MB

These results apply only to the samples tested.

Qualiflers:

В Analyte detected in the associated Method Blank E

Value above quantitation range

Analyzed by another laboratory

Not Detacted at the Reporting Limit H

ND

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

G

Analyzed at IML Gilletle laboratory Analyle detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 4 of 14



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Big Stone

Lab ID: ClientSample ID:

S1703017-005 H-8-A6382

COC:

WEB

Date Reported

3/31/2017

Report ID

S1703017001

WorkOrder:

\$1703017

CollectionDate: 2/27/2017 12:50:00 PM

3/2/2017 10:11:00 AM

DateReceived: FieldSampler:

DF

Matrix:

Water

Commante

WO# 31-0070

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	init
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	03/21/2017 1524	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	03/21/2017 1524	MB
Radium 228	ND	pCi/L		2	Ga-Tech	03/20/2017 834	MB
Radium 228 Precision (±)	NA	pCI/L			Ga-Tech	03/20/2017 834	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded

Analyzed by another laboratory

Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 5 of 14



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Big Stone

Lab ID: ClientSample ID: H-9-A6383

\$1703017-006

COC:

WEB

Date Reported

3/31/2017

Report ID

S1703017001

WorkOrder:

S1703017

CollectionDate: 2/27/2017 1:40:00 PM DateReceived: 3/2/2017 10:11:00 AM

FieldSampler:

DF Matrix: Water

WO# 31-0070

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/	nit
Allatyses	Keanir	Onits	Quai	N.E.	Methon	Date Analyzeun	CHL
Radionucildes - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	03/21/2017 1524	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	03/21/2017 1524	MB
Radium 228	ND	pCi/L		2	Ga-Tech	03/20/2017 1138	MB
Radium 228 Precision (±)	NA	pCI/L			Ga-Tech	03/20/2017 1138	MB

These results apply only to the samples tested.

Qualifiers:

- Analyte detected in the associated Melhod Blank
- Value above quantilation range
- Holding times for preparation or analysis exceeded
- Analyzed by another laboratory Not Detected at the Reporting Limit
- Spike Recovery outside accepted recovery limits

RL - Reporting Limit

- Calculated Value
- Analyzed at IML Gillette laboratory
- Analyte detected below quantitation limits
- Value exceeds Monthly Ave or MCL or is less than LCL
- Outside the Range of Dilutions 0
- Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 6 of 14



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

ANALYTICAL QC SUMMARY REPORT

CLIENT: Work Order:

Project:

MVTL Inc

S1703017

Ottertail Power Blg Stone

Date: 3/31/2017

Report ID: S1703017001

Radium 228 by Ga/Tech	Sample Type MBLK		Units	: pCl/L			
MB-423 (03/18/17 10:24)	RunNo: 144032	Prepi	Date: 03/1	3/17 12:00	Bate	chID 12937	77
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	ND	1					
Radium 228 by Ga/Tech	Sample Type LCS		Units	: pCl/L			
LCS-423 (03/18/17 13:28)	RunNo: 144032	Prepi	Date: 03/1:	3/17 12:00	Bato	hID 12937	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	40	1	40.1		100	65.9 - 132	
Radium 228 by Ga/Tech	Sample Type MS		Units:	pCi/L			
MS-423 (03/18/17 19:36)	RunNo: 144032	Prept	Date: 03/13	3/17 12:00	Bato		
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	40	1	40.1	ND	99.6	65.9 - 132	
Radium 228 by Ga/Tech	Sample Type MSD		Units:	pCi/L			
MSD-423 (03/18/17 22:42)	RunNo: 144032	PrepDate: 03/13/17 12:00			Batc	34. 1	
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Total Radium 228	43	1	40	6.64	106	20	

Qualifiers:

- Analyte detected in the associated Method Blank
- G Analyzed at IML Gillette laboratory
- Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- Matrix Effect X

- Value above quantitation range
- H Holding times for preparation or analysis exceeded
- Analyzed by another laboratory
- 0 Outside the Range of Dilutions
- Spike Recovery outside accepted recovery limits



1673 Terra Avenue, Sherldan, Wyoming 82801 ph: (307) 672-8945

ANALYTICAL QC SUMMARY REPORT

CLIENT: Work Order: MVTL Inc

\$1703017

Project:

Ottertail Power Big Stone

Date: 3/31/2017

Report ID: S1703017001

dium 226 in Water -	Sample Type MBLK	Units: pCi/L
MB-1727 (03/21/17 11:51)	RunNo: 14401	가는 전화가 하면 가게 하게 하지 않는데 가게 그렇는 그리고 하게 하다고 있다.
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Q
Radium 226	ND	0.2
MB-1728 (03/27/17 11:19)	RunNo: 14427:	
Analyle	Result	RL Spike Ref Samp %REC % Rec Limits Q
Radium 226	ND	0.2
dium 226 in Water -	Sample Type LCS	Units: pCi/L
LCS-1727 (03/21/17 11:51)	RunNo: 144019	그리시 그래를 하하는 경기를 하기 때문에 있었다. 그는 것은 사람이 되었다는 보기하기 하는데 보다는 모네.
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Qu
Radium 226	5.8	0.2 5.89 98.8 67.1 - 122
LCS-1728 (03/27/17 11:19)	RunNo: 144273	PrepDate: 03/20/17 0:00 BatchID 12974
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Qu
Radium 226	5.8	0.2 5.89 99.0 67.1 - 122
lium 226 in Water -	Sample Type LCSD	Units: pCi/L
LCSD-1727 (03/21/17 11:51)	RunNo: 144019	PrepDate: 03/15/17 0:00 BalchID 12952
Analyte	Result	RL Conc %RPD %REC % RPD Limits Qu
Radlum 226	6,6	0.2 5.8 12.4 112 20
LCSD-1728 (03/27/17 11:19)	RunNo: 144273	PrepDate: 03/20/17 0:00 BatchID 12974
Analyte	Result	RL Conc %RPD %REC % RPD Limits Qu
Radium 226	5.4	0.2 5.8 8.50 90.9 20
lium 226 in Water -	Sample Type MS	Units: pCi/L
S1702327-005AMS (03/21/17 11:51)	RunNo: 144019	PrepDate: 03/15/17 0:00 BatchID 12952
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Qu
Radium 226	11.	1 11.8 ND 91.7 65-131
S1703036-003AMS (03/27/17 11:19)	RunNo: 144273	PrepDate: 03/20/17 0:00 BatchID 12974
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Qua
Radium 226	6.1	0.2 5.89 0.2 99.9 65 - 131
lum 226 in Water -	Sample Type MSD	Units: pCi/L
S1703036-003AMSD (03/27/17 14:28)	RunNo: 144273	PrepDate: 03/20/17 0:00 BatchID 12974
Analyte	Result	RL Conc %RPD %REC % RPD Limits Que

Qualifiers:

- Analyte detected in the associated Method Blank
- G Analyzed at IML Gillette laboratory
- J Analyle detected below quantitation limits

Radium 226

- ND Not Detected at the Reporting Limit
 R RPD outside accepted recovery limits
- X Matrix Effect

- E Value above quantitation range
- H Holding times for preparation or analysis exceeded

0,2

6.1

13.7

86.5

- L Analyzed by another laboratory
- O Outside the Range of Dilutions
- S Spike Recovery outside accepted recovery limits

20



Sheridan, WY and Gillette, WY

- CHAIN OF CUSTODY RECORD -Page

All shaded fields must be completed.

#WEB

of

This is a legal document; any misrepresentation may be construed as fraud.						#AACD											
llent	Name	757		Project Ide			Sampler (Signature/Attestation of Authenticity)						Telephone #				
	世 名的新疆	医数型极近亚			ower Big Stone	李杨之(2)	SA	1	* K	71			"经验 "	TA'S		1301-276	-8089
	Address			Contact Na		11-14-1-1-1		1	ANA	LYSE	SIP	ARA	MET	ERS			
126	North Front St Ulm, Mn 56073			Tim Por				80			爱力	120		100	16.5		
	UIM, Mn 56073 /**		Soft March	Emall	tportner@mvtl.com 507-276-8089	September 1	06,470	- 228				1		Grade Control			
am		DET REPORTED	galdenes	Phone	Purchase Order#	Quote#	THE PARTY NAMED IN	226		是的		16:4	+				
			1 74		MANAGER STREET, STREET	700 0		m 2		100				500		REMA	RKS
	LAB ID (Lab Use Only)	DATE SAM	TIME PLED		SAMPLE IDENTIFICATION	Matrix	# of Containers	Radium									
I	91703017-001	27/2017	1103.	H2OX	- A6378	WT	2	x	la.								
-	500		1129	нзох	- A6379	WT	2	x									
1	003		1155	н40х	- A 6380	WT	2	x									
I	004		1211	H-6	- A6381	WT	2	x						E			
1	005		1750	H-8	- A6382	WT	2	x									
1	006		1340	H-9	- A 6383	WT	2	x									
1	007		1048	Slag-1	A6384	WT	2	x						1			
1	008		1152	Slag-4	A 6385	WT	2	x									
•	009		1415	Slag-5	A6386	WT	2	x									
0	010		1226	Slag-6	A6387	WT	2	x						1			
1	011		1309	Slag-7	A6388	WT	2	x	: 1	1							
2	012	1	1425	Slag-8	A6389	WT	2	x									
3 4								+	+	+				-			
	LAB COMMENTS		Reli	iquished By	(Signature/Printed)	DATE	TIME			Receive	d By (S	ignatur	e/Print	ted)		DATE	TIME
137	13.42	13	- 3	2/00	y Fango	2Acol	71900	1	ha	the	t	5040)			3.2.17	10:11
3	13.1				W4180 VIVE VENT												
	SHIPPING INFO	-,	X CODES		TURN AROUND TIMES		OMPLIAN							A	DDITI	ONAL REMARK	S
	UPS FedEx	Water			lestred service		iance Mon				I.N	-					
40.00	USPS	Solid			JSH - 5 Working Days	PWSII	m (SDWA	# W	4 A S	PRINCES OF	Start .						
	Hand Carried Other	Filte	r FT	DIVE	RGENT - < 2 Working Days & Urgent Surcharges will be applied	Chlorin				称人	JEN.					~	
-	- Culci	Othe	U	nusi	o orgent surcharges win be appried	npi	e Disposal	. La	U MERCE	が成了旧	11 42						



Sheridan, WY and Gillette, WY

- CHAIN OF CUSTODY RECORD - Page of All shaded fields must be completed. #WEB

	-MOUNTAIN LABS				This is a legal document; as	ny misrepre												
lient N			CERTA MANAGEMENT AND THE	Project Identification			Sampler (S							Telephone #				
	"我来说,你来说 从一个,我	1000	A A SAME	Ottertail Power B	ig Stone	1-1-31	123							3787-276-8467				
eport	Address			Contact Name				A	ARA	MET	ERS							
	North Front St			Tim Portner				m	1 4 621	SVEX.	US ST	75 EF+	No.	13000	1			
New	Ulm, Mn 56073				tner@mvtl.com	No contract		+ 228		15.5	146	10						
	Address				276-8089						125			传统				
Samo	Purchase Order #					Quote#	A Complete	226				No. Sec.	1000	10	Account Sales			
近程				阿索雷				Ę				100			REMA	RKS		
ITEM	LAB ID (Lab Use Only)	DATE	TIME		SAMPLE NTIFICATION	Matrix	# of Containers	Radium		3		4						
1	51703017013	276517	1559	Slag 9	A6390	WT	2	x										
2	一部的			Slag 9 Deep	- No Sample	WT	2	x										
3	VO14 045	1	1450	Slag 2B	A6391	WT	2	x										
4	011 of 1" 16.44		1 31 12 1					x										
5								x										
6				MUTL	WO#31-0070			x										
7								x										
8	SE 6 E-1.31							x										
9								x										
10		1					1	x										
11								x				1						
12							()	x			,							
13								x				1	14					
14	-/							x						1				
_	LAB COMMENTS	A STATE OF	Reli	nquished By (Signatu	ire/Printed)	DATE	TIME			ed By (S			ted)		DATE	TIME		
		1/2	K	1 / Ousky	tarem	27Feb	7 1900	1	thy	te	500	10			3.2.17	10:11		
No.	13.1_	A STATE OF																
	ALTONO DE LA CONTRACTOR		i Bass				Jan Service											
Title	134		T Steel	1 Section														
	SHIPPING INFO	MATRIX	CODES		AROUND TIMES		OMPLIAN						A	DDIT	ONAL REMARK	S		
	UPS	Water		Check desired			ance Mon			IN								
	FedEx	Soil		Standard			n (SDWA											
	USPS	Solid			Working Days - < 2 Working Days	principle for the control of the	/ Permit	2.45		er tek C/LN		_	_					
	Hand Carried Other	Filter			- < 2 Working Days It Surcharges will be applied	Chlorin	ateo? Disposal	· I ch				_	_		-			
-	Oulei	Other	U	nusii a orgei	Continuiges will be applied	ample	Disposal	. Lau	Ulle	are banes	2		_	_				

Minnesota Valley Testing Laboratories

1126 North Front Street Phone: 800 782 3557 New Ulm, MN 56003 Fax: 507 359 2890

Field Service Chain of Custody Record

im		exact		nt.	
AET	origi	nal do	Cume	C.L.	12
-				Reb	1.7
/	page	5 (-	23		

Project Otter Tail Power Company	Project Type:	Big Stone Plant CCR	Name of Samplers:	Dusty	Forgsian	Ben Wolf
Report Otter Tail Power Company	Carbon Copy:			July	1	par soot
Attn: Paul Vukonich	Attn:		Quote Number:			
Address P.O. Box 496	Address:		Work Order Number:	31-0	OTO	
Fergus Falls, MN 56538-0496	1000		Lab Numbers:	٥, ٠	0,0	
Phone: 218-739-8349						

		Sample In	formation									Bott	le Ty	/pe					Analysi	is
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	1000 HNO3	Fillered Yor N	1000 поле	500 HIVO3	1 4	500 H2SO4	Filler? Y or M		1000 Amber	HOEN One	Other: 150 H2SOL	Other 150 No.	Analysis Required	/
A6378			27Feb17	1103	GW		2	N	1	1	N						- 3		See Attached	1
			1	1129	GW		2	N	1	1	N				100					1
80	H4OX			1155	GW	11-5	2	N	1	1	N			1		7				1
	H-6			1211	GW		2	N	1	1	N	1	(E)							1
82	H-8		1	1250	GW		2	N	1	1	N			(=)						1
73	H-9	1		1340	GW		2	N	1	1	N			111						1
	Slag 1			1048	GW		2	N	1	1	N			-					bear and	1
	Slag 4	1		1162	GW		2	N	1	1	N	15								1
	Slag 5			1915	GW	000	2	N	1	1	N	11						J		
	Slag 6		1	1226	GW		2	N	1	1	N	13								

Comments:

WORK ORDER #2

	0 1 -			01.	11 .	
Samples Relinquish	ned By:	1	Samples Received By:	: there	Lieder	
Date: 27/ebl.	7 Time: 190%	Temp@.O	Date: 28 Rb A	Time:	800	Temp: 3 - 80
Samples Relinquish	ned into: Fridge Log	in Cart Othe	er:			
Samples Relinquish	ned By:		Samples Received By			
Date:	Time:	Temp:	Date:	Time:		Temp:
Delivery:	Samplers Other:		Seal Number(s) - If Us	sed		
Transport:	Ambient Ice	Other:	Seals Intact?	Yes	No	

Minnesota Valley Testing Laboratories

1126 North Front Street

New Ulm, MN 56003

Phone: 800 782 3557

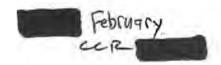
Fax: 507 359 2890

Field Service Chain of Custody Record

Project	Otter Tail P	ower Comp	any	Project Ty	/pe:	Big Stor	e Pl	ant C	CR	Nam	e of	Sam	plers	: 1	Dush	. 1	300	Co.	Ben with
Attn: Address	Otter Tail P Paul Vukor P.O. Box 4 Fergus Fal 218-739-83	nich 96 Is, MN 565	Carbon Co Attn: Address:	py:					Wor	k Or	imbe der N bers:	umbe		-	7 .		7''1	Beil mil	
		Sample In	formation	1								Bott	le Ty	ре					Analys
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	1000 HNO3	Filtered You M.	1000 none	500 HNO3	Filler? Y Or M.	500 H2SO4	Filler? Y or N	1000 Amber non-	1000 Amber	HOEN OOL	Other: 150 H2SO.	Other 150 Non-	Analysis Required
88	Slag 7		27-317	1309	GW		2	N	1	1	N	-		-		-			See Attached
63	Slag 8	1		1425	GW		2	N	1	1	N							E	
	Slag 9			1559	GW		2	N	1	1	N								
	Slag 9 Dec	ep			GW		2	N	1	1	N								
41	Slag 2B		1	1450	GW		2	N	1	1	N						VIII		
Comme	ents:								V						1 - 1				

Samples Reling	uished By:	11+	Rn		Samples Received By:	alice	Luci	()
Date: 27	eb17	Time:	900	Temp:0,0	Date: 28 Jub 17	Time		Temp: 3.80
Samples Relind	uished into:	Eridge	Log in Ca	art Other:				
Samples Relind	uished By:				Samples Received By:			
Date:		Time:		Temp:	Date:	Time	9:	Temp:
Delivery:	Samplers	Other:			Seal Number(s) - If Use	ed		
Transport:	Ambient «	de		Other:	Seals Intact?	Yes	No	

CCR 2017 (make sopy)



Big Stone Sampling

Site*	Parameter List	Well Depth	Diameter (Inches)	Well Elevation	Sample Equipment	Dedicated?	Pump Rate (ml/minute)	Goes Dry?	Sampling Seasons**	
WELL10	Α	47.43	4	1098.70	Keck/Tsunami	No	3,000	No	4.0	
WELL11	A	127.22	4	1104.00	Other Pump	Yes	36,000	No	1,3	
WELL12	A	112.40	4	1071.89	Other Pump	Yes	20,000	No	1,3	
S1	В	32.50	2	1102.17	Bailer	Yes	N/A	Yes	1,3	
S2	В	43.12	2	1102.39	Bailer	Yes	N/A	Yes	1,3	
S3	В	62.50		1102.65	Bailer	Yes	N/A	No	1,3	
S4	В	27.70	2	1090.57	Bailer	Yes	N/A	Yes	1,3	
S5	В	46.72	2	1091.40	Bailer	Yes	N/A	Yes	1,3	
S6	В	62.05	2	1090.71	Bailer	Yes	N/A	No	1,3	
H1OX	C,-CCR	32.91	2	1115.89	Bailer	Yes	100	Yes	1,3 1,3	
HIINT	C	60.11	2	1115.81	Keck/Tsunami	No	1500	No	1,3	
H2OX	C, CCR	32.20	2	1103.91	Bladder	Yes	100	Yes		
H2INT	C	62.30	2	1103.91	Bailer	Yes	N/A	Yes	1,3	
H3OX	C, CCR	22.55	2	1095.19	Bladder	Yes	100	Yes	1,3	
H3INT	C	54.31	2	1095.17	Whale	No	2000	No	1,3	
H4OX	C, CCR	27.20	2	1108.22	Bladder	Yes	100	No	1,3	
H4INT	C	60.01	2	1108.61	Keck/Tsunami	No	2000		1,3	
H5	C	43.30	2	1122.80	Whale	No	1000	Yes	1,3	
H6	C, CCR	15.00	2	1097.76	Bladder	Yes	100		1,3	
H7	C	33.20	2	1106.06	Whale	No	1000	Yes	1,3	
H8	C, CCR	22.05	2	1081.23	Bladder	Yes	100	Yes	1,3	
H9	CCR	30.20	2	1086.21	Bladder	Yes	100	TBD	1,3	
BC1	В	16.26	2	1118.46	Bailer	Yes	N/A	No	4.9	
BC101	В	39.30	2	1118.70	Bailer	Yes	N/A	Yes	1,3 1,3	
BC2R	В	32.48	2	1115.28	Bailer	Yes	N/A	No	1,3	
BC3R	В	35.15	2	1114.42	Bailer	Yes	N/A	Yes	1,3	
BC4R	В	34.60	2	1113.86	Bailer	Yes	N/A	Yes		
BC5R	В	37.32	2	1123.02	Bailer	Yes	N/A		1,3	
BC6R	В.	33.95	2	1121.58	Bailer	Yes		No	1,3	
SLAG1	CCR	34.90	2	TBD	LOW FLOW	No	N/A 100	No TBD	1,3 1,3	

SLAG2	CCR	TBD	2	1111-06	LOW FLOW	TBD	100	TBD	1,3
SLAG3	CCR	TBD	2	TBD	LOW-FLOW	TBD	100	TBD	1,3
SLAG4	CCR	39.00	2	TBD	LOW FLOW	No	100	TBD	1,3
SLAG5	CCR	38.80	2	1107.30	LOW FLOW	No	100	TBD	1,3
SLAG6	CCR	37.30	2	1111.51	LOW FLOW	No	100	TBD	1,3
SLAG7	CCR	48.70	2	1114.39	LOW FLOW	No	100	TBD	1,3
SLAG8	CCR	52.09	2	1127.26	LOW FLOW	No	100	TBD	1,3
SLAG9	CCR	49.80	2	1122.35	LOW FLOW	No	100	TBD	
SLAG9 DEEP***	CCR	68.00	2	1121.92	LOW FLOW	No	100	TBD	
SLAG2B	CCR	40.80	2	1111.26	LOW FLOW	No	100	TBD	
COOLING PONE	A	N/A	N/A	N/A	Grab	N/A	N/A	No	1,3
EVAPORATION	A	N/A	N/A	N/A	Grab	N/A	N/A	No	1,3
HOLDING PONE	A	N/A	N/A	N/A	Grab	N/A	N/A	No	1,3
RECLAIM POND	C	N/A	N/A	N/A	Grab	N/A	N/A	No	1,3

^{*} Three additional monitoring wells will be installed the Spring of 2016. Each well will be screened approximately 35' below ground surface and will be analyzed for the "C" parameter list. In addition, a new site with 9 wells will be added and will be analyzed for CCR Parameters ONLY.

^{** 1 =} Spring (March 28 - April 28), 2 = Summer (July 1 - August 7), 3 = Fall (October 14- November 14)

^{***} Only sample for the first two CCR background sampling events.

Big Stone Plant CCR Appendix III Parameters

CCR - Appendix III Detection Monitoring Field Parameters pH*

* Field and Laboratory Measurements

Total Concentration Parameters

Boron Calcium Chloride Fluoride

pH Sulfate

Dissolved Solids, Total

500 HNO3

Big Stone CCR Appendix IV Parameters

CCR - Appendix IV - Assessment Monitoring

Total Concentration Parameters

Antimony

Arsenic

Barium

Beryllium

Cadmium

Chromium, Total

Cobalt

Fluoride

Lead

Lithium

Mercury Molybdenum

Selenium

Thallium

Radium 226 + 228

500 Nore 500 HNO3 2-1000 HNO3

Big Stone Parameter List "A"

Field Parameters

Field pH Field Temperature Field Conductivity

Lab Parameters

Lab pH
Lab Conductivity
Total Alkalinity
Chloride
Hardness, Calcium
Hardness, Total
Nitrate-Nitrite as N
Potassium - Total
Sodium - Total
Sulfate

500 H2504 1000 NO-E

Big Stone Parameter List "B"

Field Parameters

Field pH Field Temperature Field Conductivity

Lab Parameters

Lab pH Lab Conductivity **Total Alkalinity** Chloride Hardness, Calcium Hardness, Total Nitrate-Nitrite as N Potassium - Total Sodium - Total Sulfate Arsenic - dissolved Boron - dissolved Cadmium - dissolved Lead - dissolved Manganese - dissolved Strontium - dissolved

1000 NO-E 500 HNOZ 500 HNOZ Filter 500 H2504

Big Stone Parameter List "C"

Field Parameters

Field pH

Field Temperature

Field Conductivity

Lab Parameters

Lab pH

Lab Conductivity

Total Alkalinity

Chloride

Hardness, Calcium

Hardness, Total

Nitrate-Nitrite as N

Potassium - Total

Sodium - Total

Sulfate

Arsenic - Dissolved

Arsenic - Total **

Barium - Dissolved

Barium - Total **

Boron - Dissolved

Boron - Total **

Cadmium - Dissolved

Cadmium - Total **

Chromium - Dissolved

Chromium - Total **

Copper - Dissolved

Copper - Total **

Lead - Dissolved

Lead - Total **

Manganese - Dissolved

Manganese - Total **

Mercury - Dissolved

Mercury - Total **

Selenium - Dissolved

Selenium - Total **

Silver - Dissolved

Silver - Total **

Strontium - Dissolved

Strontium - Total **

Vanadium - Dissolved

Vanadium - Total **

Zinc - Dissolved

Zinc - Total **

** NOTE: ONLY Reclaim Pond is required to have Total metals run.

The groundwater samples are required to have the Dissolved metals run only.

1000 NO-C 1000 HZ 904 500 HZ 904

100 ovore 100 ovore 500 Hrong Filter

Groundwater Assessment	Site:	Otter Tail Power Co./ Big Stor
Sampling Personnel:	Facility ID:	
Ben Wolf	Date: 27 Fe	6/7
	Unique Station ID:	
	Sample ID:	Well H2OX
Well Condition		
Well Locked? Yes No	Protective Posts?	Yes (No.)
Well Labeled? (es No	State ID Tag?	Yes No
Casing Straight? (es No	Grout Seal Intact?	(Yes) No
Repairs Necessary:		
Well Information Well Depth: 328/	Well Casing Eleval	tion: 1103.91
Constructed Depth: 32.20	Static Water Eleva	tion: 1096.74
Casing Diameter: 2"	Previous Static:	1094.76
Water Level Before Purge: 7.17	Water Level After S	0
Well Volume: 4,18 Gal		
Sampling Information	2	
Weather Conditions: Temp: 39	Wind: (25-10	sky: cloudy
Sampling Method: Grundfos Blad	SIT Disp. Bailer Whale Grab	Other:
Dedicated Equipment: (e) No	Pumping Rate:	≥6 gpm
Well Purged Dry? (es) No	Time Pump Began:	1- 10
Time Purged Dry? 10.58	Time of Sampling:	1103 @m/pm
Duplicate Sample? Yes No ID:		3.7
Sample Appearance: General: C/e		
17 Specific Tem	D. O. Turbidity Gallon	ns SEQ
Time pH Cond. OC	mg/L NTU Remo	
1057 6.53 4283 7.	NA NA 4.2	5 1
1103 657 4305 8.		2 Rechange
3-11		3
		4
		5
Stabilized? Yes No	Amount Water Removed: 4	, 25 Gallons
Stabilized? Yes No /	Amount vvater Removed.	, - Gallons

Sampling		sessmen	T		Site:	0	tter Tai	I Power Co./ Big Stone				
- anniputing	Personnel				Facility ID:							
	Bes	volf.			Date: 27 Feb 17							
					Unique Sta							
					Sample ID	:		Well H3OX				
Well Co	ndition	(A)						<u></u>				
Well Lock	ed?	Yes No			Protective	Posts? Ye	es	NO NO				
Well Labe	led?	Yes No			State ID To	ag? Ye	98	No				
Casing St	raight?	Yes) No			Grout Sea	Intact? Ye	s	No				
Repairs N	ecessary	-										
Well Info	rmation											
Well Dept	h:	22.68			Well Casir	g Elevation:		1095.19				
Constructe	ed Depth:	22.55			Static Wat	er Elevation:	1090	3.04				
Casing Dia		2"			Previous S	tatic: 10 59	77					
Water Lev	el Before F	Purge: 5.15	5		Water Lev	el After Samp	ol Be	to a Dimpo				
Well Volur		860	Gallons		Measurem	ent Method:	Elec.					
					1		-					
Sampling	g Informa	tion			^			4.50				
Weather C	Conditions:	Temp: 4	0~	Wind: 5	625-10	Sk	y: C	loudy				
Sampling I	Method:	Grundfos	(Bladder SS)T	Disp. Bailer	Whale	Grab Oth	er:	7				
	Equipmen	t: Yes No			Pumping R	late: , 25		gpm				
Well Purge	ed Dry?	Yes No	_		Time Pump		112	am) / pm				
Time Purg	ed Dry?	1724_			Time of Sa		29	am / pm				
Duplicate 5	Sample?	Yes No	ID: -	~	Sample El-	: 130.7						
Sample Ap	реагалсе:	General:	clear	Color: No	フレ Phase	e: NOTO		Odor. No re				
		10	Llomb	15.0	I= 11.00	10.11	lone					
12	40	Specific	Temp	D. O.	Turbidity	Gallons	SEQ					
Time	pH	Cond.	°C	mg/L	NTU	Removed	#	Comments:				
1124	6.73	4315	8,53	NA.	MA	3	1					
1129	6107	4246	9.43	0/2 =			2	Recharge				
						1	3					
			1				5					
					1		In.					
Stabilized?		(No)		1	ater Remov		10	Gallons				

	ter Assessi	nent			Site:		Otter Ta	il Power Co./ Big Sto
Sampling Pers	sonnel:				Facility I	D:		
100	Ben WC	314			Date: 2	7 Feb	17	
					Unique S	Station ID:		
-					Sample	ID:		Well H4OX
Well Conditi	ion	_		-		W11.7.5.F		
Well Locked?		(Yes No			Protectiv	e Posts?	Yes	No
Well Labeled?		Yes No			State ID	Tag?	Yes	No
Casing Straigh	it?	Yes No			Grout Se	al Intact?	Yes)	No
Repairs Neces	ssary:	-						
Well Informa	ation							
Well Depth:		27.48			Well Cas	ing Elevation	n:	1108.22
Constructed D	epth:	27.20	a/ .			ater Elevatio		11.11
Casing Diamet		2"	_		Previous	Static: 10		41.4
Water Level B	efore Purge:	17.11				vel After Sa		4.43
Well Volume:	1.69		Gallons		Measure	ment Methor	d: Elec	c. WL) Steel Tape
					1			
Sampling Int	formation							
		Temp:	39	Win	d: 5 (2) E	710	Sky: C	loudy
Weather Cond	itions:					11/		
			Bladder S	3/ Disp.	EWhale	Grab	Other:	
Sampling Meth	od:	Goundfos	Fladder S	Disp.			Other:	apm _
Weather Cond Sampling Meth Dedicated Equ Well Purged D	iod: ipment:	Goundfos (as) No	Fladder S	B∮/ Disp.	Pumping	Rate: , 2	-5	gpm (am)/ pm
Sampling Meth Dedicated Equ Well Purged D	ipment:	Goundfos (es No	Friadder S	B)∕ Disp.	Pumping Time Pur	Rate: , 2 np Began:	1142	(am)/ pm
Sampling Meth Dedicated Equ Well Purged D Time Purged D	iod: ipment: ry? ry?	Goundfos (as) No		B∳r Disp.	Pumping Time Pur	Rate: ,) np Began: Sampling:	-5	
Sampling Meth Dedicated Equ Well Purged D Time Purged D Duplicate Sam	od: ipment: ry? Pry? ple?	Goundfos (Ses) No (Yes) No 1/50 Yes (No			Pumping Time Pur Time of S Sample E	Rate: ,) np Began: Sampling:	1142	(am)/ pm (am)/ pm
Sampling Meth	od: ipment: ry? Pry? ple?	Goundfos (Ses) No (Yes) No 1/50 Yes (No			Pumping Time Pur Time of S Sample E	Rate: , 2 np Began: Sampling: E 134.6	1142	(am) / pm
Sampling Meth Dedicated Equ Well Purged D Time Purged D Duplicate Sam	od: ipment: ry? Pry? ple?	Goundfos (Ses) No (Yes) No 1/50 Yes (No	ID: -		Pumping Time Pur Time of S Sample E	Rate: , 2 np Began: Sampling: E 134.6	1142	(am)/ pm (am)/ pm
Sampling Meth Dedicated Equ Well Purged D Time Purged D Duplicate Sam	od: ipment: ry? Pry? ple?	Gundfos (as No (es No 1/50 Yes (o General:	Olear	Colo	Pumping Time Pur Time of S Sample E	Rate: 13 mp Began: Sampling: 13 4.6 se: NO 10	1142 1155	(am)/ pm (am)/ pm
Sampling Meth Dedicated Equ Well Purged D Time Purged D Duplicate Sam Sample Appea	ipment: ry? ry? ple? rance:	Gundfos (/es/ No (/es/ No (/es/ No (/es/ No (/es/ No (/es/ No General: Specific Cond. 2850	ID: -Clear	Colo	Pumping Time Pur Time of S Sample E	Rate: ,) mp Began: sampling: 134.6 se: NO:	5 1142 1155 SE Q#	Odor: NUTU
Sampling Meth Dedicated Equ Well Purged D Time Purged D Duplicate Sam Sample Appea	ipment: ry? ry? ple? rance:	Gundfos (/es/ No (/es/ No //56) Yes (/o General: Specific Cond.	ID: —	Colo	Pumping Time Pur Time of S Sample E r: Min Pha Turbidity NTU	Rate: , 2 mp Began: Sampling: E 134.6 se: N010 Gallons Removed	SE Q#	Odor: NOTO
Sampling Meth Dedicated Equ Well Purged D Time Purged D Duplicate Sam Sample Appea	ipment: ry? ry? ple? rance:	Gundfos (/es/ No (/es/ No (/es/ No (/es/ No (/es/ No (/es/ No General: Specific Cond. 2850	ID: -Clear	Colo	Pumping Time Pur Time of S Sample E r: Min Pha Turbidity NTU	Rate: , 2 np Began: Sampling: 134.6 se: ////C Gallons Removed 1.75	SE Q# 11.2 2 3	(am)/ pm (am)/ pm Odor: NUTU
Sampling Meth Dedicated Equ Well Purged D Time Purged D Duplicate Sam Sample Appea	ipment: ry? ry? ple? rance:	Gundfos (/es/ No (/es/ No (/es/ No (/es/ No (/es/ No (/es/ No General: Specific Cond. 2850	ID: -Clear	Colo	Pumping Time Pur Time of S Sample E r: Min Pha Turbidity NTU	Rate: , 2 np Began: Sampling: 134.6 se: ////C Gallons Removed 1.75	SE Q# 1.2 3 4	Odor: NUTU
Sampling Meth Dedicated Equ Well Purged D Time Purged D Duplicate Sam Sample Appea	ipment: ry? ry? ple? rance:	Gundfos (/es/ No (/es/ No (/es/ No (/es/ No (/es/ No (/es/ No General: Specific Cond. 2850	ID: -Clear	Colo	Pumping Time Pur Time of S Sample E r: Min Pha Turbidity NTU	Rate: , 2 np Began: Sampling: 134.6 se: //// Gallons Removed 1.75	SE Q# 11.2 2 3	Odor: NUTU

New Ulm, MN 56073	New	Ulm.	MN	560	73
-------------------	-----	------	----	-----	----

Groundwater Assessment	Site: Otter Tail Power Co./ Big Stone
Sampling Personnel:	Facility ID:
Ben Wolf	Date: 27 Feb 17
	Unique Station ID:
	Sample ID: Well H6
Well Condition	
Well Locked? Yes No	Protective Posts? (es) No
Well Labeled? Yes No	State ID Tag? Yes
Casing Straight? Yes No	Grout Seal Intact? Yes
Repairs Necessary:	
Well Information	
Well Depth: 17-92	Well Casing Elevation:
Constructed Depth: 17.70	Static Water Elevation:
Casing Diameter: 2"	Previous Static:
Water Level Before Purge: 15.57	Water Level After Sample: Beiow pump
Well Volume: 38 Gallons	Measurement Method: Elec. WU Steel Tap
Sampling Information	
Weather Conditions: Temp: 38	Wind: LLV Sky: cloudy
Sampling Method: Grundfos Bladder St	
Dedicated Equipment: (es) No	Pumping Rate: , 25 gpm
Well Purged Dry? (es) No	Time Pump Began 1204 am / pm
Time Purged Dry? 120/g	Time of Sampling: (2)/ am / am
Duplicate Sample? Yes No ID:	Sample EH: 124, 9
Sample Appearance: General: Clear	Color: NOTO Phase: NOTO Odor: NOTE
2 Specific Temp	D. O. Turbidity Gallons SEQ
Time pH Cond. OC	mg/L NTU Removed # Comments:
1206 6.48 1061 9.03	NA NA 55 1
1211 7.00 1055 9.19	- 2 Recharge
	3
	4
	5
Stabiliz Yes No.	Amount Water Removed: 5 Gallons
Comments:	

Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 5607	3		507 35	4 8517			
Groundwater A	ssessment			Site:	Otte	r Tail P	ower Co./ Big Ston
Sampling Personne	1: 0.00			Facility ID:			
Ben	MOH			Date: 2	1		
		3		Unique Sta	ation ID:		
		_		Sample ID	:		Well H8
Well Condition					-		
Well Locked?	Yes No			Protective	Posts? (es		No
Well Labeled?	(es) No			State ID To			NO
Casing Straight?	Yes No			Grout Sea	Intact? (Yes))	No
Repairs Necessary:							
Well Information							
Well Depth:	22,33			Well Casin	g Elevation:		1081.23
Constructed Depth:	22.05				er Elevation:	1074	
Casing Diameter:	2"				tatic: 10 72-		47
Water Level Before		7			el After Sample		5
	2.56	Gallons			ent Method:	Elec.	
7700 7 2100.027	04 00		-	1			
Sampling Informa	ation _			- n		- 1	
Weather Conditions:	Temp: 3	9 _	Wind:	56410	Sky:	clou	idy
Sampling Method:	Grundfos	Bladder SS/I	Disp. Bail	ler Whale	Grab Other		
Dedicated Equipmen	nt: (es) No			Pumping R			gpm
Well Purged Dry?	Yes (No)			Time Pump	Began: /a	717	am / pm
Time Purged Dry?	- 6			Time of Sa	mpling: 12	50	am / om
Duplicate Sample?	Yes No	ID:	-	Sample El-			
Sample Appearance	: General: (cleur	Color: A	1070 Pha	se: Non		Odor: NOTO
0.1	Specific	Temp	D. O.	Turbidity	Gallons	SEQ	
Time pH	Cond.	°C	mg/L	NTU	Removed	#	Comments:
1228 6.93	1476	7.83	NA	N.A	2.75	1	
1239 602	11150	700	1-7		EFA	2	

Time	pH	Cond.	°C	mg/L	NTU	Removed	#	Comments:
1228	6.93	1476	7.83	NA	MA	2.75	1	
1239	6.93	1478	7.90			5.50	2	
1250	10.93	1481	7.98	1	-	8.25	3	
					3		4	
	6			11/4			5	
Stabilized?	(Yes'	No		Amount	Water Remo	ve 8.25		Gallons

Comments:

Groundwater Assessment			Site:	Otte	r Tail Po	wer Co./ Big Ston
Sampling Personne			Facility ID);		
Bes Wolf			Date: 2	1 Feb 1;	7	
			Unique S	tation I		
			Sample II):	W	ell H9
Well Condition				l disas	_	
Well Locked? Yes No			Protective	Posts (es		No
Well Labeled? (es No			State ID 7	ag? Yes		(No
Casing Straight? (Yes) No			Grout Sea	al Intac Yes		No
Repairs Necessary:						
Well Information _				web. was		0.2
Well Depth: 30-71				ng Elevation		1086.21
Constructed Depth: 30.20			The second secon	ter Elevation		78.09
Casing Diameter: 2"	3			Static: 107		
Water Level Before Purge: 8-12				el After Sar		122
Well Volume: 3.69	Gallons	4	Measuren	nent Method	: Elec. V	VLP Steel Tap
			1			
Sampling Information			0			1 -
Weather Conditions Temp: 40	1	Wind: S	W 10		cloud	17
	Bladder SS/	Disp. Bailer	Whale	Grab Other:		
Dedicated Equipme(Yes No	_		Pumping I			gpm
Well Purged Dry? Yes (0)			Time Pum		55	am / gm
Time Purged Dry?	0.37		Time of Sa		40	am / 6m
Duplicate Sample? Yes (No)	ID:			1: 104.1		
Sample Appearance General: 31, g	htly day	Color: Ta	n Ph	ase: Nune	υ	Odor: Nove
15	Temp	D. O.	Turbidity	Gallons		
Time pH Specific Cond.	°C	mg/L	NTU		SEQ#	Comments:
1310 6,52 3190	9.04	NA	NA	3.75	1	
1325 6.52 3203	4,13	17	1	7.50	2	
1340 6.52 3208	9.14	1	1	11,25	3	
					4	
					5	
Stabiliz Yes No		Amount Wa	ter Remove	d 11.22		Gallons
Comments:						



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FINAL REPORT COMPLETION DATE: 17 May 17 US

Date Reported: 4 May 2017

PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496 FERGUS FALLS MN 56538-0496 Work Order #: 31-0123 Account #: 006106 PO #: 48680

Project Name: BIG STONE 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



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CERTIFICATE of ANALYSIS - CCR

PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496

FERGUS FALLS MN 56538-0496

Project Name: BIG STONE PLANT

Sample Description: WELL H6

Report Date: 4 May 2017 Lab Number: 17-A11085 Work Order #: 31-0123 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 29 Mar 2017 15:24
Sampled By: MVTL FIELD PERSONNEL
Date Received: 30 Mar 2017 13:27

PO #: 48680

Temp at Receipt: 0.4C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					3 Apr 17	JMS
Water Digestions					3 Apr 17	JMS
Radium 226	SEE ATTAC	HED			4 May 17 7:52	ABL
Radium 228	SEE ATTAC	HED		EPA M9320	4 May 17 7:52	ABL
pR, Field	7.30	units	1.00	I-1586-85	29 Mar 17 15:24	DGF
DH	* 7.4	units	1.0	SM 4500 H+ B-2000	31 Mar 17 11:42	DS
Sulfate	67.9 @	mg/L	5.0	ASTM D516-07	6 Apr 17 8:20	KCJ
Chloride	< 3	mg/L	3	SM 4500 CL E	6 Apr 17 9:15	MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7	7 Apr 17 11:44	RMB
Solids, Total Dissolved	555	mg/L	10	SM 2540 C-97	31 Mar 17 12:50	RC
Calcium	58.70	mg/L	0.500	SW6010C	12 Apr 17 10:54	RMV
1272	See Narra	tive				
Lithium	0.032	mg/L	0.005	SW6010C	12 Apr 17 10:54	RMV
Barium	0.086	mq/L	0.005	SW6010C	12 Apr 17 10:54	RMV
Chromium	< 0.01	mg/L	0.01	SW6010C	12 Apr 17 10:54	RMV
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	12 Apr 17 10:54	RMV
Boron	4.610	mg/L	0.100	SW6010C	12 Apr 17 10:54	RMV
	See Narra					
Antimony	< 2.5 €	ug/L	0.5	SW6020A	5 Apr 17 11:37	RMV
Arsenic	< 2.5 @	ug/L	0.5	SW6020A	10 Apr 17 9:52	RMV
Beryllium	< 0.25	ug/L	0.05	SW6020A	5 Apr 17 11:37	RMV
a de la companya de l	@See Narr					
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	5 Apr 17 11:37	RMV
Lead	< 2.5 €	ug/L	0.5	SW6020A	5 Apr 17 11:37	RMV
Molybdenum	22.6 @	ug/L	0.50	SW6020A	10 Apr 17 9:52	RMV
Selenium	8.39 @	ug/L	0.50	SW6020A	5 Apr 17 11:37	RMV
Thallium	< 0.5 @	ug/L	0.1	SW6020A	5 Apr 17 11:37	RMV
Fluoride	0.480	mg/L	0.020	EPA 300.0	7 Apr 17 10:37	RC

^{*} Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

RL = Reporting Limit
Analysas performed under our Minnesots Department of Health Accreditation conform to the current TNI standards.
The reporting limit was elevated for any analyte requiring a dilution as coded below:

| 6 - Due to sample matrix | # = Due to concentration of other enalytes | + = Due to concentration of other enalytes | + = Due to internal standard response

CERTIFICATION: NN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M NN NH/DN # 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: BIG STONE PLANT

Sample Description: WELL H8

Report Date: 4 May 2017
Lab Number: 17-A11086
Work Order #: 31-0123
Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 29 Mar 2017 16:06
Sampled By: MVTL FIELD PERSONNEL
Date Received: 30 Mar 2017 13:27

PO #: 48680

Temp at Receipt: 0.4C

	As Receiv Result	red	Method RL	Method Reference	Date	zed		Analyst
MS Water Digestions					3 A	r 17	-	JMS
Water Digestions						r 17		JMS
Radium 226	SEE ATTAC	HED				y 17		ABL
Radium 228	SEE ATTAC	HED		EPA M9320	4 Ma	y 17	7:53	ABL
pH, Field	7.05	units	1.00	1-1586-85	29 Ma	r 17	16:06	DGF
рН	* 7.2	units	1.0	SM 4500 H+ B-2000	31 Ma	r 17	11:42	DS
Sulfate	272 @	mg/L	5.0	ASTM D516-07	6 AT	r 17	8:20	KCJ
Chloride	4.0	mg/L	3.0	SM 4500 C1 E		r 17		MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7			11:44	RMB
Solids, Total Dissolved	941	mg/L	10	SM 2540 C-97	31 Ma	r 17	12:50	RC
Calcium	127.0	mg/L	0.500	SW6010C	12 Ap	r 17	10:54	RMV
	See Narra							
Lithium	0.044	mg/L	0.005	SW6010C	12 Ap	r 17	10:54	RMV
Barium	0.030	mg/L	0.005	SW6010C	12 Ar	r 17	10:54	RMV
Chromium	< 0.01	mg/L	0.01	SW6010C			10:54	RMV
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C			10:54	RMV
Boron	4.070	mg/L	0.100	SW6010C	12 Ap	r 17	10:54	RMV
77.00	See Narra			3000	7			
Antimony	< 2.5 @	ug/L	0.5	SW6020A	5 Ap	r 17	11:37	RMV
Arsenic	< 2,5 €	ug/L	0.5	SW6020A	10 Ap	r 17	9:52	RMV
Beryllium	< 0.25	ug/L	0.05	SW6020A			11:37	RMV
	@See Narra		2.54					
Cadmium	< 0.5 @	uq/L	0.1	SW6020A	5 Ap	r 17	11:37	RMV
lead	< 2.5 €	ug/L	0.5	SW6020A	5 Ap	r 17	11:37	RMV
folybdenum	14.3 @	ug/L	0.50	SW6020A			9:52	RMV
Selenium	8.33 @	ug/L	0.50	SW6020A			11:37	RMV
Challium	< 0.5 @	ug/L	0.1	SW6020A			11:37	RMV
Fluoride	0.570	mg/L	0.020	EPA 300.0			10:37	RC

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

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:

B Due to sample metrix

Due to sample quantity

Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 MD MICRO # 1013-M ND MW/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: BIG STONE PLANT

Sample Description: WELL H9

Report Date: 4 May 2017 Lab Number: 17-A11087 Work Order #: 31-0123 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 29 Mar 2017 17:06 Sampled By: MVTL FIELD PERSONNEL Date Received: 30 Mar 2017 13:27

PO #: 48680

Temp at Receipt: 0.4C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed		Analyst
MS Water Digestions					3 Apr 1	7	JMS
Water Digestions					3 Apr 1	7	JMS
Radium 226	SEE ATTAC	HED			4 May 1	7 7:52	ABL
Radium 228	SEE ATTAC	HED		EPA M9320	4 May 1	7 7:52	ABL
pH, Field	6.56	units	1.00	I-1586-85	29 Mar 1		DGF
pH	* 6.8	units	1.0	SM 4500 H+ B-2000	31 Mar 1	7 11:42	DS
Sulfate	1450 ~	mg/L	5.0	ASTM D516-07	6 Apr 1	7 8:56	KCJ
Chloride	12.3	mg/L	3.0	SM 4500 C1 E	6 Apr 1	7 9:33	MRW
Mercury	0.009	ug/L	0.005	EPA 245.7	7 Apr 1		RMB.
Solids, Total Dissolved	2640	mg/L	10	SM 2540 C-97	31 Mar 1		RC
Calcium	599.0	mg/L	0.500	SW6010C	12 Apr 1	7 10:54	RMV
Carcram	~See Narr	ative		2021200	740.147		
Lithium	0.135	mg/L	0.005	SW6010C	12 Apr 1	7 10:54	RMV
Barium	0.036	mq/L	0.005	SW6010C	12 Apr 1	7 10:54	RMV
Chromium	< 0.01	mg/L	0.01	SW6010C	12 Apr 1	7 10:54	RMV
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	12 Apr 1		RMV
Boron	1.150	mg/L	0.100	SW6010C	12 Apr 1		RMV
BOLON	Sec Narra			and the second		4.955.5	
Antimony	< 5 8	ug/L	0.5	SW6020A	5 Apr 1	7 11:37	RMV
Arsenic	< 5 @	ug/L	0.5	SW6020A	10 Apr 1		RMV
Beryllium	< 0.5	ug/L	0.05	SW6020A	5 Apr 1		RMV
Beratrom	@See Narr			20-22-23	2.40		
Cadmium	< 1 0	ug/L	0.1	SW6020A	5 Apr 1	7 11:37	RMV
Lead	< 5 0	ug/L	0.5	SW6020A	5 Apr 1		RMV
Molybdenum	< 5 @	ug/L	0.5	SW6020A	10 Apr 1		RMV
Selenium	< 5 @	ug/L	0.5	SW6020A	5 Apr 1		RMV
Thallium	< 1 @	ug/L	0.1	SW6020A	5 Apr 1		RMV
Fluoride	0.200	mg/L	0.020	EPA 300.0	7 Apr 1		RC



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT

Sample Description: WELL H9

Report Date: 4 May 2017
Lab Number: 17-A11087
Work Order #: 31-0123
Account #: 006106
Sample Matrix: GROUNDWATER
Date Sampled: 29 Mar 2017 17:06
Sampled By: MVTL FIELD PERSONNEL
Date Received: 30 Mar 2017 13:27
PO #: 48680

Temp at Receipt: 0.4C

As Received Result Method RL Method Reference Date Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

- ~ Sample diluted due to result above calibration of linear range.
- ^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT

Sample Description: WELL H20X

Report Date: 4 May 2017 Lab Number: 17-A11088 Work Order #: 31-0123 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 29 Mar 2017 16:28 Sampled By: MVTL FIELD PERSONNEL Date Received: 30 Mar 2017 13:27

PO #: 48680

Temp at Receipt: 0.4C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed		Analyst
MS Water Digestions					3 Apr 17	-	JMS
Water Digestions					3 Apr 17		JMS
Radium 226	SEE ATTAC	HED			2 May 17	16:09	ABL
Radium 228	SEE ATTAC	HED		EPA M9320	2 May 17	16:09	ABL
pH, Field	7.07	units	1.00	I-1586-85	29 Mar 17	16:28	BMW
pH	* 7.0	units	1.0	SM 4500 H+ B-2000	31 Mar 17	11:42	DS
Sulfate	2260 ~	mg/L	5.0	ASTM D516-07	6 Apr 17	8:56	KCJ
Chloride	3.6	mg/L	3.0	SM 4500 CL E	6 Apr 17	9:33	MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7	7 Apr 17	11:44	RMB
Solids, Total Dissolved	3960	mg/L	10	SM 2540 C-97	31 Mar 17	12:50	RC
Calcium	543.0	mg/L	0.500	SW6010C	12 Apr 17	10:54	RMV
	~See Narr	ative					
Lithium	0.475	mg/L	0.005	SW6010C	12 Apr 17	10:54	RMV
Barium	0.007	mq/L	0.005	SW6010C	12 Apr 17		RMV
Chromium	< 0.01	mg/L	0.01	SW6010C	12 Apr 17	10:54	RMV
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	12 Apr 17		RMV
Boron	0.289	mg/L	0.100	SW6010C	12 Apr 17		RMV
	See Narra	tive			PD 1-25 TO		
Antimony	< 5 @	ug/L	0.5	SW6020A	5 Apr 17	11:37	RMV
Arsenic	< 5 @	ug/L	0.5	SW6020A	10 Apr 17	9:52	RMV
Beryllium	< 0.5	ug/L	0.05	SW6020A	5 Apr 17		RMV
	@See Narr						
Cadmium	< 1 @	ug/L	0.1	SW6020A	5 Apr 17	11:37	RMV
Lead	< 5 @	ug/L	0.5	SW6020A	5 Apr 17	11:37	RMV
Molybdenum	< 5 @	ug/L	0.5	SW6020A	10 Apr 17		RMV
Selenium	21.7 €	ug/L	0.50	SW6020A	5 Apr 17		RMV
Thallium	< 1 0	ug/L	0.1	SW6020A	5 Apr 17		RMV
Fluoride	0.140	mg/L	0.020	EPA 300.0	7 Apr 17		RC



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT

Sample Description: WELL H20X

Report Date: 4 May 2017 Lab Number: 17-A11088 Work Order #: 31-0123 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 29 Mar 2017 16:28 Sampled By: MVTL FIELD PERSONNEL

Date Received: 30 Mar 2017 13:27

PO #: 48680

Temp at Receipt: 0.4C

As Received Result

Method RL

Method Reference Date Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

- Sample diluted due to result above calibration of linear range.

^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

RL = Reporting Limit



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT

Sample Description: WELL H30X

Report Date: 4 May 2017 Lab Number: 17-A11089 Work Order #: 31-0123 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 29 Mar 2017 17:01 Sampled By: MVTL FIELD PERSONNEL Date Received: 30 Mar 2017 13:27

PO #: 48680

Temp at Receipt: 0.4C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					3 Apr 17	JMS
Water Digestions					3 Apr 17	JMS
Radium 226	SEE ATTAC	HED			2 May 17 16:0	ABL
Radium 228	SEE ATTAC	HED		EPA M9320	2 May 17 16:0	ABL
pH, Field	6.85	units	1.00	I-1586-85	29 Mar 17 17:0	
HO	* 6.9	units	1.0	SM 4500 H+ B-2000	31 Mar 17 11:4	DS
Sulfate .	1820 ~	mg/L	5.0	ASTM D516-07	6 Apr 17 8:5	KCJ
Chloride	78.9	mg/L	3.0	SM 4500 C1 E	6 Apr 17 9:3	MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7	7 Apr 17 11:4	RMB
Solids, Total Dissolved	3640	mg/L	10	SM 2540 C-97	31 Mar 17 12:5	
Calcium	376.0	mg/L	0,500	SW6010C	12 Apr 17 10:5	RMV
	@See Narr					
Lithium	0.134	mg/L	0.005	SW6010C	12 Apr 17 10:5	RMV
Barium	0.013	mg/L	0.005	SW6010C	12 Apr 17 10:5	
Chromium	< 0.01	mg/L	0.01	SW6010C	12 Apr 17 10:5	
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	12 Apr 17 10:54	
Boron	8.040	mg/L	0.100	SW6010C	12 Apr 17 10:54	RMV
	-See Narr					
Antimony	< 5 @	ug/L	0.5	SW6020A	5 Apr 17 11:37	RMV
Arsenic	< 5 @	ug/L	0.5	SW6020A	10 Apr 17 9:52	RMV
Beryllium	< 0.5	ug/L	0.05	SW6020A	5 Apr 17 11:37	RMV
**************************************	@See Narr	ative				
admium	< 1 0	ug/L	0.1	SW6020A	5 Apr 17 11:37	RMV
ead	< 5 @	ug/L	0.5	SW6020A	5 Apr 17 11:37	RMV
folybdenum	33.8 @	ug/L	0.50	SW6020A	10 Apr 17 9:52	
Selenium	< 5 @	ug/L	0.5	SW6020A	5 Apr 17 11:37	
Challium	< 1 0	ug/L	0.1	SW6020A	5 Apr 17 11:37	
Fluoride	0.270	mg/L	0.020	EPA 300.0	7 Apr 17 10:37	

RL - Reporting Limit



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT

Sample Description: WELL H30X

Report Date: 4 May 2017
Lab Number: 17-Al1089
Work Order #: 31-0123
Account #: 006106
Sample Matrix: GROUNDWATER
Date Sampled: 29 Mar 2017 17:01
Sampled By: MVTL FIELD PERSONNEL
Date Received: 30 Mar 2017 13:27

Temp at Receipt: 0.4C

As Received Result Method RL Method Reference

PO #: 48680

Date Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

- ~ Sample diluted due to result above calibration of linear range.
- ^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

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 sample quantity |
| ** Due to internal standard response |
| ** CERTIFICATION: MN LAS * 027-015-125 | WI LAB * 995447680 | 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

Project Name: BIG STONE PLANT

Sample Description: WELL H40X

Report Date: 4 May 2017 Lab Number: 17-A11090 Work Order #: 31-0123 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 30 Mar 2017 8:24
Sampled By: MVTL FIELD PERSONNEL
Date Received: 30 Mar 2017 13:27

PO #: 48680

Temp at Receipt: 0.4C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					3 Apr 17	JMS
Water Digestions					4 Apr 17	JMS
Radium 226	SEE ATTAC	HED			2 May 17 16:10	ABL
Radium 228	SEE ATTAC	HED		EPA M9320	2 May 17 16:10	ABL
pH, Field	6.55	units	1.00	I-1586-85	30 Mar 17 B:24	BMW
PH	* 6.9	units	1.0	SM 4500 H+ B-2000	31 Mar 17 11:52	DS
Sulfate	1190 ~	mg/L	5.0	ASTM D516-07	6 Apr 17 8:56	KCJ
Chloride	46.4	mg/L	3.0	SM 4500 CL E	6 Apr 17 9:33	MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7	7 Apr 17 11:44	RMB
Solids, Total Dissolved	2320	mg/L	10	SM 2540 C-97	31 Mar 17 12:50	RC
Calcium	330.0	mg/L	0.500	SW6010C	12 Apr 17 11:27	RMV
Lithium	0.106	mg/L	0.005	SW6010C	12 Apr 17 11:27	RMV
Barium	0.016	mg/L	0.005	SW6010C	12 Apr 17 11:27	RMV
Chromium	< 0.01	mg/L	0.01	SW6010C	12 Apr 17 11:27	RMV
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	12 Apr 17 11:27	RMV
Boron	0.392	mg/L	0.100	SW6010C	12 Apr 17 11:27	RMV
Antimony	< 5 0	ug/L	0.5	SW6020A	5 Apr 17 11:37	RMV
Arsenic	< 5 @	ug/L	0.5	SW6020A	10 Apr 17 9:52	RMV
Beryllium	< 0.5	ug/L	0.05	SW6020A	5 Apr 17 11:37	RMV
	@See Narr	ative				
Cadmium	< 1 6	ug/L	0.1	SW6020A	5 Apr 17 11:37	RMV
Lead	< 5 @	ug/L	0.5	SW6020A	5 Apr 17 11:37	RMV
Molybdenum	< 5 @	ug/L	0.5	SW6020A	10 Apr 17 9:52	RMV
Selenium	< 5 @	ug/L	0.5	SW6020A	5 Apr 17 11:37	RMV
Thallium	< 1 6	ug/L	0.1	SW6020A	5 Apr 17 11:37	RMV
Fluoride	0.410	mg/L	0.020	EPA 300.0	7 Apr 17 10:37	RC

^{*} Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

~ Sample diluted due to result above calibration of linear range.

[•] The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLQQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.



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INORGANIC & METALS ANALYSES:

The internal standard counts associated with beryllium were outside of acceptance range in the blank spike for samples 17-A11085 through 17-A11097. Data was reported based on the acceptable recovery of beryllium in the blank spike. Beryllium recoveries were elevated in the knowns for the same set of samples. Data that was below the reporting limit was reported.

Due to the sample matrix of the spiked sample, the recoveries of the matrix spike and matrix spike duplicate were outside of acceptance limits for boron and calcium for samples 17-A11085 through 17-A11089. Data was reported based on the acceptable recoveries of the blank spike and relative percent difference of the matrix spikes.

No other problems were encountered with these analyses.

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Quality Control Report

Lab IDs: 17-A11085 to 17-A11097 Project: BIG STONE PLANT CCR Work Order: 201731-0123

Analyté de la	LCS Spike Amt	LCS Rec. %	LCS % Rec Limits	Spike	Matrix Spike D	Matrix Spike, Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	Dup Orig	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Antimony ug/L	25.0 25.0	100 100	85-115 85-115	25.0 25.0	17A11094q 17A11097q	<5 <5	25.8 26.5	103 106	75-125 75-125	25.8 26.5	26.1 24.8	104 99	1.2 6.6	10 10	98 98	90-110 90-110	< 0.5 < 0.5
Arsenic ug/L	25.0 25.0	102 97	85-115 85-115	25.0 25.0 25.0 25.0	17A10348q 17A10930q 17A11097q 17A11094q	2.25 < 0.5 < 5 < 5	28.6 22.6 26.4 27.9	105 90 106 112	75-125 75-125 75-125 75-125	28.6 22.6 26.4 27.9	28.7 24.3 23.9 28.6	106 97 96 114	0.3 7.2 9.9 2.5	10 10 10 10	92 96	90-110 90-110	< 0.5 < 0.5
Barium mg/L	1.000 1.000 1.000	104 103 102	85-115 85-115 85-115	1.00 1.00 1.00	a10486qc 17-A11089 17A11064q	0.092 0.013 0.041	1.100 1.130 1.120	101 112 108	75-125 75-125 75-125	1.100 1.130 1.120	1.180 1.120 1.090	109 111 105	7.0 0.9 2.7	10 10 10	98 98	90-110 90-110	< 0.005 < 0.005 < 0.005
Beryllium ug/L	2.50 2.50	116 116	85-115 85-115	2.50 2.50	17A11094q 17A11097q	<0.5 <0.5	2.76 2.77	110 111	75-125 75-125	2.76 2.77	2.85 2.67	114 107	3.2 3.7	10 10	112 110	90-110 90-110	< 0.05 < 0.05
Boron mg/L	1.000 1.000 1.000	101 100 105	85-115 85-115 85-115	1.00 1.00 1.00	a10486qc 17-A11089 17A11064q	0.168 8.040 1.200	1.220 9.490 2.280	105 145 108	75-125 75-125 75-125	1.220 9.490 2.280	1.270 9.400 2.200	110 136 100	4.0 1.0 3.6	10 10 10	98 101	90-110 90-110	< 0.1 < 0.1 < 0.1

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Quality Control Report

Project: BIG STONE PLANT CCR

Work Order: 201731-0123

Lab LUS: 17-A11085 to 17-A.	11097	PIL	Ject: DI	PION	S PLANT CCI		WULK	Oruer: 2	01/31-01	23			_				
Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike 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
Cadmium ug/L	5.00 5.00	100 100	85-115 85-115	5.00 5.00	17A11094q 17A11097q	<1 1.30	5.55 6.24	111 99	75-125 75-125	5.55 6.24	5.29 5.91	106 92	4.8 5.4	10 10	96 98	90-110 90-110	< 0.1 < 0.1
Calcium mg/L	50.00 50.00 50.00	104 104 106	85-115 85-115 85-115	50.0 50.0 50.0	a10486qc 17-A11089 17A11064q	106.0 376.0 169.0	157.0 491.0 218.0	102 230 98	75-125 75-125 75-125	157.0 491.0 218.0	160.0 450.0 213.0	108 148 88	1.9 8.7 2.3	10 10 10	100 102	90-110 90-110	<0.5 <0.5 <0.5
Chloride mg/L		1	0.2	60.0 60.0 60.0	17-A11086 17-A11096 17-A11777	4.0 6.9 125	61.9 64.7 182	96 96 95	85-121 85-121 85-121	61.9 64.7 182	62.9 66.2 183	98 99 97	1.6 2.3 0.5	5 5 5	94 94 95	90-110 90-110 90-110	<3 <3 <3
Chromium mg/L	1.000 1.000 1.000	102 105 103	85-115 85-115 85-115	1.00 1.00 1.00	a10486qc 17-A11089 17A11064q	<0.01 <0.01 <0.01	0.976 1.020 0.986	98 102 99	75-125 75-125 75-125	0.976 1.020 0.986	1.020 1.020 0.953	102 102 95	4.4 0.0 3.4	10 10 10	101 99	90-110 90-110	<0.01 <0.01 <0.01
Cobalt mg/L	1.000 1.000 1.000	107 110 109	85-115 85-115 85-115	1.00 1.00 1.00	a10486qc 17-A11089 17A11064q	<0.005 <0.01 <0.01	1.010 1.040 1.030	101 104 103	75-125 75-125 75-125	1.010 1.040 1.030	1.060 1.040 1.000	106 104 100	4.8 0.0 3.0	10 10 10	103 103	90-110 90-110	< 0.000 < 0.000 < 0.000
Fluoride mg/L	-	•	Ţ.	0.20 0.20	17-A11094 17-A11967	0.470 0.170	0.660 0.400	95 115	75-125 75-125	1000000	0.670 0.400	100 115	1.5 0.0	10 10	97 99	90-110 90-110	100000

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Quality Control Report

Project: BIG STONE PLANT CCR

Work Order: 201731-0123

Lab IDS: 17-A11063 to 17-A	1107/	FI	oject. DR	3 21 OW	BPLANT CC		WULK	Oruer: 2	01/21-01	43							
Arialyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	September 5	Contractor office in Paris	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec	MSD/ Dup	RED	Known Rec (%)	Known % Rec Limits	STATE OF THE PARTY
Lead ug/L	25.0	105	85-115	25.0 25.0 25.0	17A11094q 17A10930q 17A11097q	<5 7.46 <5	26.9 27.4 27.4	108 80 110	75-125 75-125 75-125	26.9 27.4 27.4	26.0 29.3 25.6	104 87 102	3.4 6.7 6.8	10 10 10	100 100	90-110 90-110	<0.5 <0.5
Lithium mg/L	1.000 1.000	106 106	85-115 85-115	1.00 1.00	17-A11089 a11064qc	0.134 0.212	1.340 1.390	121 118	75-125 75-125	1.340 1.390	1.350 1.340	122 113	0.7 3.7	10 10	102 105	90-110 90-110	< 0.005 < 0.005
Mercury ug/L				0.10 0.10	17-A11094 17-A10931	< 0.005 < 0.005	0.101 0.074	101 74	63-111 63-111	0.101 0.074	0.108 0.075	108 75	6.7 1.3	18 18	107 105	76-113 76-113	< 0.005 < 0.005 < 0.005 < 0.005
Molybdenum ug/L	25.0 25.0	100 100	85-115 85-115	25.0 25.0 25.0	17A11094q 17A10930q 17A11097q	<5 <2.5 5.24	29.1 25.8 30.3	116 103 100	75-125 75-125 75-125	29.1 25.8 30.3	29.0 26.7 29.4	116 107 97	0.3 3.4 3.0	10 10 10	95 95	90-110 90-110	<0.5 <0.5



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Quality Control Report

Lab IDs: 17-A11085 to 17-A11097 Project: BIG STONE PLANT CCR Work Order: 201731-0123

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec. %	Matrix Spike % Rec Limits	Orig	A CONTRACTOR OF THE PARTY OF TH	MSD Rec	MSD/ Dup RPD	The Lording	Rec		Method Blank
pH units	-		5	iden Ruli	:		Ď.		\$	6.9 7.8	6.9 7.9		0.0 1.3	2.5 2.5	101 101	90-110 90-110	
Selenium ug/L	25.0 25.0	101 101	85-115 85-115	25.0 25.0 25.0	17A11094q 17A10930q 17A11097q	< 5 0.56 < 5	29.3 24.0 26.7	117 94 107	75-125 75-125 75-125	29.3 24.0 26.7	30.4 25.9 25.0	122 101 100	3.7 7.6 6.6	10 10 10	96 96	90-110 90-110	<0.5 <0.5
Solids, Total Dissolved mg/L	1	1	0		4		E.II		2	2640 1670	2740 1630		3.7 2.4	8	100	85-115	< 10
Sulfate mg/L	* * *	* * *		500 500 50.0	17-A11086 17-A11096 17-A11783	272 824 < 5	801 1280 42.0	106 91 84	74-128 74-128 74-128	801 1280 42.0	812 1260 42.1	108 87 84	1.4 1.6 0.2	5 5 5	98 98 98	80-120 80-120 80-120	<5 <5 <5

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Quality Control Report

Lab IDs: 17-A11085 to 17-A11097 Project: BIG STONE PLANT CCR Work Order: 201731-0123

Dan Los, 17-1111005 to 17-11.	11071	***	Jecu Die	O L O L VI	DIMMIT COL	The second second	*** ***	OI LADA L 2	OLISTOL					The same of the sa			
	E		2		BUSINES	Matrix.			Matrix		0.2		100	MSD/	11 1/2		
经验证证明	LCS	PROPERTY OF THE PARTY OF THE PA	UNDERSONALIZABLE DELP	15 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	A STATE OF THE STATE OF THE STATE OF				Spike-	Dup	CAMPACACOA	And the same of the last of	MSD/	200000000000000000000000000000000000000	Known	DA HEATE STOLEN	11/2 11/2 3 4 5 5 5 5
	Spike	Rec	% Rec	Spike	Spike	CONTRACTOR STATE OF THE STATE O	Spike		% Rec	Orig	PROCESS OF THE PARTY OF THE PAR	Rec		RPD	Rec	% Rec	CONTRACTOR OF THE PARTY AND
Analyte	Amt	%	Limits-	Amter	District	Result	Result	%	Limits	Result	Result	%	RPD.	Limit (<	(%)	Limits	Blank
Thallium ug/L	5.00	106	85-115	5.00	17A11094q	<1	5.44	109	75-125	5.44	5.18	104	4.9	10	102	90-110	< 0.1
	5.00	106	85-115	5.00	17A10930q	< 0.1	4.33	87	75-125	4.33	4.64	93	6.9	10	103	90-110	< 0.1
		E		5.00	17A11097q	<1	5.36	107	75-125	5.36	5.05	101	6.0	10			

The beryllium LCS recovery and known recovery were above the acceptance limits, see narrative.

The boron matrix spike and spike duplicate recoveries were outside the acceptance limits, see narrative.

The calcium matrix spike and spike duplicate recoveries were outside the acceptance limits, see narrative.

Approved by



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 872-8945

Date: 5/1/2017

CLIENT:

MVTL Inc

ASTM approved and recognized standards

CASE NARRATIVE

Project:

Ottertail Power Big Stone

Report ID: S1704052001

\$1704052 Lab Order:

Samples H-6-A11085, H-8-A11086, H-9-A11087, H2OX-A11088, H3OX-A11089, H4OX-A11090, Slag 2B A11097, Slag 9-A11096, Slag-4-A11091, Slag-5-A11092, Slag-6-A11093, Slag-7-A11094, and Slag-8-A11095 were received on April 5, 2017.

All samples were received and analyzed within the EPA recommended holding times, except those noted below in this case narrative. Samples were analyzed using the methods outlined in the following references:

"Standard Methods For The Examination of Water and Wastewater", approved method versions Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition 40 CFR Parts 136 and 141 40 CFR Part 50, Appendices B, J, L, and O Methods indicated in the Methods Update Rule published in the Federal Register Friday, May 18, 2012

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as Indicated in this case narrative.

Qualifiers by sample

S1704140-003 - Radium 228 by Ga/Tech/Total Radium 228 - RPD outside accepted recovery limits

Reviewed by: All

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 1



ph: (307) 672-8945 1673 Terra Avenue, Sheridan, Wyoming 82801

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Otterfall Power Big Stone

Lab ID:

S1704052-001 ClientSample ID: H2OX-A11088

COC:

WEB 31-0123

Date Reported 5/1/2017

Report ID

\$1704052001

WorkOrder:

\$1704052

CollectionDate: 3/29/2017 4:28:00 PM DateReceived:

4/5/2017 11:28:00 AM

FieldSampler:

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radlum 226	ND	pCi/L		0.4	SM 7500 Ra-B	04/20/2017 1647	MB
Radium 226 Precision (±)	NA	pCl/L			SM 7500 Ra-B	04/20/2017 1647	MB
Radlum 228	ND	pCi/L		2	Ga-Tech	04/23/2017 429	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	04/23/2017 429	MB

These results apply only to the samples tested.

Qualiflers:

В Analyte detected in the associated Melhod Blank

Value above quantitation range

Holding times for preparation or analysis exceeded H

Analyzed by another laboratory

Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory G

Analyte detected below quantitation limits
Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by: all

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 13



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

MVTL Inc Company:

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Blg Stone

Lab ID:

\$1704052-002 ClientSample ID: H3OX-A11089

COC:

WEB 31-0123

Date Reported 5/1/2017

Report ID

S1704052001

WorkOrder:

S1704052

CollectionDate: 3/29/2017 5:01:00 PM

DateReceived: 4/5/2017 11:28:00 AM

FleldSampler:

Matrix:

Water

Commonto

Analyses	Result	Units	Qual	RL.	Method	Date Analyzed/Init	
Radionuciides - Total							
Radium 226	ND	pCi/L		0.4	SM 7500 Ra-B	04/20/2017 1647	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	04/20/2017 1647	MB
Radium 228	ND	pCI/L		2	Ga-Tech	04/23/2017 733	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	04/23/2017 733	MB

These results apply only to the samples tested.

Qualiflers:

B Analyte detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded

Analyzed by another laboratory

Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillelle laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 2 of 13



ph: (307) 672-8945 1673 Terra Avenue, Sheridan, Wyoming 82801

Sample Analysis Report

MVTL Inc Company:

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Big Stone

Lab ID:

S1704052-003 ClientSample ID: H4OX-A11090

COC:

WEB 31-0123

Date Reported 5/1/2017

Report ID

S1704052001

WorkOrder:

S1704052

CollectionDate: 3/30/2017 8:24:00 AM

4/5/2017 11:28:00 AM

DateReceived: FieldSampler:

Matrix:

Water

Analyses		Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionucildes - Total								
Radium 226		ND	pCi/L		0.4	SM 7500 Ra-B	04/20/2017 1647	MB
Radium 226 Precision (±)	- 2	NA	pCI/L			SM 7500 Ra-B	04/20/2017 1647	MB
Radium 228		ND	pCI/L		2	Ga-Tech	04/23/2017 1037	MB
Radium 228 Precision (±)		NA	pCI/L			Ga-Tech	04/23/2017 1037	MB

These results apply only to the samples tested.

Qualifiers:

8 Analyte detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory
Analyte detected below quantitation limits
Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by: All

Wade Nieuwsma, Assistant Laboratory Manager

Page 3 of 13



1673 Terra Avenue, Sheridan, Wyomlng 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertall Power Big Stone

Lab ID: ClientSample ID:

S1704052-004 H-6-A11085

COC:

WEB 31-0123

Date Reported

5/1/2017

Report ID

\$1704052001

WorkOrder:

S1704052

CollectionDate: 3/29/2017 3:24:00 PM DateReceived:

4/5/2017 11:28:00 AM

FieldSampler:

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radlum 226	ND	pCi/L		0.4	SM 7600 Ra-B	04/20/2017 1647	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	04/20/2017 1647	MB
Radium 228	4.0	pCI/L		2	Ga-Tech	04/23/2017 1341	MB
Radium 228 Precision (±)	2.8	pCI/L			Ga-Tech	04/23/2017 1341	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded H

Analyzed by another laboratory Not Detected at the Reporting Limit

Splke Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL
Outside the Range of Dilutions

Matrix Effect

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 4 of 13



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Big Stone

Lab ID: ClientSample ID:

S1704052-005 H-8-A11086

COC:

WEB 31-0123

Date Reported 5/1/2017

Report ID

S1704052001

WorkOrder:

S1704052

CollectionDate: 3/29/2017 4:06:00 PM

DateReceived: 4/5/2017 11:28:00 AM

FieldSampler:

Matrix:

Water

Commante

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	ND	pCI/L		4	SM 7500 Ra-B	04/24/2017 1203	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	04/24/2017 1203	MB
Radium 228	ND	pCI/L		2	Ga-Tech	04/23/2017 1645	MB
Radium 228 Precision (±)	NA	pCI/L			Ga-Tech	04/23/2017 1845	MB

These results apply only to the samples tested.

Qualiflers:

Analyte detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded

Analyzed by another laboratory

Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by: All

Wade Nieuwsma, Assistant Laboratory Manager

Page 5 of 13



Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName: Lab ID:

Ottertail Power Big Stone

ClientSample ID:

COC:

S1704052-006

H-9-A11087 WEB 31-0123 Date Reported 5/1/2017

Report ID

\$1704052001

WorkOrder:

\$1704052

CollectionDate: 3/29/2017 5:06:00 PM DateReceived:

4/5/2017 11:28:00 AM

FieldSampler:

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
				/ 55	111711141		
Radionuclides - Total							
Radlum 226	ND	pCI/L		1	SM 7500 Ra-B	04/24/2017 1203	MB
Radium 226 Precision (±)	NA	pCI/L			SM 7500 Ra-B	04/24/2017 1203	MB
Radium 228	ND	pCi/L		2	Ga-Tech	04/23/2017 1950	MB
Radium 228 Precision (±)	NA	pCI/L			Ga-Tech	04/23/2017 1950	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded H

Analyzed by another laboratory

Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

G

Analyzed at IML Gillette laboratory
Analyzed at IML Gillette laboratory
Analyte detected below quantitation limits
Value exceeds Monthly Ave or MCL or is less than LCL
Outside the Range of Dilutions

Matrix Effect

Reviewed by: All

Wade Nieuwsma, Assistant Laboratory Manager

Page 6 of 13



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

ANALYTICAL QC SUMMARY REPORT

CLIENT:

MVTL Inc

Work Order:

S1704052

Project:

Ottertail Power Blg Stone

Date: 5/1/2017

Report ID: S1704052001

	Ottertali Fower big Storie							
adium	228 by Ga/Tech	Sample Type MBLK		Units	s: pCl/L			
A	MB-429 (04/21/17 15:43)	RunNo: 145273	Prepl	Date: 04/1	2/17 12:00	Bato	hID 13101	
	Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
	Total Radium 228	ND	1					
N	MB-430 (04/26/17 11:52)	RunNo; 145297	Prepi	Date: 04/1	7/17 14:00	Bato	hID 13102	
	Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
	Total Radium 228	NO	1					
adlum	228 by Ga/Tech	Sample Type LCS		Units	: pCl/L			
L	CS-429 (04/21/17 18:45)	RunNo: 145273	Prepl	Date: 04/1	2/17 12:00	Bato	hID 13101	
	Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
	Total Radium 228	40	1	40.1		99.4	65.9 - 132	
L	.CS-430 (04/26/17 14:57)	RunNo: 145297	Prepl	Date: 04/1	7/17 14:00	Bato	hID 13102	
	Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
	Total Radium 228	39	1	40.1		98.1	65.9 - 132	
dlum	228 by Ga/Tech	Sample Type LCSD		Units	: pCi/L			
L	CSD-430 (04/26/17 18:01)	RunNo; 145297	Prepl	Date: 04/1	7/17 14:00	Bato	hID 13102	
	Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qua
	Total Radium 228	41	1	39	3,17	101	20	
dium	228 by Ga/Tech	Sample Type MS		Units	: pCi/L			
M	NS-429 (04/22/17 00:54)	RunNo: 145273	Prept	Date: 04/1	2/17 12:00	Bato	HD 13101	
	Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
	Total Radium 228	41	1	40.1	ND	101	50 - 139	
s	1704140-003AMS (04/28/17 15:59)	RunNo: 145297	PrepD	Date: 04/1	7/17 14:00	Batc	hID 13102	
	Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
_	Total Radium 228	25	1	40.1	ND	62.8	50 - 139	
dlum :	228 by Ga/Tech	Sample Type MSD		Units	: pCi/L			
М	ISD-429 (04/22/17 03:57)	RunNo: 145273	PrepD	Date: 04/1	2/17 12:00	Bato	hID 13101	
	Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qua
	Total Radium 228	43	1	41	5.19	107	20	
S	1704140-003AMSD (04/28/17 19:04)	RunNo: 145297	PrepD	Date: 04/1	7/17 14:00	Batcl	hID 13102	
115	Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qua

Qualiflers:

Analyte detected in the associated Method Blank

Total Radium 228

- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- X Mairix Effect

E Value above quantitation range

35

H Holding times for preparation or analysis exceeded

25

31.3

86.1

- L Analyzed by another laboratory
- O Outside the Range of Dilutions
- S Spike Recovery outside accepted recovery limits

20

R



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

ANALYTICAL QC SUMMARY REPORT

CLIENT:

MVTL Inc

Work Order:

S1704052

Project:

Ottertail Power Big Stone

Date: 5/1/2017

Report ID: S1704052001

adlum 226 In Water -		Sample Type MBLK		Units	s: pCl/L			
MB-1738 (04/20/17 14:04	\$)	RunNo: 145012	Prepi	Date: 04/1	2/17 0:00	Bate	chID 13074	
Analyt	e	Result	RL	Splke	Ref Samp	%REC	% Rec Limits	Qua
Radiu	m 226	ND	0.2					
MB-1739 (04/24/17 12:03	3)	RunNo: 145172	Prepl		7/17 0:00		hID 13086	
Analyt	е	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
Radius	n 226	ND	0.2					
adlum 226 in Water -		Sample Type LCS		Units	: pCi/L			
LCS-1738 (04/20/17 14:0	14)	RunNo: 145012	Prepl	Date: 04/1	2/17 0:00	Bato	thID 13074	
Analyt	8	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
Radiu	n 226	6,5	0.2	5.89		110	67.1 - 122	
LCS-1739 (04/24/17 12:0	3)	RunNo: 145172	Prepl	Date: 04/1	7/17 0:00	Bato	hID 13086	
Analyt	в	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
Radiur	n 226	6.1	0.2	5.89		103	67.1 - 122	
adium 226 in Water -		Sample Type LCSD		Units	: pCl/L			
LCSD-1738 (04/20/17 14	:04)	RunNo: 145012	Prept	Date: 04/1	2/17 0:00	Bato	hID 13074	
Analyte	8	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qua
Radiur	n 226	6.2	0.2	6.5	4.82	105	20	
LCSD-1739 (04/24/17 12	:03)	RunNo: 145172	Prept	Date: 04/1	7/17 0:00	Bato	hID 13086	
Analyte	•	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qua
Radiur	n 226	7.0	0.2	6.1	14.3	119	20	
adium 226 In Water -		Sample Type MS		Units	: pCi/L			
S1704026-003AMS (04/2	0/17 14:04)	RunNo: 145012	PrepE	Date: 04/1	2/17 0:00	Bato	hID 13074	
Analyte		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radiun	226	11.0	0.4	11.8	ND	93.3	65 - 131	
S1704052-005AMS (04/2	4/17 12:03)	RunNo: 145172	PrepD	Date: 04/1	7/17 0:00	Batc	hID 13086	
Analyte		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua

Qualiflers:

Analyte detected in the associated Method Blank

G Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits
X Matrix Effect

E Value above quantitation range

H Holding times for preparation or analysis exceeded

L. Analyzed by another laboratory

O Outside the Range of Dilutions

Spike Recovery outside accepted recovery limits

Minnesota Valley Testing Laboratories

1126 North Front Street Phone: 800 782 3557 New Ulm, MN 56003 Fax: 507 359 2890

Field Service Chain of Custody Record

Project Otter Tail Power Company	Project Type:	Big Stone Plant CCR	Name of Samplers: Toth Horman, Ourt , Farance
Report Otter Tail Power Company	Carbon Copy:		Buy Wolf
Attn: Paul Vukonich	Attn:		Quote Number:
Address P.O. Box 496	Address:		Work Order Number:
Fergus Falls, MN 56538-0496 Phone: 218-739-8349			Lab Numbers:

_		Sample In	formation									Bott	le Ty	pe	-	_	, ,	Analys	is
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	1000 HNO3	Fillered Yor N	1000 none	500 HNO3	14	18	Filler? Y or M.	1000 Amber no	1000 Amber H2504 500 Naci	Other: 150	Other 150 M	Analysis Required	/
88	H2OX		29man17	1628	GW		2	N	1	1	N							See Attached	
89	НЗОХ	B	1	1701	GW		2	N	1	1	N		- 1			1			7
90	H4OX		MARIT	824	GW		2	N	1	1	N			100	G4 72				1
A11035			29 MAP 17	15:24	GW		2	N	1	1	N				No.				1
86	H-8			160Ce	GW		2	N	1	1	N		- 1						1
87	H-9		-	1706	GW		2	N	1	1	N								7
100	Slag 1		-	-	-GWL	-	2	N	-1	1	N								1
A11091	Slag 4		SIMAPL	1344	GW		2	N	1	1	N		h 11		Inter 1				
92	Slag 5		30 mani7	8241	GW		2	N	1	1	N								
43	Slag 6	4	29mas !7	1925	GW		2	N	1	1	N		[1-1]						

Comments:

WORK ORDER #2

			+	35	1 1	
Samples Relind		20 12	7	Samples Received By:	U- Mieder	
Date: 30 m	AS-177	Time: 1327	Temp: 4	584 Date: 30 Mar 17	Time: 1327	Temp: 0 - 4C
Samples Relind	uished into:	Fridge Log in	Cart Oth	er		
Samples Relind	uished By:			Samples Received By:		
Date:		Time:	Temp:	Date:	Time:	Temp:
Delivery:	Samplers	Other:		Seal Number(s) - If Us	ed	
Transport:	Ambient	Ice	Other:	Seals Intact?	Yes No	





Minnesota Valley Testing Laboratories

1126 North Front Street

New Ulm, MN 56003

Phone: 800 782 3557

Fax: 507 359 2890

Field Service Chain of Custody Record

Project Otter Tail Power Company	Project Type:	Big Stone Plant CCR	Name of Samplers: IST Kasan Dutty Sample
Report Otter Tail Power Company	Carbon Copy:	A	Ben Wolf
Attn: Paul Vukonich	Attn:		Quote Number:
Address P.O. Box 496	Address:		Work Order Number:
Fergus Falls, MN 56538-0496			Lab Numbers:
Phone: 218-739-8349	/		

		Sample In	formation					,	-			Bott	le T	ype	,				Analys
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	1000 HNO3	Filtered Yor M	1000 none	500 HNO3	1.	18	Filter? Y or M	1000 Amber on	1000 Amber	500 NaOH	Other: 150 Hog	Other 150 No.	Analysis Required
	Slag 7		29MAPI7	15:26	GW	December 1	2	N	1	1	N	13	1	170				16	See Attached
	Slag 8		1	16:48	GW	-	2	N	1	1	N	1		-	E	1			
	Slag 9	1	4 1	1819	GW		2	N	1	1	N					1.0		-	
	Slag 9 De	ep			-GW		2	N	1	1	N	,	, -						
97	Slag 2B			856	GW		2	N	1	1	N		Į.						
													127						1
			1							0.1									
					1000														

Comments:

WORK ORDER #2

			839)	0 1	
Samples Relin	quished By:	ayoull	100	Samples Received By:	1- Meder	
Date: 30 f	Lan 17	Time: 1227	Temp: Y 统	Date:30 Mar 17	Time: 1327	Temp: 0.4C
Samples Relin	quished into:	Fridge Log in C	Cart Other:			
Samples Relin	quished By:			Samples Received By:		
Date:		Time:	Temp:	Date:	Time:	Temp:
Delivery:	Samplers	Other:		Seal Number(s) - If Used		
Transport:	Ambient	Ice	Other:	Seals Intact?	Yes No	



2017

500 HNO3 500 H2504 1000 NONE

Big Stone Sampling 2017

		Mr. II	my	300.00			20.02%	41.5	Territoria (13=4
Site	Parameter	Well	Diameter	Well	Sample	Dedicated?	Pump Rate	Goes	Sampling	SOO HAOS EIHEL SOO HASSEIHEL
140004 30	List	Depth	(Inches)	Elevation		2.15.100.20	(ml/minute)	Dry?	Seasons**	500 HAZ-
WELL10	A	47.43	4	1098.70	Keck/Tsunami	No	3,000	No	1,3	500 1101 5
WELL11	A	127.22	4	1104.00	Other Pump	Yes	36,000	No	1,3	THE RIHAL
WELL12	A	112,40	4	1071.89	Other Pump	Yes	20,000	No	1,3	SOD HESOY
· S1	В	32.50	2	1102.17	Baller	Yes	N/A	Yes	1,3	1,570A
S2	В	43.12	2	1102.39	Baller	Yes	N/A	Yes	1,3	
S3	В	62.50	2	1102.65	Bailer	Yes	N/A	No	1,3	C: 23 1000 and
· \$4	В	27.70	2	1090.57	Baller	Yes	N/A	Yes	1,3	C=3 1000 none
S5	В	48.72	. 2	1091.40	Bailer	Yes	N/A	Yes	1,3	500 H2504
-S6	В	62.05	2	1090.71	Bailer	Yes	N/A	No	1,3	SOO HISOY SOO HIND FIH
H1OX	C	32.91	2	1115.89	Bailer	Yes	100	Yes	1,3	A NOS E
HINT	C	60.11	2	1115.81	Keck/Tsunami	No	1500	No	1,3	SOO HAR JA
H2OX	C, CCR	32.20	2	1103.91	Bladder	Yes	100	Yes	1,3	
HZINT	C	62.30	2	1103.91	Bailer	Yes	N/A	Yes	1,3	2
H3OX	C, CCR	22.55	2	1095.19	Bladder	Yes	100	Yes	1,3	1 -12 14
H3INT	C	54.31	2	1095.17	Whale	No	2000	No	1,3	C=3 Pand"
H4OX (%)	C, CCR	27.20	2	1108.22	Bladder	Yes	100	No	1,3	SOO HOSOY SOO HMOS
H4INT	C	60.01	2	1108.61	Keck/Tsunami	. No	2000	Yes	1,3	1000 20016
- H5-	C	43.30	2	1122.80	Whale	No	1000	No	1,3	500 4 50
+16==	C, CCR	15.00	2	1097.76	Bladder	Yes	100	Yes	1,3	6-1-2-04
H7	C	33.20	2	1106.06	Whale	No	1000	Yes	1,3	300 ANG-
~/H8=	C, CCR	22.05	2	1081.23	Bladder	Yes	100	No	1,3	3
1-19#	C, CCR	30.20	2	1086.21	Bladder	Yes	100	No		
-BC1	В	16.26	2	1118.46	Bailer	Yes	NA	No	1,3	
-BC101-	В	39.30	2	1118.70	Bailer	Yes	N/A	Yes	1,3	
BC2R	В	32,48	2	1115.28	Bailer	Yes	N/A	No	1,3	100
BC3R	В	35.15	2	1114,42	Bailer	Yes	N/A	Yes	1,3	CCR = 4
BC4R-	B	34.60	2	1113,86	Bailer	Yes	NA	Yes	1,3	
*BC5R	В	37.32	2	1123.02	Bailer	Yes	N/A	No	1,3	2-1000 NAIX
BC6R	В	33.95	2	1121.58	Bailer	Yes	N/A	No	1,3	2 1000 171005
CSTAGA. S	_	34.90	2	TBD	LOW FLOW	No	100	Yes	1,3	1000 NOA
Christian and	-	5.07.5	2	1111.06		0.55	400		1,10	2-1000 HN03 - 1000 None 500 HN03
SLAGS S			2	1113199			100			SOO HNOZ
*SI546#	CCR	39.00	2	TBD	LOW FLOW	No	100	No	1,3	3
SLAGS	CCR	38.80	2	1107.30	LOW FLOW	No	100	Yes	1,3	
-SUAGO	CCR	37.30	2	1111.51	LOW FLOW	No	100	Yes	1.3	
SHAGA	CCR	48.70	2	1114.39	LOW FLOW	No	100	Yes	1,3	
STAGO	CCR	52.09	2	1127.26	LOW FLOW	No	100	No	1,3	
SMAG9	CCR	49.80	2	1122.35	LOW FLOW	No	100	No	470	
- SLAGS DEEP	-	68.00	2	1121.92	LOW FLOW	No	100	Yes		
SMAG2B	CCR	40.80	2	1111.26	LOW FLOW	No	100	Yes		
COOLING POND	A	N/A	N/A	N/A	Grab	N/A	N/A	No	1,3	
EVAPORATION POND	Ä	N/A	N/A	NA	Grab	NA	NA	No		
HOLDING POND	-21	NA	N/A	NA	Grab	N/A			1,3	
RECLAIM POND	A	N/A	N/A	N/A	Grab	N/A	N/A	No	1,3	

N/A

No

1,3

N/A

N/A

Grab

RECLAIM POND

^{** 1 =} Spring (March 28 - April 28), 2 = Summer (July 1 - August 7), 3 = Fall (October 14- November 14)

Big Stone Plant CCR Appendix III Parameters

CCR - Appendix III Detection Monitoring Field Parameters pH*

* Field and Laboratory Measurements

Total Concentration Parameters

Boron Calcium

Chloride

Fluoride

pH

Sulfate

Dissolved Solids, Total

Big Stone CCR Appendix IV Parameters

CCR - Appendix IV - Assessment Monitoring

Total Concentration Parameters

Antimony

Arsenic

Barium

Beryllium

Cadmium

Chromium, Total

Cobalt

Fluoride

Lead

Lithium

Mercury

Molybdenum

Selenium

Thallium

Radium 226 + 228

Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

			Site:	Otte	rialiPo	ower Co./ Big Stor
Sampling Personnel:			Facility ID:	-		
Dusky Farasyn			Date:	29.Mar17		
			Unique Sta		-	
			Sample ID:			Well H6
Well Condition						
Well Locked? (S) No	_	T.	Protective I)	No
Well Labeled? (GS No			State ID Ta	W		₩
Casing Straight?	-		Grout Seal	Intact? Yes		(M)
Repairs Necessary: Well Information						
Well Depth: 17.92			Well Casin	g Elevation:	N	A
Constructed Depth: 17.70	_			er Elevation:		
Casing Diameter: 2"	7		Previous S	tatic:	_1	-
Water Level Before Purge: 12.3	35		Water Leve	el After Sample	: Be	low Pund
Well Volume: 0.91	Gallons		Measureme	ent Method:	Eléc.	
Compline Mathed	DI-TI-S COM		IAIL-I-			
Dedicated Equipment: (CS) No Well Purged Dry? (CS) No	Bladder SSD	Disp. Bailer	Pumping R Time Pump	Began: 15	5	
Dedicated Equipment: (76) No Well Purged Dry? (76) No Time Purged Dry? (75) 9		Disp. Bailer	Pumping R Time Pump Time of Sal	ate: 0,2 Began: <i> 5</i> mpling: <i> 5</i>	5	am / 🛍
Dedicated Equipment: (78) No Well Purged Dry? (78) No Time Purged Dry? (78)		Disp. Bailer	Pumping R Time Pump Time of Sa Sample EH	ate: 0,2 Began: <i> 5</i> mpling: <i> 5</i> : 6 2.5	5	am / pi am / pi
Dedicated Equipment: Ves No Well Purged Dry? Ves No Duplicate Sample? Yes		Disp. Bailer Color: A	Pumping R Time Pump Time of Sa Sample EH	ate: 0,2 Began: <i> 5</i> mpling: <i> 5</i>	5	am / po am / po
Dedicated Equipment: Ves No Well Purged Dry? Ves No Time Purged Dry? Yes Sample Appearance: General: Specific		Color: A	Pumping R Time Pump Time of Sa Sample EH	ate: 0,2 Began: <i> 5</i> mpling: <i> 5</i> : 6 2.5	5	am / para am / p
Dedicated Equipment: Ves No Well Purged Dry? Ves No Duplicate Sample? Yes Sample Appearance: General: Specific	ID: — Class	Color: A	Pumping R Time Pump Time of Sa Sample EH One Phase Turbidity NTU	ate: 0,2 Began: 15 mpling: 15 : 42.5 se: Nane Gallons	5 15 23 SEQ	am / pi am / pi Odor: Nane
Dedicated Equipment: No Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: General: Time pH Specific Cond.	ID: ————————————————————————————————————	Color: A	Pumping R Time Pump Time of Sal Sample EH	ate: 0,2 Began: 15 mpling: 15 : 42.5 se: Nane Gallons	5 15 23 SEQ #	am / param / p
Dedicated Equipment: No Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: General: Time pH Specific Cond.	ID: ————————————————————————————————————	Color: A	Pumping R Time Pump Time of Sa Sample EH One Phase Turbidity NTU	ate: 0,2 Began: 15 mpling: 15 : 42.5 se: Nane Gallons	SEQ #	am / param / p
Dedicated Equipment: No Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: General: Time pH Specific Cond.	ID: ————————————————————————————————————	Color: A	Pumping R Time Pump Time of Sa Sample EH One Phase Turbidity NTU	ate: 0,2 Began: 15 mpling: 15 : 42.5 se: Nane Gallons	SEQ # 1 2	am / para am / p
Dedicated Equipment: No Well Purged Dry?	ID: — Class	Color: A	Pumping R Time Pump Time of Sa Sample EH One Phase Turbidity NTU	ate: 0,2 Began: 15 mpling: 15 : 42.5 se: Nane Gallons	SEQ # 1	am / para am / p
Dedicated Equipment: Solution No Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: General: Specific Cond. 1519 7.41 1098	ID: ————————————————————————————————————	Color: A	Pumping R Time Pump Time of Sa Sample EH One Phase Turbidity NTU	ate: 0,2 Began: 15 mpling: 15 : 625 se: Wave Gallons Removed	SEQ # 1 2 3 4	am / para am / p

Exceptions to Protocol:

S cer

Minnesota Valley Testing Laboratories, Inc. New Ulm, MN 56073 507 354 8517

New Ulm, MN 56073

Groundwater Assessmen	nt `		Site:	Otte	r Tail Po	ower Co.	/ Big Ston
Sampling Personnel:			Facility ID:	_			
Dusty Farasyn			Date:	29Mac17			
			Unique Sta	tion ID: -	-		
			Sample ID:			Well H8	
Well Condition				/=-			
	No		Protective			No	
	No		State ID Ta			No	
	No		Grout Seal	Intact? Yes		No	-
Repairs Necessary: Well Information				_	_	_	
Well Depth: 22.33	3		Well Casin	g Elevation:		1081.	23
Constructed Depth: 22.0	05		Static Water	er Elevation:	1074	1.46	
Casing Diameter: 2'			Previous S	tatic: jo	72.9	q	
	6.77		Water Leve	el After Sample		80	
			Management		Han	JAKI	Steel Ta
Well Volume: 2,54 Sampling Information Weather Conditions: Temp: Sampling Method: Grundfos		at the second	E & P	Grab Other	Most	ly a	andly
Well Volume: 2,54 Sampling Information Weather Conditions: Temp: Sampling Method: Grundfos Dedicated Equipment: (Cost 1) Well Purged Dry? Yes (Time Purged Dry?	56 Bradderssi No No	at the second	EEP	Sky: Grab Other ate: 0.2 Began: 150 mpling: 160	Mostli 5		am / ©
Well Volume: 2,54 Sampling Information Weather Conditions: Temp: Sampling Method: Grundfos Dedicated Equipment: (Cost 1) Well Purged Dry? Yes (Time Purged Dry?	56 BradderSS	at the second	Whate Pumping R Time Pump	Sky: Grab Other ate: 0.2 Began: 150 mpling: 160	Mostli 5	ly a	am / ©
Well Volume: 2,54 Sampling Information Weather Conditions: Temp: Sampling Method: Grundfos Dedicated Equipment: (Cost 1) Well Purged Dry? Yes (Time Purged Dry?	SG BradderSSA No No No	at the second	Whate Pumping R Time Pump Time of Sa Sample EH	Sky: Grab Other ate: 0.2 Began: 154 mpling: 166	Mostle S 43	gpm	am / ©
Well Volume: 2,54 Sampling Information Weather Conditions: Temp: Sampling Method: Grundfos Dedicated Equipment: (Cost 1) Well Purged Dry? Yes (Time Purged Dry? Duplicate Sample? Yes (1)	56 Beauther SSI NO NO NO NO NO LD:	P Disp. Bailer	Whate Pumping R Time Pump Time of Sa Sample EH	Sky: Grab Other ate: 0.2 Began: 154 mpling: 166	Mostle S 43	gpm Odor:	am / @
Well Volume: 2,54 Sampling Information Weather Conditions: Temp: Sampling Method: Grundfos Dedicated Equipment: (Ps. 1) Well Purged Dry? Yes (Time Purged Dry? Duplicate Sample? Yes (Sample Appearance: General	SG NO NO NO TO Temp C C Temp C	Color: No.	Whate Pumping R Time Pump Time of Sa Sample EH	Sky: Grab Other ate: 0.2 Began: 150 mpling: 160 i: 41.0 se: None	Mostle 5 43 96	gpm Odor:	am / o
Well Volume: 2,54 Sampling Information Weather Conditions: Temp: Sampling Method: Grundfos Dedicated Equipment: Self- Well Purged Dry? Yes Of Time Purged Dry? Duplicate Sample? Yes Of Sample Appearance: General Time pH Specific Cond. 1544 7.06 J42	No Bradder SSA	Color: No. mg/L.	Whate Pumping R Time Pump Time of Sa Sample EH Turbidity NTU	Sky: Grab Other ate: 0.2 Began: 150 mpling: 160 i: 41.0 se: Nore Gallons Removed	Most	gpm Odor:	am / o
Well Volume: 2,54 Sampling Information Weather Conditions: Temp: Sampling Method: Grundfos Dedicated Equipment: Well Purged Dry? Yes Time Purged Dry? Duplicate Sample? Yes Sample Appearance: General Time pH Specific Cond. 1544 7.06 J47	56 No No No No To No To No	Color: No. mg/L.	Whate Pumping R Time Pump Time of Sa Sample EH Turbidity NTU	Sky: Grab Other ate: 0.2 Began: 150 mpling: 160 i: 41.0 se: Nove Gallons Removed 2.75	Mostle 5 43 50 6 1	gpm Odor:	am / o
Well Volume: 2,54 Sampling Information Weather Conditions: Temp: Sampling Method: Grundfos Dedicated Equipment: Well Purged Dry? Yes Time Purged Dry? Duplicate Sample? Yes Sample Appearance: General Time pH Specific Cond. 1544 7.06 142	56 No No No No To No To No	Color: No. mg/L.	Whate Pumping R Time Pump Time of Sa Sample EH Turbidity NTU	Sky: Grab Other: ate: 0.2 Began: 150 mpling: 160 i: 41.0 se: None Gallons Removed 2.75 5.50	Mostle : 5 : 5 : 5 : 5 : 5 : 5 : 5 : 5 : 5 :	gpm Odor:	am / of
Well Volume: 2,54 Sampling Information Weather Conditions: Temp: Sampling Method: Grundfos Dedicated Equipment: Well Purged Dry? Yes Time Purged Dry? Duplicate Sample? Yes Sample Appearance: General Time pH Specific Cond. 1544 7.06 142	56 No No No No To No To No	Color: No. mg/L.	Whate Pumping R Time Pump Time of Sa Sample EH Turbidity NTU	Sky: Grab Other: ate: 0.2 Began: 150 mpling: 160 i: 41.0 se: None Gallons Removed 2.75 5.50	Mostle : 5 13 2 3	gpm Odor:	am / of

Exceptions to Protocol:

Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

Sampling Personnel:					ower Co./ Big Sto
0 . 17		Facility ID:	-		
		Date:	29Many7		
		Unique Star	tion ID:		
		Sample ID:			Well H9
Well Condition		76.20 P			2,50
Well Locked? (Yes No		Protective F			No
Well Labeled? (es) No		State ID Ta	×	_	@
Casing Straight? (es) No		Grout Seal	Intact? res		No
Repairs Necessary:			_		
Well Information			-		
Well Depth: 30.7		Well Casing			1086.21
Constructed Depth: 30.20		Static Water	er Elevation:	1077	7,58
Casing Diameter: 2"		Previous St	tatic: 107	5.39	
Water Level Before Purge: 8,63		Water Leve	After Sample	: 11.	30
Well Volume: 3.60 Gallons		Measureme	ent Method:	Elec.	WLP Steel T
Sampling Information Weather Conditions: Temp: 56	Wind: 5E		Sky:	Mos	thy Cloudy
Sampling Method: Grundfos Bladder SS	Disp. Bailer	Whale	Grab Other:	-	
Dedicated Equipment: (No		Pumping Ra			gpm
Well Purged Dry? Yes 🚳		Time Pump		_	am / @
Time Purged Dry?		Time of Sar		6	am / (6
Duplicate Sample? Yes 😿 ID: 🛫		Sample EH	: 142.3		
Sample Appearance: General: 51- Cloud,	Color: N	ove Phas	ie: Nane		Odor: Nove
Time pH Specific Temp oC	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
1636 657 309 8.85	NA	NA	3.75	1	
1651 6.55 3109 9.04		1-1	7.50	2	
1706 6.56 3123 9.08	3		11.25	3	
			15-33-5	4	
				5	
		4	The second second	1-	

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Exceptions to Protocol:

Minnesota Valley Testing Laboratories, Inc. New Ulm, MN 56073 507 354 8517

Groundwater A	ssessment			Site:	Otte	Tail Po	ower Co./ Big Stone
Sampling Personne	el:			Facility ID:			
	en wolf	21		Date: 2	9 marl	7	
		_		Unique Sta	tion ID:		
				Sample ID		٧	Vell H2OX
Well Condition Well Locked? Well Labeled? Casing Straight?	(es) No (es) No			Protective State ID Ta Grout Seal	ag? Yes		No No
Repairs Necessary				77-7			
Well Information							
Well Depth:	3283			Well Casin	g Elevation:		1103.91
Constructed Depth:	32.20			Static Water	er Elevation:	1096	-36
Casing Diameter:	2"			Previous S	tatic: 1094	60	
Water Level Before	Purge: 7.5	5		Water Leve	el After Sample		low pump
Well Volume:	4.12	Gallons			ent Method:	-	WILL Steel Tape
Sampling Inform Weather Conditions		54	Wind: S	05	Sky:	clo	rudy
Sampling Method:	Grundfos	Bladder SS/	Disp. Bailer	Whale	Grab Other		
Dedicated Equipme	-			Pumping R			gpm
Well Purged Dry?	(es) No	_		Time Pump		06	am / m
Time Purged Dry?	1623	2		Time of Sa		28	am / om
Duplicate Sample?	Yes 😡	_ID;		Sample EH			
Sample Appearance	e: General:	clear	Color: N	O) Pha	se: VOIV		Odor:wore
17 Time pH	Specific Cond.	Temp ^O C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ #	Comments:
1623 7.0	1 4600	8.08	MA	NH	4.25	1	
						2	
1628 7.0	7 4612	8.10	1	1	-	3	Recharge
1-27			7			4	
						5	
Stabilized? Yes	(No)		Amount W	ater Removed	4.25	Į,	Gallons
Comments:			- intourie vv		1/2		Juliono

Minnesota Valley Testing Laboratories, Inc. New Ulm, MN 56073 507 354 8517

	Water Maa	essment			Site:	Otte	r Tail Po	wer Co./ Big Sto
Sampling F	Personnel:	6.71			Facility ID:			
	Ben	Volf			Date: 2	y Man	17	
			_		Unique Sta	tion ID:		
					Sample ID:		W	ell H3OX
Well Con Well Locke Well Label Casing Str	ed?	No No No			Protective State ID Ta Grout Seal	g? Yes		6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6
Repairs Ne								
Well Info		100						
Well Depth	n:	22.68			Well Casin	g Elevation:		1095.19
Constructe	d Depth:	22.55	-		Static Water	er Elevation:		2.65
Casing Dia	meter:	2"			Previous S	tatic: 1080	1.79	
Water Leve	el Before Pu	rge: 5.14	1		Water Leve	el After Sample	: Be	low pump
Well Volum	ne:	2.86	Gallons		Measureme	ent Method:	Élèc.	WLD Steel T
AACII ACIUIT								
	Information	on	UN		0.0		- /	Maria .
	Information	on Temp:	49	Wind: S	:010	Sky:	clo	udy
Sampling Weather Co Sampling N	Informations: Informations: Informations:	Temp:	H9 Bladder S9/T	Wind: S	Whale	Grab Other		dy
Sampling Weather Co Sampling Medicated I	Informations: Jethod: Equipment:	Temp: Grundfos Yes No	1		Whale Pumping R	Grab Other ate: , 고(5	gpm
Sampling Weather Co Sampling M Dedicated I Well Purge	Informations: Method: Equipment: ed Dry?	Temp: Grundfos Yes No Yes No	1		Whale Pumping R Time Pump	Grab Other ate: , Z (5.44	gpm am /(
Sampling Weather Co Sampling N Dedicated I Well Purge Time Purge	Informations: Method: Equipment: d Dry?	Temp: Grundfos (Yes) No (Yes) No	Bladder SS/T		Whale Pumping R Time Pump	Grab Other ate: , 2,6 Began: 16 mpling: 17	5	gpm am /(r
Sampling Weather Co Sampling M Dedicated I Well Purge Time Purge Duplicate S	Informations: Jethod: Equipment: d Dry? ed Dry? Sample?	Temp: Grundfos (Yes) No (Yes) No (Yes) No (Yes) No (Yes) No	Bladder SS/T	Disp. Baller	Whale Pumping R Time Pump Time of Sa Sample EH	Grab Other ate: , 2,6 Began: 16 mpling: 17	5.44	gpm am /(p
Sampling Weather Co Sampling M Dedicated I Well Purge Time Purge Duplicate S	Informations: Jethod: Equipment: d Dry? ed Dry? Sample?	Temp: Grundfos (Yes) No (Yes) No (Yes) No (Yes) No (Yes) No	Bladder SS/T	Disp. Baller	Whale Pumping R Time Pump Time of Sa Sample EH	Grab Other ate: , 2,6 Began: 16 mpling: 17	5.44	gpm am /(p
Sampling Weather Co Sampling M Dedicated I Well Purge Time Purge Duplicate S Sample Ap	y Information on ditions: Method: Equipment: ed Dry? ed Dry? Sample? pearance:	Temp: Grundfos (Yes) No (Yes) No (Yes) No (Yes) O (Yes	Bladder SS/T ID: Clear Temp OC	Color: M	Whale Pumping R Time Pump Time of Sa Sample EH	Grab Other ate: , 2 (a) Began: 1/2 (b) Began: 1/2 (c) Market 137. 9 (c) Gallons Removed	5.44	gpm am /(r am (r
Sampling Weather Co Sampling M Dedicated I Well Purge Time Purge Duplicate S Sample Ap	y Information on ditions: Method: Equipment: ed Dry? ed Dry? Sample? pearance:	Temp: Grundfos (Yes) No (Yes) No (Yes) No (Yes) O (Yes	Bladder SS/T ID: Clear Temp OC	Color: M	Whale Pumping R Time Pump Time of Sa Sample EH	Grab Other ate: , Z (constant) Began: // mpling: 17 I: /37.9 Se: //@ne Gallons	5 544 761	gpm am /(r am /(r Odor: MO)
Sampling Weather Co Sampling M Dedicated I Well Purge Time Purge Duplicate S Sample Ap	y Information on ditions: Method: Equipment: ed Dry? ed Dry? Sample? pearance:	Temp: Grundfos (Yes) No (Yes) No (Yes) No (Yes) O (Yes	Bladder SS/T	Color: M	Whale Pumping R Time Pump Time of Sa Sample EH Phase Turbidity NTU	Grab Other ate: , 2 (a) Began: 1/2 (b) Began: 1/2 (c) Market 137. 9 (c) Gallons Removed	SEQ #	gpm am /(p am /(p
Sampling Weather Co Sampling M Dedicated I Well Purge Time Purge Duplicate S Sample Ap	y Information on ditions: Method: Equipment: ed Dry? ed Dry? Sample? pearance:	Temp: Grundfos (Yes) No (Yes) No (Yes) No (Yes) O (Yes	Bladder SS/T ID: Clear Temp OC	Color: M	Whale Pumping R Time Pump Time of Sa Sample EH Phase Turbidity NTU	Grab Other ate: , 2 (a) Began: 1/2 (b) Began: 1/2 (c) Market 137. 9 (c) Gallons Removed	5 544 761	gpm am /(r am (r Odor: MO)
Sampling Weather Co Sampling M Dedicated I Well Purge Time Purge Duplicate S Sample Ap 12 Time 1656	Information on ditions: Method: Equipment: Equipment: Ed Dry? Ed Dry? Ed Dry? Ed Dry? Dearance: pH	Temp: Grundfos (Yes) No (Yes) No (Yes) No (Yes) Yes (Yes) Office (General: Specific Cond. (4586)	Bladder SS/T ID: Clear Temp oc 8.06	Color: M	Whale Pumping R Time Pump Time of Sa Sample EH Phase Turbidity NTU	Grab Other ate: , 28 Began: 16 mpling: 17 Grab Other ate: , 28 Grap Grap Grap Grap Grap Grap Grap Grap	SEQ # 1 2 3	gpm am /(r am (r Odor: MO)
Sampling Weather Co Sampling M Dedicated I Well Purge Time Purge Duplicate S Sample Ap 12 Time 1656	Information on ditions: Method: Equipment: Equipment: Ed Dry? Ed Dry? Ed Dry? Ed Dry? Dearance: pH	Temp: Grundfos (Yes) No (Yes) No (Yes) No (Yes) Yes (Yes) Office (General: Specific Cond. (4586)	Bladder SS/T ID: Clear Temp oc 8.06	Color: M	Whale Pumping R Time Pump Time of Sa Sample EH Phase Turbidity NTU	Grab Other ate: , 28 Began: 16 mpling: 17 Grab Other ate: , 28 Grap Grap Grap Grap Grap Grap Grap Grap	SEQ #	gpm am /(r am (r Odor: MO)

Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

Groundwater Asses	ssment			Site:	Otte	r Tail Po	ower Co./ Big Stone
Sampling Personnel:				Facility ID:			
Ber 1	MOH	_		Date: 30	mar 17	,	
				Unique Sta	ation ID:		
				Sample ID		V	/ell H4OX
Well Condition Well Locked? Well Labeled?	(es) No	3		Protective State ID Ta	ag? Yes		No.
Casing Straight?	(es) No			Grout Seal	Intact? (Yes		No
Repairs Necessary: Well Information						_	
Day Exert Street, Stre	27,48			Well Casin	g Elevation:		1108.22
Constructed Depth:	27.20			Static Water	er Elevation:	1090	5.80
Casing Diameter:	2"			Previous S	tatic: 1089	.71	
Water Level Before Purg	e: 17.4	1		Water Leve	el After Sample	- 11	.90
		TXXXX		41 - 77		1	WILL DIST
Well Volume: 1.6	4	Gallons		Measurem	ent Method:	Elec.	WHY Steel Tap
Well Volume: 1.6 Sampling Information Weather Conditions:	n Temp:	12	Wind:	LLU	Sky:	clo	
Well Volume: 1.6 Sampling Information Weather Conditions: Sampling Method:	n Temp:	Gallons Bladder SSP	Wind: Disp. Baller	LLU Whale	Sky: Grab Other	clos	dy
Well Volume: 1.6 Sampling Information Weather Conditions: Sampling Method: Dedicated Equipment: (Temp: Grundfos Yes No	12		LLU Whale Pumping R	Sky: Grab Other:	clod	gp m
Well Volume: 1.6 Sampling Information Weather Conditions: Sampling Method: Dedicated Equipment: (Well Purged Dry?	Temp: Grundfos Yes No	12		Whale Pumping R Time Pump	Sky: Grab Other: Late: 2.5 Degan: 8	clos	gpm @p/pm
Well Volume: 1.6 Sampling Information Weather Conditions: Sampling Method: Dedicated Equipment: (Well Purged Dry? Time Purged Dry?	Temp: Grundfos Yes No Ves No	Bladder SSP		Whale Pumping R Time Pump	Sky: Grab Other Rate: 2.5 Degan: § 1	clos	gp m
Well Volume: 1.6 Sampling Information Weather Conditions: Sampling Method: Dedicated Equipment: (Well Purged Dry? Time Purged Dry? Duplicate Sample?	Temp: Grundfos Yes No Yes No Yes No	Bladder SSP	Disp. Baller	Whate Pumping R Time Pump Time of Sa Sample El-	Sky: Grab Other Late: , 25 p Began: 87 mpling: 87	clos	gpm @p/pm
Well Volume: 1.6 Sampling Information Weather Conditions: Sampling Method: Dedicated Equipment: (Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance:	Temp: Grundfos Yes No Yes No Yes No	Bladder SSA	Disp. Baller	Whate Pumping R Time Pump Time of Sa Sample El-	Sky: Grab Other Late: , 2.5 Degan: 81 Impling: 83 H: 161.5	clos	gpm Gm/pm Gm/pm Odor: NO 7
Well Volume: 1.6 Sampling Information Weather Conditions: Sampling Method: Dedicated Equipment: (Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance:	Temp: Grundfos Yes No (es) No (es) No General: Specific	ID: Temp	Disp. Bailer / Color: //	Whate Pumping R Time Pump Time of Sa Sample EH	Sky: Grab Other Late: 2.5 Began: 8 mpling: 8 H: 161.5 se: None	Close 24 SEQ	gpm @m/ pm @m/ pm @m/ pm
Well Volume: 1.6 Sampling Information Weather Conditions: Sampling Method: Dedicated Equipment: (Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance:	Temp: Grundfos Yes No 819 Yes No General: \$ Specific Cond.	ID: Temp	Disp. Bailer / Color: _// D. O. mg/L	Whale Pumping R Time Pump Time of Sa Sample El-	Sky: Grab Others late: 2.5 p Began: 83 mpling: 83 d: 161.5 se: No 36 Gallons Removed	SEQ #	gpm (am)/ pm (am)/ pm Odor: NO)~
Well Volume: 1.6 Sampling Information Weather Conditions: Sampling Method: Dedicated Equipment: (Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance:	Temp: Grundfos Yes No 819 Yes No General: \$ Specific Cond.	ID: Temp	Disp. Bailer / Color: _// D. O. mg/L	Whale Pumping R Time Pump Time of Sa Sample El-	Sky: Grab Others late: 2.5 p Began: 83 mpling: 83 d: 161.5 se: No 36 Gallons Removed	Close 24 SEQ#	gpm (am)/ pm (am)/ pm Odor: NO)~
Sampling Information Weather Conditions: Sampling Method: Dedicated Equipment: (Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: 7 Time pH 819 6.30	Temp: Grundfos Yes No (es) No (es) No General: S Specific Cond.	ID: 1. yhtly oldy Temp °C 8.32	Disp. Bailer / Color: _// D. O. mg/L	Whale Pumping R Time Pump Time of Sa Sample El-	Sky: Grab Others late: 2.5 p Began: 83 mpling: 83 d: 161.5 se: No 36 Gallons Removed	SEQ #	gpm @m/pm @m/pm Odor: NO1~



Inter-Mountain Labs

Sheridan, WY and Gillette, WY

CECHAIN OF CUSTODY RECORD -	Page	of	4
All shaded fields must be completed.	#WFF	3	

	Name			Denlact III	This is a legal document; a							mate at		_	Telephone #	
	Name	reset .	and the second	Project Iden			Sampler (S	ignatu	relAttes	tation o	or Autho	enticity)	9.77.0		Telephone #	
	L	Hedişey ~	The second second second	Contact Nar	ower Big Stone	Great Control	20-11	- 30 Ste	ANA	VOF	e / p	ARAM	ETED	2	74-28-51	£12
7	8 North Front St		V - 645.00	Tim Port		3400% B t	The second section	2022	ANA	LISE	3/P	ARAN	E I ER	S Francis		
	Ulm, Mn 56073	The Section		Email	tportner@mvtl.com	erikanierika Septimber		228								
**	e Address		2 3000 20 2 143	Phone	507-276-8089			7	1							
Sam	10:				Purchase Order#	Quote#		226			となり		S GE			
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3		Bomar 17	824	H4OX	A 11090	WT	2	x								
4		29 marij	1524	H-6	- A11085	WT	2	x								
5			1606	H-8	- A11086	WT	2	x						19		
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Inter-Mountain Labs

Sheridan, WY and Gillette, WY

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	SPS Solid SD RUSH - 5 Working Days and Carried Filter FT D URGENT - < 2 Working Days					Chlorina			e 3,	Y	/ N						
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FINAL REPORT COMPLETION DATE: 23 Jun 17 A.S.

Date Reported: 20 Jun 2017

PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496 FERGUS FALLS MN 56538-0496 Work Order #: 31-0190 Account #: 006106

PO #: 48680

Project Name: BIG STONE 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



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT

Sample Description: WELL H20X

Report Date: 20 Jun 2017 Lab Number: 17-A18617 Work Order #: 31-0190 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 3 May 2017 10:56
Sampled By: MVTL FIELD PERSONNEL
Date Received: 3 May 2017 18:47

PO #: 48680

Temp at Receipt: 1.0C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed		Analyst
MS Water Digestions					5 May 1	7	JMS
Water Digestions					5 May 1	7	JMS
Radium 226	SEE ATTAC	HED			20 Jun 1	7 7:22	ABL
Radium 228	SEE ATTAC			EPA M9320	20 Jun 1	7 7:22	ABL
pH, Field	6.93	units	1.00	I-1586-85	3 May 1	7 10:56	MS
pH PH	* 7.0	units	1.0	SM 4500 H+ B-2000	4 May 1	7 15:30	DK
Sulfate	2450 ~	mg/L	5.0	ASTM D516-07	11 May 1		KCJ
Chloride	3.3	mg/L	3.0	SM 4500 C1 E		7 11:53	AKF
Mercury	< 0.005	ug/L	0.005	EPA 245.7	18 May 1		RMB
Solids, Total Dissolved	3850	mg/L	10	SM 2540 C-97	5 May 1		RC
	504.0	mg/L	0.500	SW6010C	9 May 1		RC
Calcium	~See Narr		0.000	2	W. N. 18		
Lithium	0.453	mg/L	0.005	SW6010C	9 May 1	7 10:11	RC
	0.008	mg/L	0.005	SW6010C	9 May 1		RC
Barium Chromium	< 0.01	mg/L	0.01	SW6010C	9 May 1		RC
	< 0.01 ^	mg/L	0.005	SW6010C	9 May 1		RC
Cobalt	0.246	mg/L	0.100	SW6010C	9 May 1		RC
Boron	< 2.5 @	ug/L	0.5	SW6020A	9 May 1		RMV
Antimony	< 2.5 @	ug/L	0.5	SW6020A	9 May 1		RMV
Arsenic	< 0.25 €	ug/L	0.05	SW6020A	17 May 1	7 12:06	RMV
Beryllium	< 0.5 @	ug/L	0.1	SW6020A	9 May 1		RMV
Cadmium	< 2.5 @	ug/L	0.5	SW6020A	9 May 1		RMV
Lead	< 2.5 @		0.5	SW6020A	17 May 1		RMV
Molybdenum		ug/L	0.50	SW6020A	17 May 1		RMV
Selenium	21.4 6^	ug/L	0.1	SW6020A	17 May 1		RMV
Thallium	< 0.5	ug/L	4.7	5400208	Li may 1		
2.00	@See Narr		0.020	EPA 300.0	5 May 1	7 10:06	RC
Fluoride	0.120	mg/L	0.020	EFA 300.0	J May 1	20.00	

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

- ~ Sample diluted due to result above calibration of linear range.
- The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT

Sample Description: WELL H30X

Report Date: 20 Jun 2017 Lab Number: 17-A18618 Work Order #: 31-0190 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 3 May 2017 11:39
Sampled By: MVTL FIELD PERSONNEL
Date Received: 3 May 2017 18:47

PO #: 48680

Temp at Receipt: 1.0C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					5 May 17	JMS
Water Digestions					5 May 17	JMS
Radium 226	SEE ATTAC	HED			20 Jun 17 7:22	ABL
Radium 228	SEE ATTAC			EPA M9320	20 Jun 17 7:22	ABL
pH, Field	6.91	units	1.00	I-1586-85	3 May 17 11:39	MS
OH COLUMN	* 7.0	units	1.0	SM 4500 H+ B-2000	4 May 17 15:30	DK
Sulfate	1910 ~	mg/L	5.0	ASTM D516-07	11 May 17 8:01	KCJ
Chloride	80.3	mg/L	3.0	SM 4500 C1 E	5 May 17 11:53	AKE
Mercury	< 0.005	ug/L	0.005	EPA 245.7	18 May 17 14:34	RMB
Solids, Total Dissolved	3550	mg/L	10	SM 2540 C-97	5 May 17 13:54	RC
Calcium	372.0	mg/L	0,500	SW6010C	9 May 17 10:11	RC
Calcium	See Narra		24.54.14			
Lithium	0.134	mg/L	0.005	SW6010C	9 May 17 10:11	RC
Barium	0.014	mg/L	0.005	SW6010C	9 May 17 10:11	RC
Chromium	< 0.01	mg/L	0.01	SW6010C	9 May 17 10:11	RC
Cobalt	0.010 ^	mg/L	0.005	SW6010C	9 May 17 10:11	RC
Boron	7.460 ~	mg/L	0.100	SW6010C	9 May 17 10:11	RC
Antimony	< 2.5 @	ug/L	0.5	SW6020A	9 May 17 19:04	RMV
Arsenic	< 2,5 @	ug/L	0.5	SW6020A	9 May 17 19:04	RMV
Beryllium	< 0,25 €	ug/L	0.05	SW6020A	17 May 17 12:06	RMV
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	9 May 17 19:04	RMV
Lead	< 2.5 @	ug/L	0.5	SW6020A	9 May 17 19:04	RMV
	34.0 @	ug/L	0.50	SW6020A	17 May 17 12:06	RMV
Molybdenum Gelenium	< 5 @^	ug/L	0.5	SW6020A	17 May 17 12:06	RMV
Phallium	< 0.5	ug/L	0.1	SW6020A	17 May 17 12:06	RMV
Hattrum	OSee Narr			Z404.5Z-535	100	
Fluoride	0.440	mg/L	0.020	EPA 300.0	5 May 17 10:06	RC

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

- Sample diluted due to result above calibration of linear range.
- ^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT

Sample Description: WELL H40X

Report Date: 20 Jun 2017 Lab Number: 17-A18619 Work Order #: 31-0190 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 3 May 2017 12:14
Sampled By: MVTL FIELD PERSONNEL
Date Received: 3 May 2017 18:47

PO #: 48680

Temp at Receipt: 1.0C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed		Analyst
MS Water Digestions					5 May 17		JMS
Water Digestions					5 May 17		JMS
Radium 226	SEE ATTAC	HED				7:22	ABL
Radium 228	SEE ATTAC			EPA M9320		7:22	ABL
pH, Field	6.98	units	1.00	1-1586-85	3 May 17 1	2:14	MS
OH	* 7.0	units	1.0	SM 4500 H+ B-2000	4 May 17 1		DK
Sulfate	1190 ~	mg/L	5.0	ASTM D516-07	11 May 17		KCJ
Chloride	47.9	mg/L	3.0	SM 4500 Cl E	5 May 17 1	1:53	AKF
Mercury	< 0.005	ug/L	0.005	EPA 245.7	18 May 17 1	1:34	RMB
Solids, Total Dissolved	2160	mg/L	10	SM 2540 C-97	5 May 17 1	3:54	RC
Calcium	316.0	mg/L	0.500	SW6010C	9 May 17 1	11:0	RC
Carcram	See Narra						
Lithium	0.105	mg/L	0.005	SW6010C	9 May 17 1	1:11	RC
Barium	0.011	mg/L	0.005	SW6010C	9 May 17 1	1:11	RC
Chromium	< 0.01	mg/L	0.01	SW6010C	9 May 17 1		RC
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	9 May 17 1	1:11	RC
Boron	0.428	mq/L	0.100	SW6010C	9 May 17 1		RC
Antimony	< 2.5 @	ug/L	0.5	SW6020A	9 May 17 1		RMV
Arsenic	< 2.5 @	ug/L	0.5	SW6020A	9 May 17 1	2:04	RMV
Beryllium	< 0.25 @	ug/L	0.05	SW6020A	17 May 17 1		RMV
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	9 May 17 1		RMV
Lead	< 2.5 @	ug/L	0.5	SW6020A	9 May 17 1:	9:04	RMV
folybdenum	4.12 €	ug/L	0.50	SW6020A	17 May 17 1:	2:06	RMV
Selenium	< 5 @^	ug/L	0.5	SW6020A	17 May 17 1:		RMV
Fhallium	< 0.5	ug/L	0.1	SW6020A	17 May 17 1	2:06	RMV
1 3 4 to 4 to 4 to 4 to 1 to 1	@See Narr		TV CL				
Fluoride	0.540	mg/L	0.020	EPA 300.0	5 May 17 1	1:06	RC

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

- ~ Sample diluted due to result above calibration of linear range.
- ^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

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
Q = Due to concentration of other analytes
Q = Due to sample quantity
Q = Due to internal standard response
Q = Due to sample quantity
Q = Due to internal standard response



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT

Sample Description: WELL H6

Report Date: 20 Jun 2017 Lab Number: 17-A18620 Work Order #: 31-0190 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 3 May 2017 12:53
Sampled By: MVTL FIELD PERSONNEL
Date Received: 3 May 2017 18:47

PO #: 48680

Temp at Receipt: 1.00

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					5 May 17	JMS
Water Digestions					5 May 17	JMS
Radium 226	SEE ATTAC	HED			20 Jun 17 7:22	ABL
Radium 228	SEE ATTAC	and the same of th		EPA M9320	20 Jun 17 7:23	ABL
pH, Field	7.47	units	1.00	1-1586-85	3 May 17 12:53	MS
pH PH	* 7.5	units	1.0	SM 4500 H+ B-2000	4 May 17 17:01	DK
Sulfate	71.1 0	mg/L	5.0	ASTM D516-07	11 May 17 8:19	KCJ
Chloride	< 3	mg/L	3	SM 4500 C1 E	5 May 17 12:11	AKE
Mercury	< 0.005	ug/L	0.005	EPA 245.7	18 May 17 15:10	RMB
Solids, Total Dissolved	530	mg/L	10	SM 2540 C-97	5 May 17 13:54	RC
Calcium	49.90	mg/L	0.500	SW6010C	9 May 17 10:44	RC
Lithium	0.028	mg/L	0.005	SW6010C	9 May 17 10:44	RC
Barium	0.072	mg/L	0.005	SW6010C	9 May 17 10:44	RC
Chromium	< 0.01	mg/L	0.01	SW6010C	9 May 17 10:44	RC
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	9 May 17 10:44	RC
Boron	4.540	mg/L	0.100	SW6010C	9 May 17 10:44	RC
T77777V	< 2.5 @	ug/L	0.5	SW6020A	17 May 17 13:16	RMV
Antimony Arsenic	< 2.5 @	ug/L	0.5	SW6020A	17 May 17 13:16	RMV
	< 0.25	ug/L	0.05	SW6020A	17 May 17 13:16	RMV
Beryllium	@See Narr		0.00	2	74-276-50, 120-1	4231
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	17 May 17 13:16	RMV
CO 1439 PATE	< 2.5 @	ug/L	0.5	SW6020A	17 May 17 13:16	RMV
Lead	22.7 6	ug/L	0.50	SW6020A	17 May 17 13:16	RMV
Molybdenum	7.13 0	ug/L	0.50	SW6020A	17 May 17 13:16	RMV
Selenium	< 0.5 @	ug/L	0.1	SW6020A	17 May 17 13:16	RMV
Thallium			0.020	EPA 300.0	5 May 17 16:57	RC
Fluoride	0.510	mg/L	0.020	DEN SUUIU	J 17 14.51	

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

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:

8 = Due to sample matrix
1 = Due to sample quantity
1 = Due to nample quantity
CERTIFICATION: MN LAB # 027-015-125 MI 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

Project Name: BIG STONE PLANT

Sample Description: WELL H8

Report Date: 20 Jun 2017 Lab Number: 17-A18621 Work Order #: 31-0190 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 3 May 2017 13:48
Sampled By: MVTL FIELD PERSONNEL
Date Received: 3 May 2017 18:47

PO #: 48680

Temp at Receipt: 1.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					5 May 17	JMS
Water Digestions					5 May 17	JMS
Radium 226	SEE ATTAC	HED			20 Jun 17 7:23	ABL
Radium 228	SEE ATTAC	HED		EPA M9320	20 Jun 17 7:23	ABL
pH, Field	7.19	units	1,00	1-1586-85	3 May 17 13:48	MS
pH	* 7.2	units	1.0	SM 4500 H+ B-2000	4 May 17 17:01	DK
Sulfate	273 @	mg/L	5.0	ASTM D516-07	11 May 17 8:19	KCJ
Chloride	3.7	mg/L	3.0	SM 4500 C1 E	5 May 17 12:11	AKE
Mercury	< 0.005	ug/L	0.005	EPA 245.7	18 May 17 15:10	RMB
Solids, Total Dissolved	893	mg/L	10	SM 2540 C-97	5 May 17 13:54	RC
Calcium	120.0	mg/L	0.500	SW6010C	9 May 17 10:44	RC
Lithium	0.040	mg/L	0.005	SW6010C	9 May 17 10:44	RC
Barium	0.027	mg/L	0.005	SW6010C	9 May 17 10:44	RC
Chromium	< 0.01	mg/L	0.01	SW6010C	9 May 17 10:44	RC
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	9 May 17 10:44	RC
Boron	3.830	mg/L	0.100	SW6010C	9 May 17 10:44	RC
Antimony	< 2.5 @	ug/L	0.5	SW6020A	17 May 17 13:16	RMV
Arsenic	< 2.5 @	ug/L	0.5	SW6020A	17 May 17 13:16	RMV
Beryllium	< 0.5	ug/L	0.05	SW6020A	17 May 17 13:16	RMV
Beryllium	@See Narr			2023230		
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	17 May 17 13:16	RMV
	< 2.5 @	ug/L	0.5	SW6020A	17 May 17 13:16	RMV
Lead	14.6 @	ug/L	0.50	SW6020A	17 May 17 13:16	RMV
Molybdenum	8.23 6^	ug/L	0.50	SW6020A	17 May 17 13:16	RMV
Selenium	< 0.5 @	ug/L	0.1	SW6020A	17 May 17 13:16	RMV
Thallium Fluoride	0.560	mg/L	0.020	EPA 300.0	5 May 17 16:57	RC

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

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 analyta requiring a dilution as coded below:

8 = Due to sample matrix
1 = Due to sample matrix
1 = Due to sample quantity
CERTIFICATION; MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WM/DW # R-040



1126 North Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2 North German St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2616 East Broadway Ave. ~ Bismarck, ND 58501 ~ 800-279-6885 ~ Fax 701-258-9724 1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT

Sample Description: WELL H9

Report Date: 20 Jun 2017 Lab Number: 17-A18622 Work Order #: 31-0190 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 3 May 2017 14:50
Sampled By: MVTL FIELD PERSONNEL
Date Received: 3 May 2017 18:47

PO #: 48680

Temp at Receipt: 1.0C

	As Receiv	red	Method RL	Method Réference	Date Analyzed	Analyst
MS Water Digestions					5 May 17	JMS
Water Digestions	V 2000000				5 May 17	JMS
Radium 226	SEE ATTAC	HED			20 Jun 17 7:23	ABL
Radium 228	SEE ATTAC	HED		EPA M9320	20 Jun 17 7:23	ABL
pH, Field	6.70	units	1.00	1-1586-85	3 May 17 14:50	MS
рН	* 6.8	units	1.0	SM 4500 H+ B-2000	4 May 17 17:01	DK
Sulfate	1540 ~	mg/L	5.0	ASTM D516-07	11 May 17 8:19	KCJ
Chloride	16.1	mg/L	3.0	SM 4500 C1 E	5 May 17 12:11	AKE
Mercury	< 0.005	ug/L	0.005	EPA 245.7	18 May 17 15:10	RMB
Solids, Total Dissolved	2710	mg/L	10	SM 2540 C-97	5 May 17 13:54	RC
Calcium	602.0 ~	mg/L	0.500	SW6010C	9 May 17 10:44	RC
Lithium	0.132	mg/L	0.005	SW6010C	9 May 17 10:44	RC
Barium	0.016	mg/L	0.005	SW6010C	9 May 17 10:44	RC
Chromium	< 0.01	mg/L	0.01	SW6010C	9 May 17 10:44	RC
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	9 May 17 10:44	RC
Boron	1.070	mg/L	0.100	SW6010C	9 May 17 10:44	RC
Antimony	< 2.5 @	ug/L	0.5	SW6020A	17 May 17 13:16	RMV
Arsenic	< 2.5 @	ug/L	0.5	SW6020A	17 May 17 13:16	RMV
Beryllium	< 0.25	ug/L	0.05	SW6020A	17 May 17 13:16	RMV
	@See Narr	ative				
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	17 May 17 13:16	RMV
Lead	< 2.5 €	ug/L	0.5	SW6020A	17 May 17 13:16	RMV
folybdenum	< 2.5 @	ug/L	0.5	SW6020A	17 May 17 13:16	RMV
Selenium	< 5 @^	ug/L	0.5	SW6020A	17 May 17 13:16	RMV
Challium	< 0.5 @	ug/L	0.1	SW6020A	17 May 17 13:16	RMV
Fluoride	0,310	mg/L	0.020	EPA 300.0	5 May 17 16:57	RC

^{*} Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

- ~ Sample diluted due to result above calibration of linear range.
- ^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

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 concentration of other analytes
Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 W1 LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040



1126 North Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2 North German St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2616 East Broadway Ave. ~ Bismarck, ND 58501 ~ 800-279-6885 ~ Fax 701-258-9724 1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885 www.mvtl.com



Page: 15 of 15

Date Reported: 20 Jun 2017

Work Order #: 201731-0190 Account Number: 006106

PO #: 48680

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

Project Name: BIG STONE PLANT

LABORATORY NARRATIVE

INORGANIC & METALS ANALYSES:
The relative percent difference between the matix spike and matrix spike duplicate for Thallium was above the acceptance range for samples 17-A18617 through 17-A18619. The laboratory control spike, matrix spike, and matrix spike duplicate recoveries were all acceptable. Data that was below the reporting limit was reported.

The recovery of Beryllium was above the acceptance range in the known for samples 17-A18620 through A18629. Data that was below the reporting limit was reported.

Due to the concentration of calcium in the spiked sample, calcium failed to recover in the matrix spike for samples 17-A18617 through 17-A18619. Data was reported based on acceptable laboratory control spike recovery and relative percent difference between the matrix spike and matrix spike duplicate.

No other problems were encountered with these analyses.



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Date: 6/19/2017

CLIENT:

MVTL Inc

CASE NARRATIVE

Project:

Ottertail Power Big Stone

Report ID: \$1705190001

Lab Order: \$1705190

Samples A18617 H2OX, A18618 H3OX, A18619 H4OX, A18620 H-6, A18621 H-8, A18622 H-9, A18623 Slag-4, A18624 Slag-5, A18625 Slag-6, A18626 Slag-7, A18627 Slag-8, A18628 Slag-9, and A18629 Slag-2B were received on May 9, 2017.

All samples were received and analyzed within the EPA recommended holding times, except those noted below in this case narrative. Samples were analyzed using the methods outlined in the following references:

"Standard Methods For The Examination of Water and Wastewater", approved method versions
Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition
40 CFR Parts 136 and 141
40 CFR Part 50, Appendices B, J, L, and O
Methods indicated in the Methods Update Rule published in the Federal Register Friday, May 18, 2012
ASTM approved and recognized standards

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Reviewed by: Wade Nieuwsma, Assistant Laboratory Manager



Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Big Stone

Lab ID: ClientSample ID:

S1705190-001 A18617 H2OX

COC:

WEB

Date Reported

6/19/2017

Report ID

\$1705190001

WorkOrder:

\$1705190

CollectionDate: 5/3/2017 10:56:00 AM

5/9/2017 11:24:00 AM

DateReceived: FleidSampler:

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/	init
Radionuclides - Total	1,75%						
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	05/30/2017 952	MB
Radlum 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	05/30/2017 952	MB
Radium 228	ND	pCi/L		2	Ga-Tech	06/18/2017 412	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	06/18/2017 412	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded

Analyzed by another laboratory

Not Detected at the Reporting Limit
Spike Recovery outside accepted recovery limits

RL - Reporting Limit

C Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 13



Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Big Stone

Lab ID: ClientSample ID:

\$1705190-002 A18618 H3OX

COC:

WEB

Date Reported

6/19/2017

Report ID

\$1705190001

WorkOrder:

\$1705190

CollectionDate: 5/3/2017 11:39:00 AM DateReceived:

5/9/2017 11:24:00 AM

FleldSampler:

Matrix:

Water

Commonto

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/	Init
Radionucildes - Total							
Radium 226	ND	pGi/L		1	SM 7500 Ra-B	05/30/2017 952	MB
Radium 226 Precision (±)	NA	pCl/L			SM 7500 Ra-B	05/30/2017 952	MB
Radium 228	ND	pCi/L		2	Ga-Tech	06/18/2017 715	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	06/18/2017 715	MB

These results apply only to the samples tested.

Qualiflers:

Analyte detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded

Analyzed by another laboratory

Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 2 of 13



Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Big Stone

Lab ID: ClientSample ID: A18619 H4OX

S1705190-003

COC:

WEB

Date Reported

6/19/2017

Report ID

S1705190001

WorkOrder:

\$1705190

CollectionDate: 5/3/2017 12:14:00 PM

DateReceived: 5/9/2017 11:24:00 AM

FieldSampler: Matrix:

Water

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	05/30/2017 952	MB
Radium 226 Precision (±)	NA	pCI/L			SM 7500 Ra-B	05/30/2017 952	MB
Radium 228	ND	pCi/L		2	Ga-Tech	06/18/2017 1019	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	06/18/2017 1019	MB

These results apply only to the samples tested.

Qualiflers:

Analyte detected in the associated Method Blank

Value above quantitation range

H Holding times for preparation or analysis exceeded

Analyzed by another laboratory

Not Delected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by: All

Wade Nieuwsma, Assistant Laboratory Manager

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Sample Analysis Report

Company: MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertall Power Big Stone

Lab ID: ClientSample ID:

S1705190-004 A18620 H-6

COC:

WEB

Date Reported

6/19/2017

Report ID

\$1705190001

WorkOrder:

S1705190

CollectionDate: 5/3/2017 12:53:00 PM DateReceived:

5/9/2017 11:24:00 AM

FieldSampler:

Matrix:

Water

Comments							_
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/i	nit
Radionuciides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	05/30/2017 952	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	05/30/2017 952	MB
Radium 228	ND	pCI/L		2	Ga-Tech	06/18/2017 1322	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	06/18/2017 1322	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded

Analyzed by another laboratory

Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 4 of 13



Sample Analysis Report

MVTL Inc Company:

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Big Stone

Lab ID:

S1705190-005 ClientSample ID: A18621 H-8

COC:

WEB

Date Reported

6/19/2017

Report ID

S1705190001

WorkOrder:

S1705190

CollectionDate: 5/3/2017 1:48:00 PM

DateReceived: 5/9/2017 11:24:00 AM

FieldSampler:

Matrix:

Water

Commante

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/i	nit
Radionuclides - Total					7.0		
Radlum 226	ND	pCI/L		1	SM 7500 Ra-B	05/30/2017 952	MB
Radium 226 Precision (±)	NA	pGi/L			SM 7500 Ra-B	05/30/2017 952	MB
Radium 228	ND	pCi/L		2	Ga-Tech	06/18/2017 1625	MB
Radium 228 Precision (±)	NA	pCI/L			Ga-Tech	06/18/2017 1625	МВ

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank В

Value above quantitation range

Holding Ilmes for preparation or analysis exceeded

Analyzed by another laboratory

Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or Is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by: all

Wade Nieuwsma, Assistant Laboratory Manager

Page 5 of 13



Sample Analysis Report

MVTL Inc. Company:

1126 N Front St

New Ulm, MN 56073

ProjectName: Lab ID:

Ottertall Power Big Stone

\$1705190-006 ClientSample ID: A18622 H-9

WEB

6/19/2017

Date Reported Report ID

\$1705190001

WorkOrder:

\$1705190

CollectionDate: 5/3/2017 2:50:00 PM

DateReceived: 5/9/2017 11:24:00 AM

FieldSampler:

Matrix:

Water

Comments

COC:

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/i	nit
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	05/30/2017 952	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	05/30/2017 952	MB
Radium 228	ND	pCI/L		2	Ga-Tech	06/18/2017 1928	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	06/18/2017 1928	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded

Analyzed by another laboratory

Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory G

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by: all

Wade Nieuwsma, Assistant Laboratory Manager

Page 6 of 13



ANALYTICAL QC SUMMARY REPORT

CLIENT:

MVTL Inc

Work Order:

S1705190

Project:

Ottertail Power Big Stone

Date: 6/19/2017

Report ID: S1705190001

lium 228 by Ga/Tech	Sample Type MBLK	U	nits: pCI/L			
MB-440 (06/03/17 11:39)	RunNo: 146325	The second second	5/24/17 14:00		chID 13229	
Analyte	Result	RL Spi	ke Ref Samp	%REC	% Rec Limits	Qu
Total Radium 228	ND	1				
MB-439 (06/16/17 21:41)	RunNo: 146951	PrepDate: 0	5/22/17 13:02	Bat	chID 13303	
Analyte	Result	RL Spi	ke Ref Samp	%REC	% Rec Limits	Qu
Total Radium 228	ND	1				
um 228 by Ga/Tech	Sample Type LCS	Ur	rits: pCI/L			
LCS-440 (06/03/17 14:42)	RunNo: 146325	- 1	5/24/17 14:00		chID 13229	
Analyte	Result	RL Spil	ke Ref Samp	%REC	% Rec Limits	Q
Total Radium 228	43	1 40.	1	108	65.9 - 132	
LCS-439 (06/17/17 00:44)	RunNo: 146951	PrepDate: 0	5/22/17 13:02	Bat	chID 13303	
Analyte	Result	RL Spil	ke Ref Samp	%REC	% Rec Limits	Q
Total Radium 228	43	1 40.	1	108	65,9 - 132	
um 228 by Ga/Tech	Sample Type LCSD	Ur	nits: pCi/L			
LCSD-439 (06/17/17 03:47)	RunNo: 146951	PrepDate: 0	5/22/17 13:02	Bate	chID 13303	
Analyte	Result	RL Cor	c %RPD	%REC	% RPD Limits	Q
Total Radium 228	46	1 43	6.54	115	20	
um 228 by Ga/Tech	Sample Type MS	Ur	its: pCl/L			
MS-440 (06/03/17 20:48)	RunNo: 146325	PrepDate: 0	5/24/17 14:00	Bate	chID 13229	
Analyte	Result	RL Spil	e Ref Samp	%REC	% Rec Limits	Q
Total Radium 228	45	1 40.	1 ND	111	50 - 139	
S1705188-004AMS (06/19/17 01:34)	RunNo: 146951	PrepDate: 05	5/22/17 13:02	Bato	chID 13303	
Analyte	Result	RL Spik	e Ref Samp	%REC	% Rec Limits	QL
Total Radium 228	86	1 80.	1 1	105	50 - 139	
um 228 by Ga/Tech	Sample Type MSD	Un	its: pCi/L			
MSD-440 (06/03/17 23:51)	RunNo: 146325	PrepDate: 05	5/24/17 14:00	Bato	hID 13229	
Analyte	Result	RL Con	c %RPD	%REC	% RPD Limits	Qu
Total Radium 228	44	1 45	2.64	108	20	
S1705188-004AMSD (06/19/17 04:37)	RunNo: 146951	PrepDate: 05	5/22/17 13:02	Bato	:hID 13303	
Analyte	Result	RL Con	c %RPD	%REC	% RPD Limits	Qu
Total Radium 228	73	1 86	15.7	89.7	20	

Qualiflers:

- B Analyte detected in the associated Method Blank
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
 R RPD outside accepted recovery limits
- R RPD outside X Matrix Effect

- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- L Analyzed by another laboratory
- O Outside the Range of Dilutions
- S Spike Recovery outside accepted recovery limits



ANALYTICAL QC SUMMARY REPORT

CLIENT:

MVTL Inc

Date: 6/19/2017

Work Order:

S1705190

Report ID: S1705190001

Project: Ottertail Power Big Stone

Radium 226 in Water -	Sample Type MBLK		Units	: pCi/L			
MB-1754 (05/30/17 09:52)	RunNo: 146341	Prepl	Date: 05/2	2/17 0:00	Bato	hID 13230	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	ND	0.2					
Radium 226 in Water -	Sample Type LCS		Units	: pCl/L			
LCS-1754 (05/30/17 09:52)	RunNo: 146341	Prepl	Date: 05/2:	2/17 0:00	Bato	hID 13230	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	5.8	0.2	6.41		90.6	67.1 - 122	
Radium 226 in Water -	Sample Type LCSD		Units:	pCI/L			
LCSD-1754 (05/30/17 09:52)	RunNo: 146341	Prepl	Date: 05/2:	2/17 0:00	Bato	hID 13230	
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Radium 226	6.4	0.2	5.8	9.14	98.8	20	
Radium 226 in Water -	Sample Type MS	5	Units:	pCi/L			
S1705189-003AMS (05/30/17 09:52)	RunNo: 146341	Prept	Date: 05/2:	2/17 0:00	Batc	hID 13230	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	11	1	12.8	ND	83.2	65 - 131	

Qualiflers:

B Analyte detected in the associated Method Blank

G Analyzed at IML Gillette laboratory

J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

X Matrix Effect

E Value above quantitation range

H Holding times for preparation or analysis exceeded

L Analyzed by another laboratory

O Outside the Range of Dilutions

S Spike Recovery outside accepted recovery limits

MVTL

1126 N. Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2616 E. Broadway Ave. ~ Bismarck, ND 58502 ~ 800-279-6885 ~ Fax 701-258-9724 1201 Lincoln Highway ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885 www.mvtl.com

MEMBER ACIL

Page: 1 of 2

Quality Control Report Lab IDs: 17-A18617 to 17-A18629

ab IDs: 17-A18617 to 17-A18629 Project: BIG STONE PLANT Wor

Work Order: 201731-0190

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec **	MSD/ Dup RPD	MSD/ Dup RFD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Antimony ug/L	25.0 25.0	104 104	85-115 85-115	25.0 25.0	17A18619q 17A18628q	<2.5 <5	27.3 24.4	109 98	75-125 75-125	27.3 24.4	27.9 24.9	112 100	2.2	10 10	102 104	90-110 90-110	< 0.5 < 0.5
Arsenic ug/L	25.0 25.0	104 106	85-115 85-115	25.0 25.0	17A18619q 17A18628q	<2.5 <2.5	28.2 25.8	113 103	75-125 75-125	28.2 25.8	29.5 27.5	118 110	4.5 6.4	10 10	100 102	90-110 90-110	< 0.5 < 0.5
Barium mg/L	1,000	102	85-115	1.00 1.00	17A18619q 17A18629q	0.011 0.101	0.949 1.050	94 95	75-125 75-125	0.949 1.050	1.040 1.070	103 97	9.2 1.9	10 10	101 100	90-110 90-110	< 0.005
Beryllium ug/L	2.50 2.50	114 114	85-115 85-115	2.50 2.50	17A18619q 17A18628q	<0.25 <0.5	2.50 2.45	100 98	75-125 75-125	2.50 2.45	2.54 2.39	102 96	1.6 2.5	10 10	106 110 112	90-110 90-110 90-110	< 0.05 < 0.05
Boron mg/L	1.000	102	85-115	1.00 1.00	17A18619q 17A18629q	0.428 3.660	1.280 4.690	85 103	75-125 75-125	1.280 4.690	1.400 4.730	97 107	9.0 0.8	10 10	98 99	90-110 90-110	< 0.1
Cadmium ug/L	5.00 5.00	105 105	85-115 85-115	5.00 5.00	17A18619q 17A18628q	<0.5 <0.5	5.47 4.85	109 97	75-125 75-125	5.47 4.85	5.39 5.34	108 107	1.5 9.6	10 10	100 103	90-110 90-110	< 0.1 < 0.1
Calcium mg/L	50.00	104	85-115	50.0 50.0	17A18619q 17A18629q	316.0 248.0	329.0 294.0	26 92	75-125 75-125	329.0 294.0	360.0 298.0	88 100	9.0 1.4	10 10	107 100	90-110 90-110	< 0.5
Chloride mg/L	3	1	1	60.0 60.0	17-A18619 17-A18629	47.9 35.7	108 98.5	100 105	85-121 85-121	108 98.5	110 101	104 109	1.8 2.5	5 5	97 97	90-110 90-110	<3 <3
Chromium mg/L	1.000	104	85-115	1.00 1.00	17A18619q 17A18629q	< 0.01 0.015	0.894 0.898	89 88	75-125 75-125	0.894 0.898	0.977 0.910	98 90	8.9 1.3	10 10	103 101	90-110 90-110	< 0.01
Cobalt mg/L	1.000	105	85-115	1.00 1.00	17A18619q 17A18629q	0.009 0.009	0.864 0.870	86 86	75-125 75-125		0.945 0.880	94 87	9.0 1.1	10 10	104 101	90-110 90-110	
Fluoride mg/L		2	1	0.20 0.20	a18619qc a18627qc	0.540 0.540	0.720 0.740	90 100	75-125 75-125	0.720 0.740	0.720 0.750	90 105	0.0	10 10	101 96	90-110 90-110	
Lead ug/L	25.0 25.0	101 102	85-115 85-115		17A18619q 17A18628q	<2.5 <2.5	24.9 24.4	100 98	75-125 75-125		27.0 26.5	108 106	8.1 8.3	10 10	100 102	90-110 90-110	
Lithium mg/L	1.000 1.000	101 101	85-115 85-115	1.00 1.00	17-A18619 17-A18629	0.105 0.036	1.100 1.030	100 99	75-125 75-125		1.170 1.030	106 99	6.2	10 10	102 103	90-110 90-110	

MVTL

1126 N. Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2616 E. Broadway Ave. ~ Bismarck, ND 58502 ~ 800-279-6885 ~ Fax 701-258-9724 1201 Lincoln Highway ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885 www.mvtl.com

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Page: 2 of 2

Quality Control Report

Thallium ug/L

Lab IDs: 17-A18617 to 17-A18629 Project: BIG STONE PLANT Work Order: 201731-0190 Matrix Matrix Matrix MSD/ MSD/ LCS LCS Spike Matrix MSD/ MSD MSD. LCS Matrix Matrix Spike Spike Dup Dup Known Known % Rec Spike Spike Orig % Rec Spike Rec Spike Rec Orig Dup RPD % Rec Method Rec Dup Rec % Limits Amt % % Limits Amt ID Result Result Limits Result. Result RPD Limit (<) (%) Blank Analyte 0.10 17-A18618 < 0.005 0.101 101 63-111 0.101 0.102 102 18 94 76-113 < 0.005 1.0 Mercury ug/L 0.10 17-A18627 < 0.005 0.103 103 63-111 0.103 0.105 105 1.9 18 98 76-113 < 0.005 < 0.005 < 0.005 25.0 17A18619a 4.12 30.1 104 75-125 30.1 102 90-110 Molybdenum ug/L 25.0 102 85-115 30.7 106 2.0 10 < 0.5 25.0 102 85-115 25.0 17A18628q 9.54 31.8 89 75-125 31.8 34.8 101 9.0 10 102 90-110 < 0.5 7.0 7.0 2.5 90-110 0.0 101 pH units 7.1 2.5 7.1 0.0 101 90-110 2.5 8.1 8.1 0.0 101 90-110 <5 31.2 10 < 0.5 107 85-115 25.0 17A18619q 31.2 125 75-125 29.5 118 5.6 102 90-110 Selenium ug/L 25.0 < 5 27.0 108 75-125 27.0 26.6 10 90-110 < 0.5 25.0 107 85-115 25.0 17A18628q 106 1.5 103 4.5 8 Solids, Total Dissolved mg/L 2160 2260 102 85-115 < 10 1790 1770 1.1 8 500 17-A18609 140 651 102 74-128 651 674 107 3.5 5 101 80-120 <5 Sulfate mg/L 5 500 17-A18620 71.1 550 96 74-128 550 557 97 1.3 101 80-120 < 5

5.10

4.96

102

99

75-125

75-125

5.10

4.96

5.69

5.10

114

102

10.9

2.8

10

10

99

102

90-110

90-110

< 0.1

< 0.1

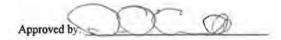
The calcium matrix spike recovery was outside the acceptance limits, see narrative.

The thallium duplicate RPD was outside the acceptance limits, see narrative.

5.00

5.00

The beryllium known was outside the acceptance limits, see narrative.



102

102

85-115

85-115

5.00

5.00

17A18619q

17A18628q

< 0.5

< 0.5

Minnesota Valley Testing Laboratories

1126 North Front Street Phone: 800 782 3557 New Ulm, MN 56003 Fax: 507 359 2890

1536

GW

GW

GW

Field Service Chain of Custody Record

This is an exa	act copy of
the original	document
By Of D	Date 4 May 17
pages	1-21

Project Otter Tail Power Company Report Otter Tail Power Company				Project Type: Big Stone Plant CCR Carbon Copy:					Name of Samplers: DF, MS											
Address	Paul Vuke P.O. Box Fergus Fr 218-739-	496 alls, MN 565	Attn: Address:						Quote Number: 31-0190 Lab Numbers:											
		Sample In	formation									Bott	le Ty	ре					Analys	is
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	1000 HNO3	Filtered Yor M	1000 none	500 HIVO3	-	500 H2SO4	Filter? Y or M		1000 Amber	500 NaOH	Other: 150 Has	Other 150 A.	Analysis Required	/
A 18617			3May 17	1056	GW		2	N	1	1	N	12-1			117				See Attached	1
18	НЗОХ		1	1139	GW		2	N	1	1	N						-			1
19	H4OX	1,1,4,		1214	GW		2	N	1	1	N		Fal			13	-			1
30	H-6	1		1253	GW		2	N	1	1	N	1		-	1		-			
	H-8	111		1348	GW		2	N	1	1	N			1						
22	H-9			1450	GW	4	2	N	1	1	N				1		-			
	Slag 1				GW		2	-N	_4_	1	N							-		

2 N

N

N

1

2

2

1 N

1 N

1 N

Comments:

Slag 4

Slag 5

Slag 6

WORK ORDER #2

Samples Relin	quished By:	Ret	FN		Samples Received By: (1) AVA (21)							
Date: 3Mqy	17	Time:	1847	Temp:0.0	Date: 4 May	17	Time: 1:15	Temp: 1.00				
Samples Relin	quished into:	Fridge	Log in C	Cart Other:	1							
Samples Relin	quished By:				Samples Received	By:						
Date:		Time:		Temp:	Date:	ate: Time:						
Delivery:	Samplers	Other:		The Vice	Seal Number(s) - I	f Used						
Transport:	Ambient	(ce)		Other	Seals Intact?	Yes	No					



Minnesota Valley Testing Laboratories

1126 North Front Street Phone: 800 782 3557 New Ulm, MN 56003 Fax: 507 359 2890

Field Service Chain of Custody Record

Project Otter Tail Power Company	Project Type:	Big Stone Plant CCR	Name of Samplers:	DF, MS
Report Otter Tail Power Company	Carbon Copy:	CONTRACT A SUC		ער, ויט
Attn: Paul Vukonich	Attn:		Quote Number:	
Address P.O. Box 496	Address:		Work Order Number:	
Fergus Falls, MN 56538-0496			Lab Numbers:	
Phone: 218-739-8349				

_		Sample In	formation									Bott	le Ty	ype				Analysi
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	1000 HNO3	Fillered Yor M	1000 none	500 HIVO3	/ :	18	Filler? Y or M		1000 Amber 42504 500 Na.C.:	Other: 150.	Other 150 M.	Analysis Required
26	Slag 7		3 May 17	1155	GW		2.	N	1	1	N							See Attached
37	Slag 8		11	1421	GW		2	N	1	1	N							
28	Slag 9		150 15 -	1532	GW		2	N	1	1	N							
-	Slag 9 De	ep		_	GW	المسيور	2	N	1	1	N	1 0					-	
29	Slag 2B		1	1226	GW		2	N	1	1	N							
	-		1													15		

Comments:

WORK ORDER #2

		-	-				0 1	^	
Samples Relin	quished By:	12-1	Fn		Samples Rec	eived By: /	1. 1000	de	
Date: 3M	9/17	Time:	1847	Temp: O, O	Date: 4 Mo	W 17	Time:	715	Temp: j - OC
Samples Relin	quished into:	Fridge	Log in Ca	rt Other:					
Samples Relin	quished By:				Samples Rec	eived By:			
Date:		Time:		Temp:	Date:		Time:		Temp:
Delivery:	Samplers	Other:			Seal Number	(s) - If Used			
Transport:	Ambient	(CB)		Other:	Seals Intact?		Yes	No	



5811-8 2017

Big Stone Sampling 2017

						3 70 0 0 0 0				
Site	Parameter	Well	Diameter	Well	Sample	Dedicated?	Pump Rate	Goes	Sampling	B=4 1000 None 500 HNOS
0,10	List	Depth	(Inches)	Elevation	Equipment	Deciroated;	(ml/minute)	Dry?	Seasons**	SOO HASSOY
WELL10	A	47.43	4	1098.70	Keck/Tsunami	No	3,000	No	1,3	200 VVOS
WELL11	A	127.22	4	1104.00	Other Pump	Yes	35,000	No	1,3	500 AND EIL
WELL12	A	112.40	4	1071.89	Other Pump	Yes	20,000	No	1,3	San 1 2 Tipes
°S1	В	32.50	2	1102.17	Baller	Yes	N/A	Yes	1,3	300 H25011
S2	В	43.12	2	1102.39	Baller	Yes	N/A	Yes	1,3	6-4
S3	В	62.50	2	1102.65	Baller	Yes	N/A	No	1,3	17
S4.	В	27.70	2	1090.57	Baller	Yes	N/A	Yes	1,3	C = 3 1000 Nene
\$5	В	46.72	2	1091.40	Bailer	Yes	N/A	Yes	1,3	SOO HISOY SOO HIND FIH
-56	В	62.05	2	1090.71	Baller	Yes	N/A	No	1,3	AZSON
-H1OX	C	32.91	2	1115.89	Baller	Yes	100	Yes	1,3	SOO HADS
HIINT	C	60.11	2	1115.81	Keck/Tsunami	No	1500	No	1,3	200 Mar 11/7
H2OX *	C, CCR	32.20	2	1103,91	Bladder	Yes	100	Yes	1,3	18100
H2INT	C	62.30	2	1103.91	Bailer	Yes	N/A	Yes	1,3	2
H3OX	C, CCR	22.55	2	1095.19	Bladder	Yes	100	Yes	1,3	1 12 14
H3INT	C	54.31	2	1095.17	Whale	No	2000	No	1,3	C=3'fond"
H4OX	C, CCR	27,20	2	1108.22	Bladder	Yes	100	No	1,3	
HAINT	C	60.01	2	1108.61	Keck/Tsunami	No	2000	Yes	1,3	1000 NOTE 500 H2504 500 HNOS
H5	C	43.30	2	1122.80	Whale	No	1000	No	1,3	Sanit
···H6=	C, CCR	15.00	2	1097.76	Bladder	Yes	100	Yes	1,3	705 450H
H7	C	33.20	2	1106.06	Whale	No	1000	Yes	1,3	500 4 No.
4H8m	C, CCR	22.05	2	1081,23	Bladder	Yes	100	No	1,3	5
·H9*	C, CCR	30.20	2	1086.21	Bladder	Yes	100	No	.,,-	
-BC1	В	16.28	2	1116.46	Baller	Yes	N/A	No	1,3	
BG101-	В	39.30	2	1118.70	Bailer	Yes	N/A	Yes	1,3	
BC2R	В	32,48	2	1115.28	Baller	Yes	N/A	No	1,3	1.0
BC3R ₂	В	35.15	2	1114.42	Bailer	Yes	N/A	Yes	1,3	CCR = 4
BC4R*	В	34.60	2	1113.86	Baller	Yes	N/A	Yes	1,3	
BC5R	В	37.32	2	1123.02	Baller	Yes	N/A	No	1,3	2-1002 11112
BC6R	В	33.95	2	1121.58	Balter	Yes	N/A	No	1,3	× 1000 19702
	_	34.90	2	TBD	LOW FLOW	Na	100	Yes	4,3	1 bood Non
STAGE		2310/4	2	1111.06	white study of	- 2.55	100			2-1000 HNO3 1000 Nove 500 HNO3
STAGG -			2				400			SOO HNOS
SCAGA	CCR	39.00	2	TBD	LOW FLOW	No	100	No	4,3	3
SLAG5	CCR	38.80	2	1107.30	LOW FLOW	No	100	Yes	4,3	
SLAGE	CCR	37.30	2	1111.51	LOW FLOW	No	100	Yes	13	
SEAG7	CCR	48.70	2	1114.39	LOW FLOW	No	100	Yes	4.3	
SEAG8	CCR	52.09	2	1127.26	LOW FLOW	No	100	No	1,3 1,3 1,3	
ALAG9	CCR	49.80	2	1122.35	LOW FLOW	No	100	No	374	
-SLAGS DEEP		68.00	2	1121.92	LOW FLOW	No	100	Yes		
SPACES DEE	CCR	40.80	2	1111.26	LOW FLOW	No	100	Yes		
COOLING POND	A	N/A	NA	NA	Grab	N/A	N/A	No	1.9	
EVADODATION BOND	19.5	N/A	NIA	NIA	Grab	NVA	NIA	NO	1,3	

N/A

N/A

NA

No

No

No

1,3 1,3 1,3

1,3

N/A

NA

N/A

N/A

N/A

N/A

Grab

Grab

Grab

N/A

NA

N/A

N/A

N/A

N/A

A

HOLDING POND

RECLAIM POND

EVAPORATION FOND

^{** 1 =} Spring (March 28 - April 28), 2 = Summer (July 1 - August 7), 3 = Fall (October 14- November 14)

Big Stone Plant CCR Appendix III Parameters



CCR - Appendix III Detection Monitoring Field Parameters pH*

* Field and Laboratory Measurements

Total Concentration Parameters

Boron

Calcium

Chloride

Fluoride

pH

Sulfate

Dissolved Solids, Total

Big Stone CCR Appendix IV Parameters



CCR - Appendix IV - Assessment Monitoring

Total Concentration Parameters

Antimony

Arsenic

Barium

Beryllium

Cadmium

Chromium, Total

Cobalt

Fluoride

Lead

Lithium

Mercury

Molybdenum

Selenium

Thallium

Radium 226 + 228

Big Stone Parameter List "A"

Field Parameters

Field pH Field Temperature Field Conductivity

Lab Parameters

Lab pH
Lab Conductivity
Total Alkalinity
Chloride
Hardness, Calcium
Hardness, Total
Nitrate-Nitrite as N
Potassium - Total
Sodium - Total
Sulfate

Big Stone Parameter List "B"



Field pH Field Temperature Field Conductivity

Lab Parameters Lab pH Lab Conductivity **Total Alkalinity** Chloride Hardness, Calcium Hardness, Total Nitrate-Nitrite as N Potassium - Total Sodium - Total Sulfate Arsenic - dissolved Boron - dissolved Cadmium - dissolved Lead - dissolved

Manganese - dissolved Strontium - dissolved



Big Stone Parameter List "C"

\$61.9 (1)

Field Parameters

Field pH

Field Temperature

Field Conductivity

Lab Parameters

Lab pH

Lab Conductivity

Total Alkalinity

Chloride

Hardness, Calcium

Hardness, Total

Nitrate-Nitrite as N

Potassium - Total

Sodium - Total

Sulfate

Arsenic - Dissolved

Arsenic - Total **

Barium - Dissolved

Barium - Total **

Boron - Dissolved

Boron - Total **

Cadmium - Dissolved

Cadmium - Total **

Chromium - Dissolved

Chromium - Total **

Copper - Dissolved

Copper - Total **

Lead - Dissolved

Lead - Total **

Manganese - Dissolved

Manganese - Total **

Mercury - Dissolved

Mercury - Total **

Selenium - Dissolved

Selenium - Total **

Silver - Dissolved

Silver - Total **

Strontium - Dissolved

Strontium - Total **

Vanadium - Dissolved

Vanadium - Total **

Zinc - Dissolved

Zinc - Total **

^{**} NOTE: ONLY Reclaim Pond is required to have Total metals run.

The groundwater samples are required to have the Dissolved metals run only.

Groundwa	ter Ass	Capilletic			Site:	Otte	raire	ower Co./ Big Stone
Sampling Per	rsonnel:				Facility ID:			
	Mar	+ t Star	6		Date: 3/	1ay 17		
		2175			Unique Stat	tion ID:		
					Sample ID:		V	Vell H2OX
Well Condit Well Locked? Well Labeled Casing Straig	? !? ght?	Ves No (Yes No (Yes No	3		Protective F State ID Ta Grout Seal	g? Yes)	No No
Repairs Nece								
Well Depth:		32.81			Well Casing			1103.91
Constructed I	Depth:	32.20			Static Wate	r Elevation: /	097	. 76
Casing Diame	eter:	2"	3%			atic: 1096		
Halle House	Before Pu	rge: 6.7	15		Water Leve	I After Sample	a: Belo	in Amp
Water Level B			2000		TA VITTOR AND	Tar. 4 & 2 Co. 5 C	-	Jane Janes
Water Level I Well Volume:		1,341	Gallons		Measureme	ent Method:	Elec.	WLI Steel Tap
Well Volume: Sampling Ir Weather Con	nformati iditions:	on Temp: 💆	58	Wind: W	68	Sky:	Sun	
Well Volume: Sampling In Weather Con Sampling Me	nformati ditions: thod:	on Temp:	5 (10)		©8 Whale	Sky:	Sun	ny
Sampling In Weather Con Sampling Me Dedicated Eq	nformati nditions: nthod: quipment:	Temp:	58		କ୍ଷ Whate Pumping Ra	Sky: Grab Other ate: " 2	Sun :	gpm
Well Volume: Sampling In Weather Con Sampling Me Dedicated Eq Well Purged I	nformati iditions: ithod: quipment: Dry?	Temp: Support of the	58		Whale Pumping Ra	Sky: Grab Other ate: 2	Sum ::	gpm am/pm
Sampling In Weather Con Sampling Me Dedicated Eq Well Purged Time Purged	nformati ditions: thod: quipment: Dry?	Temp: Superior Control	Bladder SS/I		Whale Pumping Ra Time Pump	Sky: Grab Other ate: 2 Began: /	Sun 15 1033	gpm am/pm
Well Volume: Sampling In Weather Con Sampling Me Dedicated Eq Well Purged I	nformati ditions: thod: quipment: Dry? Dry? mple?	Temp: Support of the	Bladder SS/II		Whate Pumping Ra Time Pump Time of Sar Sample EH	Sky: Grab Other ate:	Sum 155 1033	gpm am/pm
Well Volume: Sampling In Weather Con Sampling Me Dedicated Eq Well Purged I Time Purged Duplicate Sar Sample Appe	nformati nditions: thod: quipment: Dry? Dry? mple? parance:	on Temp: Grundfos (Ves) No (Ve	Bladder SSCI	Color: nan	Whale Pumping Ra Time Pump Time of Sar Sample EH	Sky: Grab Other ate: 2 Began: / mpling: / : 23.5, e: none Gallons	Sum 1033 1056 9	gpm am/pm Odor: Nave
Well Volume: Sampling In Weather Con Sampling Me Dedicated Eq Well Purged I Time Purged Duplicate Sar Sample Appe	nformati ditions: thod: quipment: Dry? Dry? mple? earance:	Temp: Grundfos Ves No Ves No Ves No Ves No Specific Cond.	ID: Temp OC	Color: non	Whale Pumping Ra Time Pump Time of Sar Sample EH Phas Turbidity NTU	Sky: Grab Other ate: 2 Began: / mpling: / 23.5, e: none Gallons Removed	Sum 1033 1056 9	gpm am/pm am/pm Odor: Mave
Well Volume: Sampling In Weather Con Sampling Me Dedicated Eq Well Purged I Time Purged Duplicate Sar Sample Appe	nformati nditions: thod: quipment: Dry? Dry? mple? parance:	on Temp: Grundfos (Ves) No (Ve	Bladder SSCI	Color: nan	Whale Pumping Ra Time Pump Time of Sar Sample EH	Sky: Grab Other ate: 2 Began: / mpling: / : 23.5, e: none Gallons	Sum 1033 056 9	gpm am/pm Odor: Nave
Well Volume: Sampling In Weather Con Sampling Mer Dedicated Eq Well Purged I Time Purged Duplicate Sar Sample Appe	nformati ditions: thod: quipment: Dry? Dry? mple? earance:	Temp: Superification of the superification o	ID: Temp OC 8,52	Color: non	Whale Pumping Ra Time Pump Time of Sar Sample EH Phas Turbidity NTU	Sky: Grab Other ate: 2 Began: / mpling: / 23.5, e: none Gallons Removed	Sum 1033 056 9 SEQ #	gpm am/ pm Odor: Nave Comments:
Well Volume: Sampling In Weather Con Sampling Mer Dedicated Eq Well Purged I Time Purged Duplicate Sar Sample Appe	nformati ditions: thod: quipment: Dry? Dry? mple? earance:	Temp: Grundfos Ves No Ves No Ves No Ves No Specific Cond.	ID: Temp OC	Color: non	Whale Pumping Ra Time Pump Time of Sar Sample EH Phas Turbidity NTU	Sky: Grab Other ate: 2 Began: / mpling: / 23.5, e: none Gallons Removed	Sum 1033 056 9	gpm am/pm Odor: Nave
Well Volume: Sampling In Weather Con Sampling Mer Dedicated Eq Well Purged I Time Purged Duplicate Sar Sample Appe	nformati ditions: thod: quipment: Dry? Dry? mple? earance:	Temp: Superification of the superification o	ID: Temp OC 8,52	Color: non	Whale Pumping Ra Time Pump Time of Sar Sample EH Phas Turbidity NTU	Sky: Grab Other ate: 2 Began: / mpling: / 23.5, e: none Gallons Removed	Sum 1033 056 9 SEQ #	gpm am/ pm Odor: Nave Comments:

Groundwater Assessment	Site:	Otter Tail Power Co./ Big Stone					
Sampling Personnel:	Facility ID:	Facility ID: Date: 3 May 1					
Mart t Skin		W. 13					
14-17 1 - 744		Unique Station ID:					
	Sample ID:						
Well Condition							
Well Locked? (Yes) No	Protective P	Posts? Yes (Ng)					
Well Labeled? Yes No	State ID Ta						
Casing Straight? Yes No	Grout Seal						
Repairs Necessary:	Siout oddi i	100					
Well Information							
Well Depth: よる。6 8	Well Casing						
Constructed Depth: 22.55		r Elevation: 1090,14					
Casing Diameter: 2"	Previous Sta	atic: 1090,04					
Nater Level Before Purge: S, o 5		After Sampl Below pun					
Well Volume: ∂,85 Gallon	Measureme	ent Method: Fiec. WLI) Steel Tape					
	1						
Sampling Information	2.43						
Weather Conditions: Temp: 58	₩ind: 10@8	sky: Suny					
Sampling Method: Grundfos Bladder	S/T Disp. Bailer Whale	Grab Other:					
Dedicated Equipment Yes No	Pumping Ra						
Well Purged Dry? (Yes) No	Time Pump	Began: //d am / pm					
Time Purged Dry? 734 1134	Time of San						
Ouplicate Sample? Yes (No) ID: -	Sample EH:	235,4					
Sample Appearance: General: Class	Color: none Phase	: none Odor: none					
Specific Temp	D. O. Turbidity	Gallons SEQ					
Time pH Cond. OC	mg/L NTU	Removed # Comments:					
1134 6.88 4075 9.0		3 1					
		2					
139 6.91 4064 9.9	2	3 recharge					
11		4					
	1111	2 5					
		1 0					
Stabilized? Yes	Amount Water Remove						

New Ulm, MN 56073

Groundwa	ter Assessm	nent			Site:		Otter Tai	Power Co./ Big Stor
Sampling Pen	sonnel:				Facility II):		
	Marti	Stein			Date:	May 17		
					Unique S	tation ID:		
			-		Sample I	D:		Well H4OX
Well Condit	ion	-1				C TATE		^
Well Locked?		Yes No			Protective		es /	NO
Well Labeled	?	(Yes No			State ID	Tag? Y	'es	NO
Casing Straig	ht?	(Yes No			Grout Se	al Intact? (Y	es')	No
Repairs Nece		_						
Well Inform		7						VM KOLT
Well Depth:	27.	.48				ing Elevation:		1108.22
Constructed D		27.20			Static Wa	ater Elevation:	1091	47
Casing Diame	eter:	2"			Previous		0,00	
Water Level E		16:75	5			vel After Sam	ple: 3	4.56
Well Volume:	1.	75	Gallons		Measure	ment Method:	Flex	>Whi Steel Tape
					1			
Sampling In	formation							
Weather Cond		Temp: 6	2	Win	d: NW@	7 8	ky: Si	nn
Sampling Met	hod:	Grundfos	Bladder SS	Of Disp.	EWhale		ther:	
Dedicated Equ		Yes No	_	-	Pumping	Rate: O	12.5	gpm
Well Purged D		Yes No				np Began:		am / (pm)
Time Purged		1209				Sampling:	1214	
Duplicate San		Yes No	ID:	_	Sample E			-
Sample Appea		General:	clear	Colo	Pha	se: mini		Odor: nene
7		Specific	1emp	D.	Turbidity	Gallons	SE	
Time	pH	Cond.	°C	0.	NTU	Removed	Q#	Comments:
1209	6.89	27/2	9.00	NA.	per free	1.75	1	
		1200		101			2	
1214	6.98	2725	10.10				3	recharge
1.70.0							4	
		1 1 - 4		4	-		5	
Stabilized?	Yes	(No)		Amo	unt Water	1 1.7	5	Gallons
Comments:				7.7.7				

Groundwater Assessment	Site: Otter Tail Power Co./ Big St
Sampling Personnel:	Facility ID:
must t stem	Date: 3 - 17
	Unique Station ID:
	Sample ID: Well H6
Well Condition	
Well Locked? Yes No	Protective Posts? (Yes) No
Well Labeled? Yes No	State ID Tag? Yes
Casing Straight? (Yes No	Grout Seal Intact? Yes No.
Repairs Necessary:	
Well Information	
Well Depth: 17.4	Well Casing Elevation:
Constructed Depth: 17.70	Static Water Elevation:
Casing Diameter: 2"	Previous Static:
Water Level Before Purge: 11,0 d	Water Level After Sample: Below Pun
Well Volume: 1,13 Gallon	
Sampling Information	Mostly
Weather Conditions: Temp: 63	Wind: Wie 7 Sky: Sunc
	SS/T Disp. Bailer Whale Grab Other:
Dedicated Equipment: Yes No	Pumping Rate: O.) 5 gpm
Well Purged Dry? Yes, No	Time Pump Began 1243 am 1
Time Purged Dry?	Time of Sampling: 1853 am /
	Sample EH: 223. 7
Duplicate Sample? Yes (NO) ID:	
Duplicate Sample? Yes (No) ID: Sample Appearance: General: Chapter	
Sample Appearance: General: Class	
Sample Appearance: General: Class	- Color: none Phase: none Odor: none
Sample Appearance: General: Clook Specific lemp	D. O. Turbidity Gallons SEQ
Sample Appearance: General: Class Specific Time pH Cond. Cond.	D. O. Turbidity Gallons SEQ Removed # Comments:
Sample Appearance: General: Class Specific Time pH Cond. Cond.	D. O. Turbidity Gallons SEQ Removed # Comments:
Sample Appearance: General: Class Specific Time pH Cond. Cond.	D. O. Turbidity Gallons SEQ Removed # Comments:
Sample Appearance: General: Class Specific Time pH Cond. °C 1348 7.70 1094 9.	D. O. Turbidity Gallons SEQ Removed # Comments:
Sample Appearance: General: Class Specific Time pH Cond. °C 1348 7.70 1094 9.	D. O. Turbidity Gallons SEQ Removed # Comments:

Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

Groundy	water As	sessment			Site: Otter Tail Power Co./ Big Stone						
Sampling F	Personnel:	7 8 100			Facility ID: Date: 7 May 17						
	N. I	Matt Strin			Date: 2 W	10417					
		The Land Land			Unique Sta	ation ID:					
			Ξ.		Sample ID	:		Well H8			
Well Con		n.			TEAU SOL	-	_	th.			
Well Locke		Yes No	2		Protective		1	No			
Well Labele		Yes No			State ID Ta			NO			
Casing Stra		(Yes) No			Grout Seal	Intact? Yes	1	No			
Repairs Ne	ecessary:										
Well Info	rmation	U.S. 57-5									
Well Depth	Ľ.	22.33	,		Well Casin	g Elevation:		1081.23			
Constructe		22.05					676				
Casing Dia	meter:	2"	1.0		Previous S		74.6				
Water Leve	el Before P	urge: 5.	76		Water Leve	el After Sample	6.0	2			
Well Volum		2,80	Gallons		Measurem	ent Method:	(Elec.				
				7	1						
Sampling	Informat	tion	2.45				3				
Weather Co	A CONTRACTOR OF THE PROPERTY O	Temp: 6	4	Wind:	W@10	Sky:	Part1.	Summer			
Sampling N		Grundfos	Hadder SS/T		ler Whale	Grab Other		1			
Dedicated I		(Yes) No			Pumping R	Rate: O.,	25	gpm			
Well Purge		Yes (No	_		Time Pum		3112				
Time Purge		-			Time of Sa		348	am / (pm)			
Duplicate S		Yes (No	ID:		Sample El-						
Sample Ap		General: C	lear-	Color:	nove Pha			Odor: nane			
12		Specific	Temp	D. O.	Turbidity	Gallons	SEQ				
Time	pH	Cond.	°C	mg/L	NTU	Removed	#	Comments:			
1324	7.17	1330	8.07	M	140	3	1	1			
1336	7.16	1334	8.65	11		6	2				
1348	7.19	1333	8.00			9	3				
		1000					4				
	$\overline{}$	1		1	1		5				
Stabilized/	Yes	No	-	Amount	Water Remo	ive <	1	Gallons			
Comment											

*well not in Field Notes Program

Groundwater Assessment			Site:		Tail Po	wer Co./ Big Sto						
Sampling Personne		Facility ID: Date: 3 may 17										
Matt Ste	7		Unique Station I									
	3.1											
			Sample ID):	We	ell H9						
Well Condition				6								
Well Locked? (Yes) No			Protective	Posts Yes)	No						
Well Labeled? No			State ID T			No)						
Casing Straight? (Yes') No			Grout Sea	Intac Yes	7	No						
Repairs Necessary:												
Well Information												
Well Depth: 30.7	/		Well Casin	ng Elevation		1086.21						
Constructed Depth: 30.20				er Elevation		8-6						
Casing Diameter: 2"			Previous S		1075							
Water Level Before Purge: 7.	61											
			Water Level After Sam 8,6 3 Measurement Method Elec. WH Steel									
	Gallons		Measurem	ent Method	Elec V	Neasurement ivietnoos Fiec. VVB Steel						
Well Volume: 3-77 Sampling Information	Gallons	-	V		0							
Sampling Information Weather Conditions Temp: (95) Sampling Method: Grundfos Dedicated Equipmed No		Wind: W Disp. Bailer	V (P) (N) (N) (N) (N) (N) (N) (N) (N) (N) (N	Sky: Grab Other:	Parth 25	y Survey						
Sampling Information Weather Conditions Temp: (95) Sampling Method: Grundfos Dedicated Equipmeres No Well Purged Dry? Yes No	í		Whale Pumping F	Sky: Grab Other: Rate: 🔷	Parth 25	y Survey gpm am / (
Sampling Information Weather Conditions Temp: (95 Sampling Method: Grundfos Dedicated Equipm (195) No Well Purged Dry? Yes No Time Purged Dry?	Bladder SS/§		Whale Pumping F Time Pum Time of Sa	Sky: Grab Other: Rate: Ou p Beg / amplin	Parth 25	y Survey						
Sampling Information Weather Conditions Temp: (o Sampling Method: Grundfos Dedicated Equipmed No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No	Bladder SS/3	Disp. Bailer	Whale Pumping F Time Pum Time of Sa Sample El	Sky: Grab Other: Rate: One p Beg / amplin H: [9]	Parth 25 402 450	gpm am / g am / g						
Sampling Information Weather Conditions Temp: (95 Sampling Method: Grundfos Dedicated Equipm (195) No Well Purged Dry? Yes No Time Purged Dry?	Bladder SS/3		Whale Pumping F Time Pum Time of Sa Sample El	Sky: Grab Other: Rate: On p Beg / amplin	Parth 25 402 450	y Survey gpm am / (
Sampling Information Weather Conditions Temp: Sampling Method: Grundfos Dedicated Equipmeres No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No Sample Appearance General:	Bladder SS/5	Color: ne	Whale Pumping F Time Pum Time of Sa Sample El	Sky: Grab Other: Rate: On p Beg / amplin H: Iql ase: No	Parth 25 402 450	gpm am / g am / g						
Sampling Information Weather Conditions Temp: Sampling Method: Grundfos Dedicated Equipmeres No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No Sample Appearance General:	Bladder SS/5	Color: ne	Whale Pumping F Time Pum Time of Sa Sample El	Sky: Grab Other: Rate: On p Beg / amplin H: q ase: Ne	Parth 25 402 450 .7	gpm am / g am / g						
Sampling Information Weather Conditions Temp: (o Sampling Method: Grundfos Dedicated Equipmed No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No Sample Appearance General: (14) If ph Specific Cond. 1418 6.70 2499	Bladder SS/s ID: Temp OC 9.00	Color: ne	Whale Pumping F Time Pum Time of Sa Sample El	Sky: Grab Other: Rate: On p Beg / amplin H: 9 ase: No	Parth 25 402 450 .7 .7 .8 SEQ#	gpm am / g am / g						
Sampling Information Weather Conditions Temp: 65 Sampling Method: Grundfos Dedicated Equipmeres No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No Sample Appearance General: Cla	ID: ————————————————————————————————————	Color: ne	Whale Pumping F Time Pum Time of Sa Sample El	Sky: Grab Other: Rate: One p Beg / amplin H: 9 ase: Ne Gallons Removed 4	Parth 25 402 450 .7 .7 .7 seq#	gpm am / g am / g						
Sampling Information Weather Conditions Temp: (o Sampling Method: Grundfos Dedicated Equipmed No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No Sample Appearance General: (14) If ph Specific Cond. 1418 6.70 2499	Bladder SS/s ID: Temp OC 9.00	Color: ne	Whale Pumping F Time Pum Time of Sa Sample El	Sky: Grab Other: Rate: On p Beg / amplin H: 9 ase: No	Parth 25 450 7 7 8 SEQ# 1 2 3	gpm am / g am / g						
Sampling Information Weather Conditions Temp: 65 Sampling Method: Grundfos Dedicated Equipmer Sono No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No Sample Appearance General: Clarific Cond. 1418 6.70 2499 1439 6.69 3003	ID: ————————————————————————————————————	Color: ne	Whale Pumping F Time Pum Time of Sa Sample El	Sky: Grab Other: Rate: One p Beg / amplin H: 9 ase: Ne Gallons Removed 4	Parth 25 450 7 8EQ# 1 2 3	gpm am / g am / g						
Sampling Information Weather Conditions Temp: 65 Sampling Method: Grundfos Dedicated Equipm Fes No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No Sample Appearance General: Cla	ID: ————————————————————————————————————	Color: ner	Whale Pumping F Time Pum Time of Sa Sample El	Sky: Grab Other: Rate: On p Beg / amplin H: 191 ase: New Y	Parth 25 450 7 7 8 SEQ# 1 2 3	gpm am / g am / g						



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FINAL REPORT COMPLETION DATE: 18 JUL 17 ax

Date Reported: 12 Jul 2017

PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496 FERGUS FALLS MN 56538-0496 Work Order #: 31-0261 Account #: 006106

PO #: 48680

Project Name: BIG STONE PLANT CCR

Field Service Manager/Date Reviewed

Chemistry hab Manager/Date Reviewed

Quality Assurance Director/Date Reviewed

RL = Reporting Limits

NQ = Not Present, Qualitative Only

PQ = Present, Qualitative Only

ND = Not Determined



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT CCR

Sample Description: WELL H20X

Report Date: 12 Jul 2017 Lab Number: 17-A25505 Work Order #: 31-0261 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 6 Jun 2017 10:56 Sampled By: MVTL FIELD PERSONNEL Date Received: 6 Jun 2017 19:07

PO #: 48680

Temp at Receipt: 0.8C

	As Receiv	red.	Method RL	Method Reference	Date Analyzed	Analys
MS Water Digestions					8 Jun 17	JMS
Water Digestions					8 Jun 17	JMS
Radium 226	SEE ATTAC	CHED			10 Jul 17 1	4:24 ABL
Radium 228	SEE ATTAC	HED		EPA M9320	10 Jul 17 1	4:25 ABL
pH, Field	6.68	units	1.00	I-1586-85	6 Jun 17 1	0:56 MS
Hq	* 6.9	units	1,0	SM 4500 H+ B-2000	8 Jun 17 1	1:31 JFG
Sulfate	202 @	mg/L	5.0	ASTM D516-07	21 Jun 17	7:17 AKF
Chloride	4.0	mg/L	3.0	SM 4500 Cl E	8 Jun 17	9:21 MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7	15 Jun 17 1	5:04 RMB
Solids, Total Dissolved	3980	mg/L	10	SM 2540 C-97	9 Jun 17 1	3:12 RC
Calcium	494.0 -	mg/L	0.500	SW6010C	13 Jun 17 1	3:05 KAM
Lithium	0.418	mg/L	0.005	SW6010C	12 Jun 17 1	1:28 KAM
Barium	0.007	mg/L	0.005	SW6010C	12 Jun 17 1	1:28 KAM
Chromium	< 0.02 ^	mg/L	0.01	SW6010C	12 Jun 17 1	1:28 KAM
Cobalt	< 0.005	mg/L	0.005	SW6010C	12 Jun 17 1	L:28 KAM
Boron	0.254	mg/L	0.100	SW6010C	12 Jun 17 1	1:28 KAM
Antimony	< 1 @	ug/L	0.5	SW6020A	14 Jun 17 1	1:52 RMV
Arsenic	1.70 @	ug/L	0.50	SW6020A	14 Jun 17 1	:52 RMV
Beryllium	< 0.1	ug/L	0.05	SW6020A	14 Jun 17 1	1:52 RMV
	@See Narr	ative				
Cadmium	< 0.2 @	ug/L	0.1	SW6020A	14 Jun 17 1	:52 RMV
Lead	< 1	ug/L	0.5	SW6020A	14 Jun 17 1	:52 RMV
	@See Narr	ative				
Molybdenum	1.60 @	ug/L	0.50	SW6020A	14 Jun 17 1	:52 RMV
Selenium	20.1 @^	ug/L	0.50	SW6020A	14 Jun 17 1	;52 RMV
Challium	< 0.2	ug/L	0.1	SW6020A	14 Jun 17 1	:52 RMV
	@ See Nar					
Fluoride	0.120	mg/L	0.020	EPA 300.0	9 Jun 17 10	:17 RC

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:

8 = Due to sample matrix
9 = Due to sample quantity
+ > Due to internal standard response

CERTIFICATION: HN LAB # 027-015-125 WI LAB # 999447600 ND MICRO # 1013-N 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

Project Name: BIG STONE PLANT CCR

Sample Description: WELL H20X

Report Date: 12 Jul 2017 Lab Number: 17-A25505 Work Order #: 31-0261 Account #: 006106 Sample Matrix: GROUNDWATER

Date Sampled: 6 Jun 2017 10:56 Sampled By: MVTL FIELD PERSONNEL Date Received: 6 Jun 2017 19:07

PO #: 48680

Temp at Receipt: 0.8C

As Received Result

Method

Method Reference

Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

- Sample diluted due to result above calibration of linear range,

^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT CCR

Sample Description: WELL H30X

Report Date: 12 Jul 2017 Lab Number: 17-A25506 Work Order #: 31-0261 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 6 Jun 2017 11:31
Sampled By: MVTL FIELD PERSONNEL
Date Received: 6 Jun 2017 19:07

PO #: 48680

Temp at Receipt: 0.8C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed		Analyst
MS Water Digestions					8 Jun 17		JMS
Water Digestions					8 Jun 17		JMS
Radium 226	SEE ATTAC	HED			10 Jul 17	14:25	ABL
Radium 228	SEE ATTAC			EPA M9320	10 Jul 17	14:25	ABL
pH, Field	6.84	units	1.00	1-1586-85	6 Jun 17	11:31	MS
oH Tield	* 6.9	units	1.0	SM 4500 H+ B-2000	8 Jun 17	11:31	JFG
Sulfate	1910 ~	mg/L	5.0	ASTM D516-07	21 Jun 17	7:17	AKE
Chloride	80.8	mg/L	3.0	SM 4500 CL E	8 Jun 17	9:21	MRW
Mercury	0.006	ug/L	0.005	EPA 245.7	15 Jun 17	15:04	RMB
Solids, Total Dissolved	3530	mg/L	10	SM 2540 C-97	9 Jun 17	13:12	RC
Calcium	416.0 ~	mg/L	0.500	SW6010C	13 Jun 17	13:05	KAM
Lithium	0.129	mg/L	0.005	SW6010C	12 Jun 17	11:28	KAM
	0.016	mg/L	0.005	SW6010C	12 Jun 17	11:28	KAM
Barium	< 0.02 ^	mg/L	0.01	SW6010C	12 Jun 17		KAM
Chromium	< 0.005	mg/L	0.005	SW6010C	12 Jun 17		KAM
Cobalt	7.170	mg/L	0.100	SW6010C	12 Jun 17		KAM
Boron	< 1 0	ug/L	0.5	SW6020A	14 Jun 17		RMV
Antimony	1.18 @	ug/L	0.50	SW6020A	14 Jun 17		RMV
Arsenic	< 0.1		0.05	SW6020A	14 Jun 17		RMV
Beryllium	@See Narr	ug/L	0,03	SWOOZOA	11 000 17	-4100	14.10
2 2 1 2 2 2		Contract of the contract of th	0.1	SW6020A	14 Jun 17	14.52	RMV
Cadmium	< 0.2 @	ug/L	0.5	SW6020A	14 Jun 17		RMV
Lead	< 1	ug/L	0.5	SWOOZUA	74 000 74	14.02	1434
PACIFIC PACIFIC	@See Narr		0.50	04450000	14 Jun 17	14.50	RMV
Molybdenum	33.7 @	ug/L	0.50	SW6020A	14 Jun 17		RMV
Selenium	< 2 @^	ug/L	0.5	SW6020A	1000 0 100000 10000		19.77
Thallium	< 0.2	ug/L	0.1	SW6020A	14 Jun 17	14:52	RMV
	@ See Nar		72.00	and the court of		40.40	20
Fluoride	0.370	mg/L	0.020	EPA 300.0	9 Jun 17	10:17	RC

RL = Reporting Limit

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

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

P = Due to sample matrix

| = Due to sample quentity
| = Due to internal standard response
| ND NICRO | 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

Project Name: BIG STONE PLANT CCR

Sample Description: WELL H30X

Report Date: 12 Jul 2017
Lab Number: 17-A25506
Work Order #: 31-0261
Account #: 006106
Sample Matrix: GROUNDWATER
Date Sampled: 6 Jun 2017 11:31
Sampled By: MVTL FIELD PERSONNEL

Date Received: 6 Jun 2017 19:07 PO #: 48680

Temp at Receipt: 0.8C

As Received Result Method RL Method Reference Date Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

- ~ Sample diluted due to result above calibration of linear range.
- ^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT CCR

Sample Description: WELL H40X

Report Date: 12 Jul 2017 Lab Number: 17-A25507 Work Order #: 31-0261 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 6 Jun 2017 12:03 Sampled By: MVTL FIELD PERSONNEL Date Received: 6 Jun 2017 19:07

PO #: 48680

Temp at Receipt: 0.8C

	As Receiv Result	red	Method RL	Method Reference	Date Analyz	ed	Analyst
MS Water Digestions					8 Jun	17	JMS
Water Digestions					8 Jun	17	JMS
Radium 226	SEE ATTAC	HED			10 Jul	17 14:25	ABL
Radium 228	SEE ATTAC			EPA M9320	10 Jul	17 14:25	ABL
oH, Field	6.94	units	1.00	I-1586-85	6 Jun	17 12:03	MS
oH .	* 6.9	units	1.0	SM 4500 H+ B-2000	8 Jun	17 11:31	JFG
ulfate	1210 -	mg/L	5.0	ASTM D516-07	21 Jun	17 7:17	AKE
hloride	48.6	mq/L	3.0	SM 4500 C1 E	8 Jun	17 9:21	MRW
lercury	< 0.005	ug/L	0.005	EPA 245.7	15 Jun	17 15:04	RMB
olids, Total Dissolved	2220	mg/L	10	SM 2540 C-97	9 Jun	17 13:12	RC
alcium	335.0 ~	mq/L	0.500	SW6010C	13 Jun	17 13:05	KAM
ithium	0.095	mg/L	0.005	SW6010C	12 Jun	17 11:28	KAM
arium	0.011	mg/L	0.005	SW6010C	12 Jun	17 11:28	KAM
hromium	< 0.02 ^	mg/L	0.01	SW6010C		17 11:28	KAM
obalt	< 0.005	mq/L	0.005	SW6010C		17 11:28	KAM
oron	0.366	mg/L	0.100	SW6010C	12 Jun	17 11:28	KAM
ntimony	< 1 @	ug/L	0.5	SW6020A	14 Jun	17 14:52	RMV
rsenic	< 1 @	ug/L	0.5	SW6020A		17 14:52	RMV
eryllium	< 0.1	ug/L	0.05	SW6020A	14 Jun	17 14:52	RMV
cryrrram	@See Narr						
admium	< 0.2 @	ug/L	0.1	SW6020A	14 Jun	17 14:52	RMV
ead	< 1	ug/L	0.5	SW6020A	14 Jun	17 14:52	RMV
cau	@See Narr						
olybdenum	3,62 @	ug/L	0.50	SW6020A	14 Jun	17 14:52	RMV
elenium	< 2 0^	ug/L	0.5	SW6020A	14 Jun	17 14:52	RMV
'hallium	< 0.2	ug/L	0.1	SW6020A	14 Jun	17 14:52	RMV
TIGA A A MIN	@ See Nar		100				
luoride	0.500	mg/L	0.020	EPA 300.0	9 Jun	17 10:17	RC



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT CCR

Sample Description: WELL H40X

Report Date: 12 Jul 2017 Lab Number: 17-A25507 Work Order #: 31-0261 Account #: 006106 Sample Matrix: GROUNDWATER

Date Sampled: 6 Jun 2017 12:03 Sampled By: MVTL FIELD PERSONNEL Date Received: 6 Jun 2017 19:07

PO #: 48680

Temp at Receipt: 0.8C

As Received Result Method

Method Reference Date Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to; Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

- ~ Sample diluted due to result above calibration of linear range.
- ^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

RL = Reporting Limit
Analyses performed under our Minnesots Department of Health Accreditation conform to the current TNI standards.
The reporting limit was elevated for any snalyte requiring a dilution as coded below:

Due to sample matrix
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

Project Name: BIG STONE PLANT CCR

Sample Description: WELL H6

Report Date: 12 Jul 2017 Lab Number: 17-A25508 Work Order #: 31-0261 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 6 Jun 2017 12:40
Sampled By: MVTL FIELD PERSONNEL
Date Received: 6 Jun 2017 19:07

PO #: 48680

Temp at Receipt: 0.8C

	As Receiv	red	Method RL	Method Reference	Date Analyzed		Analyst
MS Water Digestions					8 Jun 1	7	JMS
Water Digestions					8 Jun 1	7	JMS
Radium 226	SEE ATTAC	HED			10 Jul 1	7 14:25	ABL
Radium 228	SEE ATTAC	HED		EPA M9320	10 Jul 1	7 14:25	ABL
pH, Field	7.29	units	1.00	I-1586-85	6 Jun 1	7 12:40	MS
Hq	* 7.3	units	1.0	SM 4500 H+ B-2000	6 Jun 1	7 11:31	JFG
Sulfate	72.4	mg/L	5.0	ASTM D516-07	21 Jun 1	7 7:17	AKE
Chloride	< 3	mg/L	3	SM 4500 C1 E	8 Jun 1	7 9:21	MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7	15 Jun 1	7 15:04	RMB
Solids, Total Dissolved	507	mg/L	10	SM 2540 C-97	9 Jun 1	7 13:12	RC
Calcium	48.20	mg/L	0.500	SW6010C	13 Jun 1	7 13:05	KAM
Lithium	0.027	mg/L	0.005	SW6010C	12 Jun 1	7 11:28	KAM
Barium	0.070	mg/L	0.005	SW6010C	12 Jun 1	7 11:28	KAM
Chromium	< 0.02 ^	mg/L	0.01	SW6010C	12 Jun 1	7 11:28	KAM
Cobalt	< 0.005	mg/L	0.005	SW6010C	12 Jun 1	7 11:28	KAM
Boron	3.480	mg/L	0.100	SW6010C	12 Jun 1	7 11:28	KAM
Antimony	< 1 8	ug/L	0.5	SW6020A	14 Jun 1	7 14:52	RMV
Arsenic	< 1 @	ug/L	0.5	SW6020A	14 Jun 1	7 14:52	RMV
Beryllium	< 0.25	ug/L	0.05	SW6020A	14 Jun 1	7 14:52	RMV
	@See Narr						
Cadmium	< 0.2 0	ug/L	0.1	SW6020A	14 Jun 1	7 14:52	RMV
Lead	< 1	ug/L	0.5	SW6020A	14 Jun 1	7 14:52	RMV
	@See Narr						0.325
Molybdenum	21.0 @	ug/L	0.50	SW6020A	14 Jun 1	7 14:52	RMV
Selenium	6.38 @^	ug/L	0.50	SW6020A	14 Jun 1	7 14:52	RMV
Thallium	< 0.2	ug/L	0.1	SW6020A		7 14:52	RMV
	@ See Nar		200		7017		
Fluoride	0.450	mg/L	0.020	EPA 300.0	9 Jun 1	7 10:17	RC

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

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

Paralyte	Paralyte	Paralyte
Due to sample matrix	Paralyte	
Due to sample quantity	Paralyte	
Due to sample quantity	Paralyte	
Due to internal standard response		



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT CCR

Sample Description: WELL H8

Report Date: 12 Jul 2017 Lab Number: 17-A25509 Work Order #: 31-0261 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 6 Jun 2017 13:25
Sampled By: MVTL FIELD PERSONNEL
Date Received: 6 Jun 2017 19:07

PO #: 48680

Temp at Receipt: 0.8C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed		Analyst
MC Water Discotions					8 Jun 17		JMS
MS Water Digestions					8 Jun 17		JMS
Water Digestions Radium 226	SEE ATTAC	HED			10 Jul 17	14:26	ABL
Radium 228	SEE ATTAC			EPA M9320	10 Jul 17	14:26	ABL
	7.12	units	1.00	I-1586-85	6 Jun 17	13:25	MS
pH, Field	* 7.2	units	1.0	SM 4500 H+ B-2000	8 Jun 17	11:31	JFG
pH	231 @	mg/L	5.0	ASTM D516-07	21 Jun 17	7:17	AKE
Sulfate	4.1	mg/L	3.0	SM 4500 C1 E	8 Jun 17	9:21	MRW
Chloride	< 0.005	ug/L	0.005	EPA 245.7	15 Jun 17		RMB
Mercury	847	mg/L	10	SM 2540 C-97	9 Jun 17		RC
Solids, Total Dissolved	122.0	mg/L	0.500	SW6010C	13 Jun 17		KAM
Calcium	0.038		0.005	SW6010C	12 Jun 17		KAM
Lithium	0.025	mg/L	0.005	SW6010C	12 Jun 17		KAM
Barium		mg/L	0.003	SW6010C	12 Jun 17		KAM
Chromium	< 0.02 ^	mg/L	0.005	SW6010C	12 Jun 17		KAM
Cobalt	< 0.005	mg/L	0.100	SW6010C	12 Jun 17		KAM
Boron	3,600	mg/L	0.5	SW6020A	14 Jun 17		RMV
Antimony	< 1 @	ug/L	0.5	SW6020A	14 Jun 17		RMV
Arsenic	< 1 @	ug/L		SW6020A	14 Jun 17		RMV
Beryllium	< 0.25	ug/L	0.05	SW60ZUA	14 Dun 17	14.52	1474
	@See Narr	2012 1171	0.0	SW6020A	14 Jun 17	14.52	RMV
Cadmium	< 0.2 @	ug/L	0.1		14 Jun 17		RMV
Lead	< 1	ug/L	0.5	SW6020A	14 Jun 17	74.02	Linda
	@See Narr			********	14 Jun 17	14.52	RMV
Molybdenum	13.7 €	ug/L	0.50	SW6020A	E. E. 11 S. 1775 11(3.7)		RMV
Selenium	8.46 @^	ug/L	0.50	SW6020A	The state of the s		RMV
Thallium	< 0.2	ug/L	0.1	SW6020A	14 Jun 17	14:52	PULLY
	@ See Nar				9 Jun 17	10.17	RC
Fluoride	0.540	mg/L	0.020	EPA 300.0	9 Jun 17	10:17	TIL

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

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 internal standard response

CERTIFICATION: MN LAB # 027-015-125 | WI LAB # 999447680 | ND MICRO # 1013-M | ND WM/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: BIG STONE PLANT CCR

Sample Description: WELL H9

Report Date: 12 Jul 2017 Lab Number: 17-A25510 Work Order #: 31-0261 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 6 Jun 2017 14:19 Sampled By: MVTL FIELD PERSONNEL Date Received: 6 Jun 2017 19:07

PO #: 48680

Temp at Receipt: 0.8C

	As Receiv	red	Method RL	Method Reference	Da	te alyz	ed		Analyst
MS Water Digestions					В	Jun	17		JMS
Water Digestions						Jun			JMS
Radium 226	SEE ATTAC	HED			10	Jul	17	14:26	ABL
Radium 228	SEE ATTAC	HED		EPA M9320	10	Jul	17	14:26	ABL
pH, Field	6.64	units	1,00	1-1586-85	6	Jun	17	14:19	MS
PH	* 6.8	units	1.0	SM 4500 H+ B-2000	В	Jun	17	11:31	JFG
Sulfate	253 @	mg/L	5.0	ASTM D516-07	21	Jun	17	7:17	AKF
Chloride	14.5	mg/L	3.0	SM 4500 Cl E	8	Jun	17	9:39	MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7	15	Jun	17	15:04	RMB
Solids, Total Dissolved	2640	mg/L	10	SM 2540 C-97	9	Jun	17	13:12	RC
Calcium	544.0 ~	mg/L	0.500	SW6010C	13	Jun	17	13:05	KAM
Lithium	0.115	mg/L	0.005	SW6010C	12	Jun	17	11:28	KAM
Barium	0.012	mg/L	0.005	SW6010C	12	Jun	17	11:28	KAM
Chromium	< 0.02 ^	mg/L	0.01	SW6010C	12	Jun	17	11:28	KAM
Cobalt	< 0.005	mg/L	0.005	SW6010C	12	Jun	17	11:28	KAM
Boron	0.999	mg/L	0.100	SW6010C	12	Jun	17	11:28	KAM
Antimony	< 1 @	ug/L	0.5	SW6020A	14	Jun	17	14:52	RMV
Arsenic	< 1 @	ug/L	0.5	SW6020A	14	Jun	17	14:52	RMV
Beryllium	< 0.1	ug/L	0.05	SW6020A	14	Jun	17	14:52	RMV
	@See Narr								
Cadmium	< 0.2 @	ug/L	0.1	SW6020A	14	Jun	17	14:52	RMV
Lead	< 1	ug/L	0.5	SW6020A	14	Jun	17	14:52	RMV
	@See Narr								
folybdenum	1.71 @	ug/L	0.50	SW6020A	14	Jun	17	14:52	RMV
Selenium	< 2 @^	ug/L	0.5	SW6020A	14	Jun	17	14:52	RMV
Challium	< 0.2	ug/L	0.1	SW6020A	14	Jun	17	14:52	RMV
	@ See Nar								
Cluoride	0.430	mg/L	0.020	EPA 300.0	9	Jun	17	10:17	RC

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:

8 = Due to sample matrix
1 = Due to sample quantity
4 = Due to internal standard response
CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND HW/DN # R-040



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Report Date: 12 Jul 2017 Lab Number: 17-A25510

Sample Matrix: GROUNDWATER

Date Sampled: 6 Jun 2017 14:19 Sampled By: MVTL FIELD PERSONNEL Date Received: 6 Jun 2017 19:07

Work Order #: 31-0261

Temp at Receipt: 0.8C

Account #: 006106

CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT CCR

Sample Description: WELL H9

Method

As Received RL Method Reference

PO #: 48680

Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

~ Sample diluted due to result above calibration of linear range.

Result

^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.



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Date Reported: 12 Jul 2017

Work Order #: 201731-0261 Account Number: 006106

PO #: 48680

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

Project Name: BIG STONE PLANT CCR

LABORATORY NARRATIVE

INORGANIC AND METALS ANALYSES:
Beryllium recovery was elevated in the laboratory control spike associated with samples 17-A25505 through 17-A25517. Data that was below the reporting limit was reported.

The internal standard counts for lead and thallium were outside of limits in the laboratory control spike associated with samples 17-A25505 through 17-A25517. Data was reported based on the acceptabe recovery of lead and thallium in the laboratory control spike.

No other problems were encountered with these analyses.



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Quality Control Report

Lab IDs: 17-A25505 to 17-A25517 Project: BIG STONE PLANT CCR Work Order: 201731-0261

ab IDs: 17-A25505 to 17-A2	25517	Pro	ject: BR	NOTE	E PLANT CCI	(Work (Order: 2	01731-02	.61							
analyte 301	LCS: Spike f	LCS Ret	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike 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
Antimony ug/L	25.0 25.0	99 99	85-115 85-115	25.0 25.0	17A25514q a25082qc	<1 <0.5	21.5 25.5	86 102	75-125 75-125	21.5 25.5	23.1 25.5	92 102	7.2 0.0	10 10	100 98	90-110 90-110	< 0.5 < 0.5
Arsenic ug/L	25.0 25.0	99 99	85-115 85-115	25.0 25.0	17A25514q a25082qc	2.32 2.64	27.1 29.1	99 106	75-125 75-125	27.1 29.1	29.3 28.8	108 105	7.8 1.0	10 10	98 100	90-110 90-110	< 0.5 < 0.5
Barium mg/L	1.000 1.000	98 98	85-115 85-115	1.00 1.00	17A25512q 17A25012q	0.132 0.068	1.150 1.040	102 97	75-125 75-125	1.150 1.040	1.140 1.070	101 100	0.9 2.8	10 10	99 100	90-110 90-110	< 0.005 < 0.005
Beryllium ug/L	2.50 2.50	121 121	85-115 85-115	2.50 2.50	17A25514q a25082qc	<0.25 <0.5	2.36 2.47	94 99	75-125 75-125	2.36 2.47	2.30 2.50	92 100	2.6 1.2	10 10	107 93	90-110 90-110	< 0.05 < 0.05
Boron mg/L	1.000 1.000	98 98	85-115 85-115	1.00 1.00	17A25512q 17A25012q	0.495 < 0.1	1.570 1.000	108 100	75-125 75-125	1.570 1.000	1.540 1.040	104 104	1.9 3.9	10 10	95 96	90-110 90-110	<0.1 <0.1
Cadmium ug/L	5.00 5.00	100 100	85-115 85-115	5.00 5.00	17A25514q a25082qc	0.31 < 0.1	4.79 5.14	90 103	75-125 75-125	4.79 5.14	5.27 5.09	99 102	9.5 1.0	10 10	98 102	90-110 90-110	<0.1 <0.1
Calcium mg/L	50.00 50.00	106 110	85-115 85-115	50.0 50.0	A25512q a25012qc	107.0 79.60	164.0 139.0	114 119	75-125 75-125	164.0 139.0	169.0 140.0	124 121	3.0 0.7	10 10	105 106	90-110 90-110	< 0.5 < 0.5
Chloride mg/L				60.0 60.0	17-A25509 17-A25519	4.1 12.4	62.6 72.5	98 100	85-121 85-121	62.6 72.5	62.1 72.5	97 100	0.8	5	96 96	90-110 90-110	<3 <3
Chromium mg/L	1.000 1.000	101 101	85-115 85-115	1.00 1.00	17A25512q 17A25012q	<0.01 <0.01	1.010 0.981	101 98	75-125 75-125	1.010 0.981	0.996 1.020	100 102	1.4 3.9	10 10	102 102	90-110 90-110	< 0.01 < 0.01
Cobalt mg/L	1.000 1.000	101 101	85-115 85-115		17A25512q 17A25012q	< 0.005 < 0.005	0.957 0.956	96 96	75-125 75-125	0.957 0.956	0.948 0.988	95 99	0.9	10 10	100 100	90-110 90-110	< 0.005 < 0.005
Fluoride mg/L	1		1-	0.20 0.20	17-A25512 17-A25523	0.240 0.240	0.420 0.450	90 105	75-125 75-125	0.420 0.450	0.420 0.450	90 105	0.0	10 10	95 100	90-110 90-110	< 0.02
Lead ug/L	25.0 25.0	100 100	85-115 85-115		17A25514q a25082qc	2.32 1.78	25.4 28.1	92 105	75-125 75-125	100000	27.6 27.7	101 104	8.3 1.4	10 10	100 101	90-110 90-110	< 0.5 < 0.5
Lithium mg/L	1.000	99 99	85-115 85-115	100000000000000000000000000000000000000	17-A25512 a25012qc	0.022 0.007	1.060 0.979	104 97	75-125 75-125		1.050 1.000	103 99	0.9 2.1	10 10	102 105	90-110 90-110	< 0.005 < 0.005



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Quality Control Report Lab IDs: 17-A25505 to 17-A25517

Lab IDs: 17-A25505 to 17-A25517 Project: BIG STONE PLANT CCR Work Order: 201731-0261

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike 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
Mercury ug/L				0.10 0.10	17-A25505 17-A25524	< 0.005 < 0.005	0.098 0.093	98 93	63-111 63-111	0.098 0.093	0.099 0.104	99 104	1.0 11.2	18 18	106 99	76-113 76-113	< 0.005 < 0.005 < 0.005 < 0.005
Molybdenum ug/L	25.0 25.0	102 102	85-115 85-115	25.0 25.0	17A25514q a25082qc	4.56 1.20	24.9 26.6	81 102	75-125 75-125	24.9 26.6	26.9 26.2	89 100	7.7 1.5	10 10	105 98	90-110 90-110	< 0.5 < 0.5
pH units	1	2	\$3		(2)		3	Ŷ		7.3 7.0	7.4 7.1	3	1.4	2.5 2.5	100 100	90-110 90-110	
Selenium ug/L	25.0 25.0	104 104	85-115 85-115	25.0 25.0	17A25514q a25082qc	2.07	29.8 27.0	111 108	75-125 75-125	29.8 27.0	30.6 27.5	114 110	2.6	10 10	102 107	90-110 90-110	1.00
Solids, Total Dissolved mg/L	1	1	15-	:		1			:	1170 561	1170 550	:	0.0 2.0	8	93	85-115	< 10
Sulfate mg/L	:	:	-	500 500	17-A25514 17-A25524	513 97.4	1070 647	111 110	74-128 74-128	1 10000000	1040 647	105 110	2.8	5	99 99	80-120 80-120	
Thallium ug/L	5.00 5.00	98 98	85-115 85-115	5.00 5.00	17A25514q a25082qc	< 0.2 < 0.1	4.91 5.24	98 105	75-125 75-125	7.15.73	5.29 5.18	106 104	7.5 1.2	10 10	100 102	90-110 90-110	

The beryllium LCS recoveries were outside the acceptance limits, see narrative.

Approved by:



Date: 7/10/2017

CLIENT:

MVTL Inc

CASE NARRATIVE

Project:

Ottertail Power Big Stone

Report ID: S1706214001

Lab Order: S1706214

Samples H-6 A25508, H-8 A25509, H2OX A25505, H3OX A25506, H4OX A25507, H9 A25510, Slag-2B A25517, Slag-4 A25511, Slag-5 A25512, Slag-6 A25513, Slag-7 A25514, Slag-8 A25515, and Slag-9 A25516 were received on June 9, 2017.

All samples were received and analyzed within the EPA recommended holding times, except those noted below in this case narrative. Samples were analyzed using the methods outlined in the following references:

"Standard Methods For The Examination of Water and Wastewater", approved method versions Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition 40 CFR Parts 136 and 141 40 CFR Part 50, Appendices B, J, L, and O Methods indicated in the Methods Update Rule published in the Federal Register Friday, May 18, 2012 ASTM approved and recognized standards

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Reviewed by: all

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 1



Sample Analysis Report

MVTL Inc Company:

1126 N Front St New Ulm, MN 56073

ProjectName:

Ottertail Power Big Stone

Lab ID: ClientSample ID:

S1706214-001 H2OX A25505

COC:

WEB

Date Reported

7/10/2017

Report ID

\$1706214001

WorkOrder:

S1706214

CollectionDate: 6/7/2017 10:56:00 AM 6/9/2017 11:43:00 AM

DateReceived: FieldSampler:

Water

Matrix:

Comments								
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init		
Radionuclides - Total					Company of	Cale J-1		
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	06/20/2017 1147	MB	
Radium 228 Precision (±)	NA	pCi/L			SM 7500 Ra-B	06/20/2017 1147	MB	
Radium 228	ND	pCI/L		2	Ga-Tech	07/01/2017 1145	WN	
Radium 228 Precision (±)	NA	pCl/L			Ga-Tech	07/01/2017 1145	WN	

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

E

Value above quantilation range
Holding times for preparation or analysis exceeded
Analyzed by another leboratory
Not Detected at the Reporting Limit H

ND Spike Recovery outside accepted recovery limits **RL** - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory G

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or Is less than LCL Outside the Range of Dilutions M

0

Matrix Effect X

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 13



Sample Analysis Report

MVTL Inc Company:

1126 N Front St New Ulm, MN 56073

ProjectName:

Ottertail Power Big Stone

Lab ID: ClientSample ID:

S1706214-002 H3OX A25506

COC:

WEB

Date Reported

7/10/2017

Report ID

51706214001

WorkOrder:

S1706214

DateReceived:

CollectionDate: 6/7/2017 11:31:00 AM 6/9/2017 11:43:00 AM

FieldSampler:

Matrix: Water

Analyses	Result	Units Qual		RL	Method	Date Analyzed/I	Init
Radionuciides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	06/21/2017 1048	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	06/21/2017 1048	MB
Radium 228	ND	pCi/L		2	Ga-Tech	07/01/2017 1448	WN
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	07/01/2017 1448	WN

These results apply only to the samples tested.

Qualiflers:

Analyte detected in the associated Method Blank

Value above quantitation range

H Holding times for preparation or analysis exceeded

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

C Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by: All

Wade Nieuwsma, Assistant Laboratory Manager

Page 2 of 13



Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Big Stone

Lab ID: ClientSample ID:

S1706214-003 H4OX A25507

COC:

WEB

Date Reported

7/10/2017

Report ID

S1706214001

WorkOrder:

S1706214

DateReceived:

CollectionDate: 6/7/2017 12:03:00 PM 6/9/2017 11:43:00 AM

FieldSampler:

Matrix:

Water

Analyses	Result Units		Qual	RL	Method	Date Analyzed/init		
Radionuclides - Total					7-4-7			
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	06/21/2017 1048	MB	
Radium 226 Precision (±)	NA.	pCi/L			SM 7500 Ra-B	06/21/2017 1048	MB	
Radium 228	ND	pCI/L		2	Ga-Tech	07/01/2017 1750	WN	
Radium 228 Precision (±)	NA	pCI/L			Ga-Tech	07/01/2017 1750	WN	

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded

Analyzed by another laboratory

ND Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by: all

Wade Nieuwsma, Assistant Laboratory Manager

Page 3 of 13



Sample Analysis Report

MVTL Inc Company:

> 1126 N Front St New Ulm, MN 56073

ProjectName:

Ottertail Power Big Stone

Lab ID:

S1706214-004 ClientSample ID: H-6 A25508

COC:

WEB

Date Reported 7/10/2017

Report ID

S1706214001

WorkOrder:

S1706214

CollectionDate: 6/7/2017 12:40:00 PM DateReceived:

6/9/2017 11:43:00 AM

FieldSampler:

Matrix:

Water

Analyses	Result Units Qual		RL	Method	Date Analyzed/Init		
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	06/21/2017 1048	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	06/21/2017 1048	MB
Radium 228	ND	pCi/L		2	Ga-Tech	07/01/2017 2053	WN
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	07/01/2017 2053	WN

These results apply only to the samples tested.

Qualiflers:

Analyte detected in the associated Method Blank

E Value above quantitation range

H Holding times for preparation or analysis exceeded

Analyzed by another laboratory

ND

Not Detected at the Reporting Limit Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantifiation limits

Value exceeds Monthly Ave or MCL or is less than LCL Outside the Range of Dilutions

Matrix Effect

Reviewed by: All

Wade Nieuwsma, Assistant Laboratory Manager

Page 4 of 13



Sample Analysis Report

Company:

MVTL Inc

1126 N Front St New Ulm, MN 56073

ProjectName:

Ottertail Power Big Stone

Lab ID: ClientSample ID:

S1706214-005 H-8 A25509

COC:

WEB

Date Reported 7/10/2017

Report ID

S1706214001

WorkOrder:

S1706214

CollectionDate: 6/7/2017 1:25:00 PM

DateReceived:

6/9/2017 11:43:00 AM

FieldSampler: Matrix:

Water

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nlt
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	06/21/2017 1048	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	06/21/2017 1048	MB
Radium 228	ND	pCl/L		2	Ga-Tech	07/05/2017 342	MB
Radium 228 Precision (±)	NA.	pCi/L			Ga-Tech	07/05/2017 342	MB

These results apply only to the samples tested.

Qualiflers:

Analyte detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded

Analyzed by another laboratory

Not Detected at the Reporting Limit ND.

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

C Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by: All

Wade Nieuwsma, Assistant Laboratory Manager

Page 5 of 13



Sample Analysis Report

MVTL Inc Company:

> 1126 N Front St New Ulm, MN 56073

ProjectName:

Otterfail Power Big Stone

S1706214-006 Lab ID: ClientSample ID: H9 A25510 COC: WEB

7/10/2017

Report ID

S1706214001

WorkOrder:

Date Reported

S1706214

CollectionDate: 6/7/2017 2:19:00 PM DateReceived:

6/9/2017 11:43:00 AM

FieldSampler:

Matrix: Water

Comments				_			
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nīt
Radionuclides - Total							
Radium 226	ND	pCl/L		1	SM 7500 Ra-B	06/21/2017 1048	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	06/21/2017 1048	MB
Radium 228	ND	pCi/L		2	Ga-Tech	07/05/2017 645	MB
Radium 228 Precision (±)	NA	pGi/L			Ga-Tech	07/05/2017 645	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

E

Value above quantitation range
Holding times for preparation or analysis exceeded
Analyzed by another laboratory H

ND Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory G

Analyte detected below quantitation limits
Value exceeds Monthly Ave or MCL or is less than LCL

0 Outside the Range of Dilutions

Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 6 of 13



ANALYTICAL QC SUMMARY REPORT

CLIENT:

MVTL Inc.

Date: 7/10/2017

Work Order:

S1706214

Report ID: S1706214001

Project:

Ottertail Power Big Stone

um 228 by Ga/Tech	Sample Type MBLK	LK Units: pCi/L					
MB-444 (06/28/17 22:40)	RunNo: 147536	PrepD	Date: 06/	12/17 14:00	BatchID 13368		
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
Total Radium 228	ND	1					
MB-445 (07/04/17 18:34)	RunNo: 147649	PrepD	ate: 06/	14/17 12:00	BatchID 13385		
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
Total Radium 228	ND	-1					
ım 228 by Ga/Tech	Sample Type LCS	Units: pCi/L					
LCS-444 (06/29/17 01:43)	RuлNo: 147536	PrepDate: 06/12/17 14:00			Bate		
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
Total Radium 228	43	1	40.1		107	65.9 - 132	
LCS-445 (07/04/17 15:31)	RunNo: 147649	PrepDate: 06/14/17 12:00			Bate	chID 13385	
Analyle	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
Total Radium 228	44	1	39.3		112	65.9 - 132	
m 228 by Ga/Tech	Sample Type MS	Units: pCi/L					
MS-444 (06/29/17 07:49)	RunNo: 147536	PrepD	ate: 06/1	2/17 14:00	Bato	:hID 13368	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
Total Radium 228	47	1	40.1	ND	116	65.9 - 132	
MS-445 (07/04/17 21:37)	RunNo: 147649	PrepDate: 06/14/17 12:00			Bato	-	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
Total Radium 228	42	1	39.1	2	104	50 - 139	
m 228 by Ga/Tech	Sample Type MSD	Units: pCi/L					
MSD-444 (06/29/17 10:53)	RunNo: 147536	PrepDate: 06/12/17 14:00		BatchID 13368			
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qua
Total Radium 228	47	1	47	0.532	117	20	
MSD-445 (07/05/17 00:40)	RunNo: 147649	PrepDate: 06/14/17 12:00			BatchID 13385		
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qua
Total Radium 228	47	1	42	11.4	117	20	

Qualiflers:

- Analyte detected in the associated Method Blank
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit R RPD outside accepted recovery limits
- X Matrix Effect

- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- L Analyzed by another laboratory
- O Outside the Range of Dilutions
- S Spike Recovery outside accepted recovery limits



ANALYTICAL QC SUMMARY REPORT

CLIENT:

MVTL Inc

Date: 7/10/2017

Work Order:

S1706214

Report ID: S1706214001

Project:

Ottertail Power Big Stone

dium 226 in Water -	Sample Type MBLK	Units: pCi/L					
MB-1761 (06/20/17 11:47)	RunNo: 147123	PrepDate: 06/12/17 0:00			Bat	177	
Analyte	Result	RL	Splke	Ref Samp	%REC	% Rec Limits	Qua
Radium 2	ND	0.2					
MB-1762 (06/21/17 10:48)	RunNo: 147141	PrepDate: 06/14/17 0:00			Bat		
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
Radium 2	ND	0.2					
flum 226 In Water -	Sample Type LCS	Units: pCi/L		: pCi/L			
LCS-1761 (06/20/17 11:47)	RunNo: 147123	PrepDate: 06/12/17 0:00			BatchID 13322		
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
Radium 22	5.4	0.2	6.41		84.7	67.1 - 122	
LCS-1762 (06/21/17 10:48)	RunNo: 147141	PrepDate: 06/14/17 0:00			BatchID 13329		
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
Radium 22	5.7	0.2	6.41		89.1	67.1 - 122	
llum 226 in Water -	Sample Type LCSD	Units: pCi/L					
LCSD-1761 (06/20/17 11:47)	RunNo: 147123	PrepDate: 06/12/17 0:00			Bate	chID 13322	
Analyle	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qua
Radium 22	6.0	0.2	5.4	9.83	93.5	20	
LCSD-1762 (06/21/17 10:48)	RunNo: 147141	PrepDate: 06/14/17 0:00		BatchID 13329			
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qua
Radium 22	6.0	0.2	5.7	5.31	93.9	20	
ium 226 in Water -	Sample Type MS	Units: pCi/L					
S1706157-004AMS (06/20/17	RunNo: 147123	PrepDate: 06/12/17 0:00		BatchID 13322			
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
Radium 22	6.5	0.2	6.41	0.3	97.8	65 - 131	
S1706214-002AMS (06/21/17	RunNo; 147141	PrepDate: 06/14/17 0:00			BatchID 13329		
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
	12		12.8	ND	85.8	65 - 131	

Qualiflers:

- B Analyte detected in the associated Method Blank
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
 R RPD outside accepted recovery limits
- X Matrix Effect

- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- L Analyzed by another laboratory
- O Outside the Range of Dilutions
- S Spike Recovery outside accepted recovery limits

Minnesota Valley Testing Laboratories

1126 North Front Street Phone: 800 782 3557 New Ulm, MN 56003 Fax: 507 359 2890

Field Service Chain of Custody Record

This is an exact copy of the original document By AB Date Le Sun 13

pages 1-16

Project Otter Tail Power Company	Project Type:	Big Stone Plant CCR	Name of Samplers:	Ben		
Report Otter Tail Power Company	Carbon Copy:			30	mutt Stein	
Attn: Paul Vukonich	Attn:		Quote Number:	70	12/21	
Address P.O. Box 496	Address:		Work Order Number:	31-	0261	
Fergus Falls, MN 56538-0496			Lab Numbers:			
Phone: 218-739-8349						
Sample Informatio	n		Bottle Type			Analysis

		Sample-In	formation		-	-						Bott	le Ty	/pe					Analys	sis
Lab Number	Sample ID	Unique Station 1D	Date	Time	Sample Type	Sample Location	1000 HNO3	Fillered Yor N	1000 none	500 HNO3	1 4	500 H2SO4	Filler? Y or N.	Mber	1000 Amber	500 NaOH	Other: 150 Hag	Other 150 No.	Analysis Required	/
ARTE	H2OX	1,	6 June17	1056	GW	1000	2	N	1	1	N								See Attached	1
de	НЗОХ			1131	GW		2	N	1	1	N			101						
m	H4OX			1203	GW		2	N	1	1	N									
08	H-6	1		1240	GW		2	N	1	1	N		12.0							
69	H-8			1325	GW		2	N	1	1	N	-	100							
O	H-9			1419	GW		2	N	1	1	N									
	Slag 1			-	GW		-2	N	1	1	N									
1112	Slag 4			1118	GW		2	N	1	1	N				1					
123	Slag 5			1453	GW	1	2	N	1	1	N		-	10 11	4 111	-		-		
1314	Slag 6		1	1222	GW		2	N	1	1	N				1					

Comments:

WORK ORDER #2

	D-	00			0 1	
Samples Reline	quished By: O	ey wor		Samples Received B	y. U. Dude	
Date: 6 TO	UN 17	Time: 1907	Temp: 3 Tribi	Date: 6 Jun 17	Time: 1907	Temp: 0-30
Samples Relin	quished into:	Fridge Log	g in Cart Other:			7 10 10 10 10 10 10 10 10 10 10 10 10 10
Samples Relin	quished By:			Samples Received B	y:	
Date:		Time:	Temp:	Date:	Time:	Temp:
Delivery:	Samplers	Other:		Seal Number(s) - If L	Jsed	
Transport:	Ambient	Ice	Other:	Seals Intact?	Yes No	

Minnesota Valley Testing Laboratories 1126 North Front Street New Ulm, MN 56003

1126 North Front Street Phone: 800 782 3557

Fax: 507 359 2890

Field Service Chain of Custody Record

Report	Otter Tail F	Power Com		Project T Carbon Co		Big Sto	ne P	ant C	CR					s:	Ben	5	lolf M	att	stein
Address	Paul Vukor P.O. Box 4 Fergus Fal 218-739-83	96 lls, MN 565	38-0496	Attn: Address:						Wor	k Or	umbe der N abers	lumb	er:					
		Sample In	formation									Bott	le Ty	/pe					Analysis
Lab Number	Sample ID	Unique Station ID	Date	Тіте	Sample Type	Sample Location	1000 HNO3	Fillered Yor M	1000 поле	500 HNO3		500 H2SO4	Filler? Y or M	1000 Amber no	1000 Amber	500 NaOH	Other: 150 Hag	Offier 150 Mg	Analysis Required
	Slag 7		6 June 17	1159	GW		2	N	1	1	N					1			See Attached
	Slag 8			1350	GW		2	N	1	1	N						100	1	
16	Slag 9			1515	GW		2	N	1	1	N	-						0	
_	Slag 9 Dee	ep e		-	GW		-2-	N	1	1	14					-	_		
17	Slag 2B		4	1539	GW		2	N	1	1	N								
Comme	nts:																		

WORK ORDER #2

			- O a				
Samples Relind	quished By: (6	50N	WOY)	*	Samples Received I	By: /x- Needw	
Date: (a Tw	1- 17	Time:	1907	Temp: 8TM	W Date: b Jun 17	Time: 1907	Temp:0.8C
Samples Relind	uished into:	Fridge) Log in (Cart Othe	r:		
Samples Relind	uished By:	_			Samples Received I	By:	
Date:		Time:		Temp:	Date:	Time:	Temp:
Delivery:	Samplers	Other:			Seal Number(s) - If	Used	
Transport:	Ambient	Ice		Other:	Seals Intact?	Yes No	

Big Stone Plant CCR Appendix III Parameters

CCR - Appendix III Detection Monitoring
Field Parameters
pH*

* Field and Laboratory Measurements

Total Concentration Parameters

Boron

Calcium

Chloride

Fluoride

pH

Sulfate

Dissolved Solids, Total



Big Stone CCR Appendix IV Parameters CCR - Appendix IV - Assessment Monitoring

Total Concentration Parameters

Antimony

Arsenic

Barium

Beryllium

Cadmium

Chromium, Total

Cobalt

Fluoride

Lead

Lithium

Mercury

Molybdenum

Selenium

Thallium

Radium 226 + 228



Groundwater A	ssessment			Site:	Otte	r Tail Po	ower Co./ Big Stone
Sampling Personne	el:			Facility ID:			
	Mat + Sto.	1		Date: 6	Jun 17		
				Unique Sta	ition ID:		
				Sample ID		W	/ell H2OX
Well Condition Well Locked? Well Labeled? Casing Straight? Repairs Necessary.	Yes No Yes No Yes No	3		Protective State ID Ta Grout Seal	g? Yes	>	No No
Well Information							
Well Depth:	3281			Well Casin	g Elevation:		1103.91
Constructed Depth:						1097	.36
Casing Diameter:	2"			Previous S	tatic: 097	76	
Water Level Before	Purge: 6.5	-2		Water Leve	el After Sample		and Dung
			1	1			the same of the sa
Well Volume:	4.29 nation	Gallons	-1~	Measurem	ent Method:	Elec.	VVLIS Steel Tape
ES TENTENT	nation		Wind: E	Measurem Whale	Sky: Grab Other:	Sun	
Well Volume: Sampling Inform Weather Conditions	nation s: Temp: 7 Grundfos	5		@13 .	Sky: Grab Other:	Sym	
Well Volume: Sampling Inform Weather Conditions Sampling Method:	nation s: Temp: 7 Grundfos	5		© (3 Whale	Sky: Grab Other: ate: O.J.	5 5	n.Y
Well Volume: Sampling Inform Weather Conditions Sampling Method: Dedicated Equipme Well Purged Dry? Time Purged Dry?	ration s: Temp: 7 Grundfos ent: Yes No Yes No	5 Biádar SS/T		Whale Pumping R Time Pump	Sky: Grab Other: ate: O.J. Began: 1	5 5 5 6 5 5 6	gpm
Well Volume: Sampling Inform Weather Conditions Sampling Method: Dedicated Equipme Well Purged Dry?	ration s: Temp: 7 Grundfos ent: Yes No Yes No Yes No	5 Bradder SS/T	Disp. Bailer	Whale Pumping R Time Pumping Time of Sa Sample El-	Sky: Grab Other: ate: O.J. Began: 1	5 5 5 6 5 5 6	gpm (arn)/pm (arn)/pm
Well Volume: Sampling Inform Weather Conditions Sampling Method: Dedicated Equipme Well Purged Dry? Time Purged Dry?	ration s: Temp: 7 Grundfos ent: Yes No Yes No Yes No	5 Bradder SS/T		Whale Pumping R Time Pumping Time of Sa Sample El-	Sky: Grab Other: ate: O.J. Began: 10 mpling: 10	5 5 5 6 5 5 6	gpm (am)/pm
Well Volume: Sampling Inform Weather Conditions Sampling Method: Dedicated Equipme Well Purged Dry? Time Purged Dry? Duplicate Sample?	ration s: Temp: 7 Grundfos ent: Yes No Yes No Yes No	5 Bradder SS/T	Disp. Bailer	Whale Pumping R Time Pumping Time of Sa Sample El-	Sky: Grab Other: ate: O.J. Began: 10 mpling: 10	5 5 5 6 5 5 6	gpm (arn)/pm (arn)/pm
Well Volume: Sampling Inform Weather Conditions Sampling Method: Dedicated Equipme Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance	ration s: Temp: 7 Grundfos ent: Yes No Yes No Yes No e: General: C Specific Cond.	ID:	Color: No	Whale Pumping R Time Pump Time of Sa Sample El-	Sky: Grab Other: ate: O.J. Began: 10 mpling: 10 : 235. se: Nortel	5 (4 3 3 3 0 5 6 0	gpm (am)/pm (am)/pm Odor: None
Well Volume: Sampling Inform Weather Conditions Sampling Method: Dedicated Equipme Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance	ration s: Temp: 7 Grundfos ent: Yes No Yes No Yes No e: General: C Specific Cond.	5 Diadder SS/T ID: leov Temp C	Color: No	Whale Pumping R Time Pump Time of Sa Sample El- Phase Turbidity NTU	Sky: Grab Other: ate: O.J. Began: 10 mpling: 10 : 235. se: Norte Gallons Removed	SEQ #	gpm (am)/pm (am)/pm Odor: None
Well Volume: Sampling Inform Weather Conditions Sampling Method: Dedicated Equipme Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance	ration s: Temp: 7 Grundfos ent: Yes No Yes No Yes No e: General: C Specific Cond.	5 Diadder SS/T ID: leov Temp C	Color: No	Whale Pumping R Time Pump Time of Sa Sample El- Phase Turbidity NTU	Sky: Grab Other: ate: O.J. Began: 10 mpling: 10 : 235. se: Norte Gallons Removed	SEQ # 1 2	gpm (am)/pm (am)/pm Odor: None
Well Volume: Sampling Inform Weather Conditions Sampling Method: Dedicated Equipme Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance	ration s: Temp: 7 Grundfos ent: Yes No Yes No Yes No e: General: C Specific Cond.	5 Diadder SS/T ID: leov Temp C	Color: No	Whale Pumping R Time Pump Time of Sa Sample El- Phase Turbidity NTU	Sky: Grab Other: ate: O.J. Began: 10 mpling: 10 : 235. se: Norte Gallons Removed	SEQ # 1 2	gpm (am)/pm (am)/pm Odor: None
Well Volume: Sampling Inform Weather Conditions Sampling Method: Dedicated Equipme Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance	ration s: Temp: 7 Grundfos ent: Yes No Yes No 105 Yes No e: General: C Specific Cond. J 402	5 Diadder SS/T ID: leov Temp C	Color: No	Whale Pumping R Time Pump Time of Sa Sample El- Phase Turbidity NTU	Sky: Grab Other: ate: O.J. Began: 10 mpling: 10 : 235. se: Norte Gallons Removed	SEQ # 1 2	gpm (am)/pm (am)/pm Odor: none

4.4		2 22 2		
New	Ulm.	MN	560	73

Groundwater Assessment		Site:	Ot	ter Tail	Power Co./ Big Stone
Sampling Personnel:		Facility ID:			
made Stem		Date: 65	m(7		
		Unique Sta	ation ID:		
		Sample ID			Well H3OX
Well Condition					
Well Locked? (Yes) No		Protective	Posts? Ye	s	(No)
Well Labeled? Wee No		State ID Ta	ag? Ye	s	(No)
Casing Straight? (Yes) No		Grout Seal	Intact? Ye	s /	NO
Repairs Necessary:				-	
Well Information		110.00	10.1.31		Marketon .
Well Depth: 22.55			g Elevation:		1095.19
			er Elevation:		, 14
Casing Diameter: 2"		Previous S	tatic: 1890	4	
Water Level Before Purge: 5,65			el After Samp		
Well Volume: 2786 Gallons		Measurem	ent Method:	Elec	WLI Steel Tape
		1			
Sampling Information				- 24	
Weather Conditions: Temp: 7	_ Wind:	EQ8	Sk	y: 5.	way
Sampling Method: Grundfos Bledder'S	S/T) Disp. Baile	r Whale	Grab Oth		-/-
Dedicated Equipment: (Yes) No		Pumping R	late: 00	5	gpm
Well Purged Dry? (Yes) No		Time Pump	Began:	1115	- (am)/ pm
Time Purged Dry? 1127		Time of Sa	mpling: 1	131	(am)/ pm
Duplicate Sample? Yes (No. ID:	-	Sample El-	1: 209.1	0	
Sample Appearance: General: Clear	Color: V	are Phas	e: mon		Odor: Mone
	100			Sec.	
(12) Specific Temp	D. O.	Turbidity	Gallons	SEQ	
Time pH Cond. C	mg/L	NTU	Removed	#	Comments:
1127 6.76 4077 10.68	AN	NA	3,0	1	
			4 4 5	2	
				3	
1131 6.84 4044 11,40	5		10-02	4	rechovere
	12		4	5	
Stabilized? Yes (No)	Amount	Water Remov	/e(3	0	Gallons
Comments:					



Groundwat	ter Assessm	ent			Site:	0	tter Tai	Power Co./ Big Stor
Sampling Pers	sonnel:				Facility II	D:		
					Date: >	F 6 June	17	
M	alt Stev	1			Unique S	tation ID:		
					Sample I	D;		Well H4OX
Well Conditi	ion							
Well Locked?		YES NO			Protective	e Posts? Ye	es (Na
Well Labeled?	î .	(es No			State ID	Tag? Ye	es (No
Casing Straigh	nt?	(Yes No			Grout Se	al Intact? (Ye	es)	No
Repairs Neces	ssary:							
Well Informa	ation	"						
Well Depth:	7	7.48			Well Cas	ing Elevation:		1108.22
Constructed D		27.20	-			ater Elevation:	100	71.33
Casing Diame		2"				Static: 1091		
Water Level B	efore Purge:	16.89				vel After Samp		Tow Auro
Well Volume:	1.73 +	6,89	Gallons			ment Method:	/Elec	WLI Steel Tape
		(TESUS	>		1			
Sampling In	formation							
Weather Cond		Temp: 5	()	Win	d: SEE	10 Sk	y: 5	~~~
Sampling Meth		Grundfos	Bradder S				ner:	7
Dedicated Equ		Yes No			Pumping	Rate: 0.2	5	gpm
Well Purged D		(Yes) No	-				151	am)/ pm
Time Purged D	Dry?	156	5			Sampling: 12		am / pm
Duplicate Sam		Yes No)ID:	-	Sample E			
Sample Appea	rance:	General:	Clear	Colo	r:none Pha	se: none		Odor: none
0								
(7)	1/12/	Specific	Temp	D.	Turbidity	Gallons	SE	the state of the state of
Time	pH	Cond.	°C	0.	NTU	Removed	Q#	Comments:
1158	6.84	2763	10.09	NA	NA	1,75	1	
	and the Continue			1			2	
		A PERSON					3	
					100		4	
1203	694	2703	10.35	9	4		5	techeral
Stabilized?	Yes	(No)		Amo	unt Water	1 1.73		Gallons
Comments:	(7 1110	-//C TYDIO	11.10		



Groundwater Assessmen	nt		Site:	Otter	Tail Po	wer Co./ Big Stone
Sampling Personnel:			Facility ID:			
matt stell	n		Date: 6			
			Unique Sta			
			Sample ID			Well H6
Well Condition					_	
Well Locked? (Yes No	5		Protective	Posts? Yes		No
Well Labeled? (Yes No			State ID T			(No.
Casing Straight? (res) No				Intact? Yes	1 1 10	No
Repairs Necessary:			251474,875			
Well Information	4					
Well Depth: 17.4	2		Well Casir	ng Elevation:		«IA
Constructed Depth: 17.70				er Elevation:		7
Casing Diameter: 2"	_		Previous S			1
Water Level Before Purge: //	145			el After Sampl	e: _ F	Below Pund
Well Volume: 1,06	Gallons			ent Method:	Elec.	
1/-		_	1			
Sampling Information						
Weather Conditions: Temp:	82	Wind: 5	Eag	Skv:	Sim	NY
Sampling Method: Grundfos	Bladder SS/T)	Disp. Bailer	Whale	Grab Other:		
Dedicated Equipment: (res) No			Pumping F		-	gpm
Well Purged Dry? Yes No			Time Pum		30	am / (pm)
	35		Time of Sa		40	am / om
Duplicate Sample? Yes No) ID: -	-	Sample El		1	
Sample Appearance: General:	Clear	Color: n		se: none	-	Odor: none
1						
Specific Specific	Temp	D.O.	Turbidity	Gallons	SEQ	
Time pH Cond.	°C	mg/L	NTU	Removed	#	Comments:
1035 7.48 1116	11.88	wh	N.A	1,25	1	100
					. 2	
		111		K K K W	3	
				_		
1240 7.29 994	10.55				4	recherce ?
1240 7.29 994	10.55				5	recharge

	Site:	Otter Tail Po	ower Co./ Big Stone
Sampling Personnel:	Facility ID:		
Matt 5 ton	Date: 6 Jun 1	7	
	Unique Station ID):	
	Sample ID:		Well H8
Well Condition			
Well Locked? (Yes No	Protective Posts?	Tes	No
Well Labeled? No	State ID Tag?	Yes	No
Casing Straight? (Yes) No	Grout Seal Intact		No
Repairs Necessary:			
Well Information			
Well Depth: 22.33	Well Casing Eleva	ation:	1081.23
Constructed Depth: 22.05	Static Water Elev		
Casing Diameter: 2"	Previous Static:	1076.07	7
Water Level Before Purge: 6.55	Water Level After		6,96
Well Volume: 2,57 Gallo	s Measurement Me	thod: Elec.	WLI Steel Tape
	\-		
Sampling Information	Wind: SE@8	Sky: Schn	04
Sampling Information Weather Conditions: Temp: 44		Sky: SUM	py
Sampling Information Weather Conditions: Temp: 814 Sampling Method: Grundfos Sadd		Other:	
Sampling Information Weather Conditions: Temp: 41 Sampling Method: Grundfos Dedicated Equipment Yes No	SS/T Disp. Bailer Whale Grab	Other:	gpm am / pm
Sampling Information Weather Conditions: Temp: 81 Sampling Method: Grundfos Sladd Dedicated Equipment Yes No Well Purged Dry? Yes No	Pumping Rate: Time Pump Bega Time of Sampling	Other: 0,25 In: 1352	gpm am / pm
Sampling Information Weather Conditions: Temp: 814 Sampling Method: Grundfos Dedicated Equipment Yes No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No ID:	Pumping Rate: Time Pump Bega Time of Sampling Sample EH:	o Other: 0,25 in: 1352 1,7	gpm am / pm am / pm
Sampling Information Weather Conditions: Temp: 81 Sampling Method: Grundfos Dedicated Equipment Yes No Well Purged Dry? Yes No Time Purged Dry?	Pumping Rate: Time Pump Bega Time of Sampling	o Other: 0,25 in: 1352 1,7	gpm am / pm
Sampling Information Weather Conditions: Temp: 81- Sampling Method: Grundfos Dedicated Equipment Yes No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No ID: Sample Appearance: General: Conditions (1) Specific Iem	Pumping Rate: Time Pump Bega Time of Sampling Sample EH: Color:	o Other: 0,25 in: 1352 1,7	gpm am / pm am / pm
Sampling Information Weather Conditions: Temp: 814 Sampling Method: Grundfos Dedicated Equipment Yes No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No ID: Sample Appearance: General: Clew Time pH Specific Cond.	Pumping Rate: Time Pump Bega Time of Sampling Sample EH: Color: None Phase: D. O. Turbidity Gall mg/L NTU Ren	o Other: 0,25 n: 1352 : 1325 1,7 one	gpm am / pm am / pm
Sampling Information Weather Conditions: Temp: 844 Sampling Method: Grundfos Dedicated Equipment Yes No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No ID: Sample Appearance: General: Clew Time pH Cond. CC 1363 7.08 1315 8	Pumping Rate: Pumping Rate: Time Pump Bega Time of Sampling Sample EH: Color: Nove Phase: D. O. Turbidity Gall mg/L NTU Rer	o Other: 0,25 In: 1352 I.7 one. lons SEQ moved #	gpm am / pm am / pm
Sampling Information Weather Conditions: Temp: 814 Sampling Method: Grundfos Dedicated Equipment Yes No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No ID: Sample Appearance: General: Clew Time pH Cond. 9C 1363 7.08 1315 8.	Pumping Rate: Pumping Rate: Time Pump Bega Time of Sampling Sample EH: Color: Nove Phase: N. D. O. Turbidity Gall mg/L NTU Rer	o Other: 0,25 n: 1325 1,7 one. lons SEQ noved # 73 1 75 2	gpm am / pm am / pm
Sampling Information Weather Conditions: Temp: 814 Sampling Method: Grundfos Dedicated Equipment Yes No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No ID: Sample Appearance: General: Clew Time pH Cond. 9C 1363 7.08 1315 8.	Pumping Rate: Pumping Rate: Time Pump Bega Time of Sampling Sample EH: Color: Nove Phase: N. D. O. Turbidity Gall mg/L NTU Rer	o Other: 0,25 n: 1325 1,7 one lons SEQ noved # 73 1 75 2 8,25 3	gpm am / pm am / pm
Sampling Information Weather Conditions: Temp: 814 Sampling Method: Grundfos Dedicated Equipment Yes No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No ID: Sample Appearance: General: Clew Time pH Cond. 9C 1363 7.08 1315 8.	Pumping Rate: Pumping Rate: Time Pump Bega Time of Sampling Sample EH: Color: Nove Phase: N. D. O. Turbidity Gall mg/L NTU Rer	o Other: 0,25 n: 1325 1,7 one. lons SEQ moved # 7,5 1 7,5 2 8,25 3	gpm am / pm am / pm
Sampling Information Weather Conditions: Temp: 814 Sampling Method: Grundfos Dedicated Equipment Yes No Well Purged Dry? Yes No Time Purged Dry? Duplicate Sample? Yes No ID: Sample Appearance: General: Clew Time pH Cond. 9C 1363 7.08 1315 8	Pumping Rate: Pumping Rate: Time Pump Bega Time of Sampling Sample EH: Color: Nove Phase: N. D. O. Turbidity Gall mg/L NTU Rer	o Other: 0,25 n: 1325 1,7 one lons SEQ noved # 73 1 75 2 8,25 3	gpm am / pm am / pm

Grou	Huwater	- 100000 Cilicit			Site:		Tail Po		Dig
Sampi	ling Personi	ne			Facility ID	:			
		Matt Stin			Date: 6 7	w17			
		1000			Unique St	ation I		7	
			-		Sample ID);	We	ell H9	
Well	Condition								
Well L	ocked?	Yes No			Protective	Posts Yes		No	_
	abeled?	(Yes) No				ag? Yes	- 1	No)	
	Straight?	Yes No			Grout Sea	I Intac Yes	7	No	
Repair	s Necessar	у:							
Well I	nformatio								
Well D	epth:	30.7				ng Elevation		1086.	21
	ructed Dept					ter Elevation			
	Diameter:	2"				Static: 107			
Water	Level Befor		02			el After San	_	10,	
			O 11		Manageran	ant Mathad	Clan VI	VE 1	Ste
Well V Samp Weath	olume: ling Informer Condition	nsTemp: 5/3	Gallons	Wind: 5	ETOS.		Sun		
Samp Weath Sampl Dedica	ling Information er Condition ing Method: ated Equipm	mation ns Temp: 95 Grundfos (Bladder SS/T		Whale Pumping F	Sky: Grab Other: Rate:	Sun		
Samp Weath Sampl Dedica Well P	eling Information of the Informa	mation ns Temp: 55 Grundfos (ne Ves No			Whale Pumping F	Sky: Grab Other: Rate:	Sun	Ŋ	am
Samp Weath Sampl Dedica Well P	eling Information of the Condition of th	mation ns Temp: 93 Grundfos ne Yes No	Bladder SS/T)		Whale Pumping F Time Pum Time of Sa	Sky: Grab Other: Rate: Original Peg amplin 14	Sun 1331	Ŋ	am
Samp Weath Sampl Dedica Well P Time F	eling Information of Condition of Method: ated Equipmourged Dry? Purged Dry? ate Sample	mation ns Temp: 53 Grundfos ne Yes No Yes No 7 Yes No	Bladder SS/T) Disp. Bailer	Whale Pumping F Time Pum Time of Sa Sample El	Sky: Grab Other: Rate: Our p Beg amplin 14	Sum 1331 119	gp m	am am
Samp Weath Sampl Dedica Well P Time F	eling Information of Condition of Method: ated Equipmourged Dry? Purged Dry? ate Sample	mation ns Temp: 93 Grundfos ne Yes No	Bladder SS/T		Whale Pumping F Time Pum Time of Sa Sample El	Sky: Grab Other: Rate: Original Peg amplin 14	Sum 1331 119	Ŋ	am am
Samp Weath Sampl Dedica Well P Time F Duplica Sampl	eling Information of Condition of Method: ated Equipmourged Dry? Purged Dry? ate Sample	mation ns Temp: 53 Grundfos ne Yes No Yes No 7 Yes No	Bladder SS/T) Disp. Bailer	Whale Pumping F Time Pum Time of Sa Sample El	Sky: Grab Other: Rate: O Dip Beg amplin 14 H: 1944 ase: Don	Sum 1331 139 4	gpm Odor:	am am
Samp Weath Sampl Dedica Well P Time F Duplica Sampl	eling Information of the Condition of th	mation ns Temp: 53 Grundfos ne Yes No Yes No 7 Yes No	Bladder SS/T) ID: I emp OC	Color: 1/1/2 D. O. mg/L	Whale Pumping F Time Pum Time of Sa Sample El	Sky: Grab Other: Rate: Original Plants Gallons Removed	Sim 1331 1331 4 8	gpm Odor:	am am
Samp Weath Sampl Dedica Well P Time F Duplica Sampl	eling Informer Condition ing Method: ated Equipm urged Dry? Purged Dry? ate Sample e Appearan	mation ns Temp: 53 Grundfos (ne Yes No Yes No Yes No Cor General: () Specific Cond.	Bladder SS/T) ID: ar lemp C 9.64	Color: 1000	Whale Pumping F Time Pum Time of Sa Sample El	Sky: Grab Other: Rate: Order P Beg amplin 14 H: 1914 Pase: Don Gallons Removed \$.75	Sum 1334 139 4 SEQ#	gpm Odor:	am am
Sample Weath Sample Dedicated Well P Time F Duplicated Sample 15 Time 1341	er Condition ing Method: ated Equipm urged Dry? Purged Dry? ate Sample e Appearan	mation ns Temp: 53 Grundfos (ne Yes No Yes No Reserved No Reserve	Bladder SS/T) ID: Per	Color: 1000	Whale Pumping F Time Pum Time of Sa Sample El	Sky: Grab Other: Rate: Or app Beg amplin 14 H: 1914 ase: Don Gallons Removed \$.75	SL 1331- 179 4 SEQ# 1	gpm Odor:	am am
Samp Weath Sampl Dedica Well P Time F Duplica Sampl	er Condition ing Method: ated Equipm urged Dry? Purged Dry? ate Sample e Appearan	mation ns Temp: 53 Grundfos (ne Yes No Yes No Yes No Cor General: () Specific Cond.	Bladder SS/T) ID: ar lemp C 9.64	Color: 1000	Whale Pumping F Time Pum Time of Sa Sample El	Sky: Grab Other: Rate: Order P Beg amplin 14 H: 1914 Pase: Don Gallons Removed \$.75	SEQ# 12331 129 4 SEQ# 1 2	gpm Odor:	am am
Sample Weath Sample Dedicated Well P Time F Duplicated Sample 15 Time 1341	er Condition ing Method: ated Equipm rurged Dry? Purged Dry? ate Sample e Appearan	mation ns Temp: 53 Grundfos (ne Yes No Yes No Reserved No Reserve	Bladder SS/T) ID: Per	Color: 1000	Whale Pumping F Time Pum Time of Sa Sample El	Sky: Grab Other: Rate: Or app Beg amplin 14 H: 1914 ase: Don Gallons Removed \$.75	SEQ# 12334	gpm Odor:	am am
Samp Weath Sampl Dedica Well P Time F Duplica Sampl 15 Time	er Condition ing Method: ated Equipm rurged Dry? Purged Dry? ate Sample e Appearan	mation ns Temp: 53 Grundfos (ne Yes No Yes No Reserved No Reserve	Bladder SS/T) ID: Per	D. O. mg/L	Whale Pumping F Time Pum Time of Sa Sample El	Sky: Grab Other: Rate: O Page amplin 14 H: 1914 ase: Done Gallons Removed \$.75 7.5	SLM 133L 149 4 SEQ# 1 2 3 4 5	gpm Odor:	am am



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Page: 1 of 18

FINAL REPORT COMPLETION DATE: 21 Aug 17- 117

Date Reported: 16 Aug 2017

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496 FERGUS FALLS MN 56538-0496 Work Order #: 31-0334 Account #: 006106 PO #: 48680

Project Name: BIG STONE PLANT CCR

Field Service Manager/Date Review

)) /6 A ...

aun h Quality Assurance Director/Date Reviewed

RL = Reporting Limits

NQ = Not Present, Qualitative Only

PQ = Present, Qualitative Only

ND = Not Determined



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT CCR

Sample Description: H20X

Report Date: 16 Aug 2017 Lab Number: 17-A32926 Work Order #: 31-0334 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 11 Jul 2017 11:16 Sampled By: MVTL FIELD PERSONNEL Date Received: 11 Jul 2017 17:46

PO #: 48680

Temp at Receipt: 4.2C

	As Receiv	red	Method RL	Method Reference	Date Analyz	ed	Analyst	
MS Water Digestions					17 Jul	17	JMS	
Water Digestions					17 Jul		JMS	
Radium 226	See Attac	ched				17 15:57	ABL	
Radium 228	See Attac	110011		EPA M9320		17 15:57	ABL	
pH, Field	7.35	units	1.00	1-1586-85		17 11:16	MS	
pH	* 6.9	units	1.0	SM 4500 H+ B-2000		17 10:25	AJM	
Sulfate	2510 ~	mg/L	5.0	ASTM D516-07		17 12:16	MRW	
Chloride	3.7	mg/L	3.0	SM 4500 C1 E	14 Jul	17 8:30	MRW	
Mercury	< 0.005	ug/L	0.005	EPA 245.7	24 Jul	17 15:19	RMB	
Solids, Total Dissolved	4020	mg/L	10	SM 2540 C-97	12 Jul	17 15:00	AJM	
Calcium	464.0	mg/L	0.500	SW6010C	19 Jul	17 13:58	KAM	
J. P. G. S. P. P. C.	~ See nar		4.1440		25 2 7	-11-0	1000	
Lithium	0.427	mg/L	0.005	SW6010C	20 Jul	17 14:04	KAM	
Barium	0.007	mg/L	0.005	SW6010C	19 Jul	17 13:58	KAM	
Chromium	< 0.01	mq/L	0.01	SW6010C	19 Jul	17 13:58	KAM	
Cobalt	< 0.005	mq/L	0.005	SW6010C	19 Jul	17 13:58	KAM	
Boron	0.228	mg/L	0.100	SW6010C	19 Jul	17 13:58	KAM	
Antimony	< 5 @^	ug/L	0.5	SW6020A	2 Aug	17 12:25	RMV	
Arsenic	< 2.5 €	ug/L	0.5	SW6020A		17 19:25	RMV	
Beryllium	< 0.25	ug/L	0.05	SW6020A		17 12:25	RMV	
	@See Nari				2000			
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	1 Aug	17 19:25	RMV	
Lead	< 2.5	ug/L	0.5	SW6020A		17 19:25	RMV	
	@See Narr	ative		2.00.00	90.00			
Molybdenum	< 2.5 @	ug/L	0.5	SW6020A	1 Aug	17 19:25	RMV	
Selenium	23.0 6^	ug/L	0.50	SW6020A		17 19:25	RMV	
Thallium	< 0.5 @	ug/L	0.1	SW6020A		17 12:25	RMV	
Fluoride	0.410 #	mg/L	0.020	EPA 300.0		17 13:24	RC	

RL = Reporting 1.1mit
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 marrix
= Due to concentration of other analytes
= Due to concentration of other analytes
= Due to internal standard response
CERTIFICATION: MN LAB # 027-015-125 MI LAB # 999447680 ND MICRO # 1013-M. ND WW/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

Project Name: BIG STONE PLANT CCR

Sample Description: H20X

Report Date: 16 Aug 2017 Lab Number: 17-A32926 Work Order #: 31-0334 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 11 Jul 2017 11:16 Sampled By: MVTL FIELD PERSONNEL Date Received: 11 Jul 2017 17:46

PO #: 48680

Temp at Receipt: 4.2C

As Received Result

Method RL

Method Reference

Date Analyzed

Analyst

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

- Sample diluted due to result above calibration of linear range.

The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

RL - Reporting Limit

^{*} Holding Time Exceeded



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT CCR

Sample Description: H30X

Report Date: 16 Aug 2017 Lab Number: 17-A32927 Work Order #: 31-0334 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 11 Jul 2017 11:49 Sampled By: MVTL FIELD PERSONNEL Date Received: 11 Jul 2017 17:46

PO #: 48680

Temp at Receipt: 4.2C

	As Receiv	red	Method RL	Method Reference	Date Analyzed		Analyst
MS Water Digestions					17 Jul 17		JMS
Water Digestions					17 Jul 17		JMS
Radium 226	See Attac	ched			15 Aug 17	15:57	ABL
Radium 228	See Attac	hed		EPA M9320	15 Aug 17		ABL
pH, Field	6.99	units	1.00	1-1586-85	11 Jul 17		MS
pH	* 7.0	units	1.0	SM 4500 H+ B-2000	12 Jul 17		AJM
Sulfate	1790 ~	mg/L	5.0	ASTM D516-07	18 Jul 17	8:59	MRW
Chloride	80.6	mg/L	3.0	SM 4500 C1 E	14 Jul 17	8:30	MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7	24 Jul 17	15:19	RMB
Solids, Total Dissolved	3480	mg/L	10	SM 2540 C-97	12 Jul 17		AJM
Calcium	383.0	mg/L	0.500	SW6010C	19 Jul 17		KAM
3,000,000	~ See nar		44.425.465.	001034-335	27. 925. (24)	9-16-0	1945-3
Lithium	0.134	mq/L	0.005	SW6010C	20 Jul 17	14:04	KAM
Barium	0.014	mg/L	0.005	SW6010C	·19 Jul 17	13:58	KAM
Chromium	< 0.01	mg/L	0.01	SW6010C	19 Jul 17	13:58	KAM
Cobalt	< 0.005	mg/L	0.005	SW6010C	19 Jul 17	13:58	KAM
Boron	7.070	mg/L	0.100	SW6010C	19 Jul 17	13:58	KAM
Antimony	< 5 @^	ug/L	0.5	SW6020A	2 Aug 17	12:25	RMV
Arsenic	< 2.5 €	ug/L	0.5	SW6020A	1 Aug 17		RMV
Beryllium	< 0.25	ug/L	0.05	SW6020A	2 Aug 17		RMV
	@See Narr				2 1,059 50	20.00	
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	1 Aug 17	19:25	RMV
Lead	< 2.5	ug/L	0.5	SW6020A	1 Aug 17		RMV
	@See Narr		2.00	4.54.554		35,155	1000
Molybdenum	30.5 @	ug/L	0.50	SW6020A	1 Aug 17	19:25	RMV
Selenium	< 2.5 €	ug/L	0.5	SW6020A	2 Aug 17		RMV
Thallium	< 0.5 @	ug/L	0.1	SW602DA	2 Aug 17		RMV
Fluoride	0.490 #	mg/L	0.020	EPA 300.0	12 Jul 17		RC



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT CCR

Sample Description: H30X

Report Date: 16 Aug 2017 Lab Number: 17-A32927 Work Order #: 31-0334 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 11 Jul 2017 11:49 Sampled By: MVTL FIELD PERSONNEL Date Received: 11 Jul 2017 17:46

PO #: 48680

Temp at Receipt: 4.2C

As Received Result

Method RL

Method Reference Date Analyzed

Analyst

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

- Sample diluted due to result above calibration of linear range.

The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

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-K ND WW/DM # R-040



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT CCR

Sample Description: H40X

Report Date: 16 Aug 2017 Lab Number: 17-A32928 Work Order #: 31-0334 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 11 Jul 2017 12:09 Sampled By: MVTL FIELD PERSONNEL Date Received: 11 Jul 2017 17:46

PO #: 48680

Temp at Receipt: 4.20

	As Receiv	red	Method RL	Method Reference	Date Analyzed	V	Analyst
MS Water Digestions	-				17 Jul 1	7	JMS
Water Digestions					17 Jul 1	7	JMS
Radium 226	See Attac	hed			15 Aug I	7 15:58	ABL
Radium 228	See Attac	hed		EPA M9320	15 Aug 1		ABL
pH, Field	7.00	units	1.00	I-1586-85	11 Jul 1		MS
pH	* 7.0	units	1.0	SM 4500 H+ B-2000	12 Jul 1	7 10:25	AJM
Sulfate	1170 ~	mg/L	5.0	ASTM D516-07	18 Jul 1		MRW
Chloride	49.3	mq/L	3.0	SM 4500 C1 E	14 Jul 1		MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7		7 15:19	RMB
Solids, Total Dissolved	2260	mq/L	10	SM 2540 C-97	12 Jul 1	7 15:00	AJM
Calcium	327.0	mg/L	0.500	SW6010C	19 Jul 1		KAM
	~ See nar		21230	B30 550 5			
Lithium	0.107	mg/L	0.005	SW6010C	20 Jul 1	7 14:04	KAM
Barium	0.018	mq/L	0.005	SW6010C	19 Jul 1	7 13:58	KAM
Chromium	< 0.01	mg/L	0.01	SW6010C	19 Jul 1	7 13:58	KAM
Cobalt	< 0.005	mq/L	0.005	SW6010C	19 Jul 1	7 13:58	KAM
Boron	0.353	mg/L	0.100	SW6010C	19 Jul 1	7 13:58	KAM
Antimony	< 5 @^	ug/L	0.5	SW6020A	2 Aug 1	7 12:25	RMV
Arsenic	< 2.5 @	ug/L	0.5	SW6020A		7 19:25	RMV
Beryllium	< 0.25	uq/L	0.05	SW6020A		7 12:25	RMV
27.3-7.20	@See Narr	ative			5) (2)		
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	1 Aug 1	7 19:25	RMV
Lead	< 2.5	ug/L	0.5	SW6020A		7 19:25	RMV
	@See Narr	ative					
Molybdenum	4.48 @	ug/L	0.50	SW6020A	1 Aug 1	7 19:25	RMV
Selenium	< 2.5 @	ug/L	0.5	SW6020A		7 12:25	RMV
Thallium	< 0.5 @	ug/L	0.1	SW6020A		7 12:25	RMV
Fluoride	0.630 #	mg/L	0.020	EPA 300.0	12 Jul 1		RC

RL = Reporting limit

Analyses performed under our Minnesots 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
Q = Due to concentration of other analytes
Q = Due to sample quantity
Q = Due to internal standard response
Q = Due to sample quantity
Q = 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: BIG STONE PLANT CCR

Sample Description: H40X

Report Date: 16 Aug 2017 Lab Number: 17-A32928 Work Order #: 31-0334 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 11 Jul 2017 12:09 Sampled By: MVTL FIELD PERSONNEL Date Received: 11 Jul 2017 17:46

PO #: 48680

Temp at Receipt: 4.2C

As Received Result

Method RL

Method Reference

Date Analyzed

Analyst

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

- Sample diluted due to result above calibration of linear range.
- * The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

RL = Reporting Limit

^{*} Holding Time Exceeded



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT CCR

Sample Description: WELL H6

Report Date: 16 Aug 2017 Lab Number: 17-A32929 Work Order #: 31-0334 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 11 Jul 2017 12:37 Sampled By: MVTL FIELD PERSONNEL Date Received: 11 Jul 2017 17:46

PO #: 48680

Temp at Receipt: 4.2C

	As Receiv	red	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					17 Jul 17	JMS
Water Digestions					17 Jul 17	JMS
Radium 226	See Attac	hed			15 Aug 17 15:58	1 4 5 4 5 5
Radium 228	See Attac	175 0 00		EPA M9320	15 Aug 17 15:58	
pH, Field	7.41	units	1.00	I-1586-85	11 Jul 17 12:3	
рН	* 7.3	units	1.0	SM 4500 H+ B-2000	12 Jul 17 10:25	AJM
Sulfate	64.2	mg/L	5.0	ASTM D516-07	18 Jul 17 8:59	
Chloride	< 3	mg/L	3	SM 4500 C1 E	14 Jul 17 8:30	MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7	24 Jul 17 15:19	
Solids, Total Dissolved	517	mg/L	10	SM 2540 C-97	12 Jul 17 15:00	
Calcium	46.90	mg/L	0.500	SW6010C	19 Jul 17 13:58	KAM
	See Narra			2110-22-3	and have been aftern.	
Lithium	0.036	mg/L	0.005	SW6010C	20 Jul 17 14:04	KAM
Barium	0.076	mg/L	0.005	SW6010C	19 Jul 17 13:58	KAM
Chromium	< 0.01	mg/L	0.01	SW6010C	19 Jul 17 13:58	KAM
Cobalt	< 0.005	mg/L	0.005	SW6010C	19 Jul 17 13:58	KAM
Boron	3.690	mg/L	0.100	SW6010C	19 Jul 17 13:58	KAM
Antimony	< 2 @^	ug/L	0.5	SW6020A	2 Aug 17 13:07	RMV
Arsenic	< 1 @	ug/L	0.5	SW6020A	1 Aug 17 20:10	
Beryllium	< 0.1	ug/L	0.05	SW6020A	2 Aug 17 13:07	
7.0	@See Narr	ative			TO 1004 14 15 15 15 15 15 15 15 15 15 15 15 15 15	
Cadmium	< 0.2 @	ug/L	0.1	SW6020A	1 Aug 17 20:10	RMV
Lead	< 1 @	ug/L	0.5	SW6020A	2 Aug 17 13:07	RMV
Molybdenum	22.9 @	ug/L	0.50	SW6020A	1 Aug 17 20:10	
Selenium	7.64 8"	ug/L	0.50	SW6020A	1 Aug 17 20:10	RMV
Thallium	< 0.2 @	ug/L	0.1	SW6020A	2 Aug 17 13:07	
Fluoride	0.560 #	mg/L	0.020	EPA 300.0	12 Jul 17 13:24	

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

* The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT CCR

Sample Description: WELL H8

Report Date: 16 Aug 2017 Lab Number: 17-A32930 Work Order #: 31-0334 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 11 Jul 2017 13:17 Sampled By: MVTL FIELD PERSONNEL Date Received: 11 Jul 2017 17:46

PO #: 48680

Temp at Receipt: 4.20

	As Receiv	red	Method RL	Method Reference	Date Analyzed		Analyst
MS Water Digestions					17 Jul 1	7	JMS
Water Digestions					17 Jul 1	7	JMS
Radium 226	See Attac	ched			15 Aug 1	7 15:58	ABL
Radium 228	See Attac	hed		EPA M9320	15 Aug 1	7 15:58	ABL
pH, Field	7.14	units	1.00	I-1586-85	11 Jul 1	7 13:17	MS
pH	* 7.3	units	1.0	SM 4500 H+ B-2000	12 Jul 1	7 10:25	AJM
Sulfate	269 @	mq/L	5.0	ASTM D516-07	18 Jul 1	7 8:59	MRW
Chloride	4.3	mg/L	3.0	SM 4500 C1 E	14 Jul 1	7 8:30	MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7	24 Jul 1	7 15:19	RMB
Solids, Total Dissolved	878	mg/L	10	SM 2540 C-97	12 Jul 1	7 15:00	AJM
Calcium	114.0	mg/L	0.500	SW6010C	19 Jul 1	7 13:58	KAM
	See Narra	tive					
Lithium	0.039	mq/L	0.005	SW6010C	20 Jul 1	7 14:04	KAM
Barium	0.026	mg/L	0.005	SW6010C	19 Jul 1	7 13:58	KAM
Chromium	< 0.01	mq/L	0.01	SW6010C	19 Jul 1	7 13:58	KAM
Cobalt	< 0.005	mg/L	0.005	SW6010C	19 Jul 1	7 13:58	KAM
Boron	3.740	mg/L	0.100	SW6010C	19 Jul 1	7 13:58	KAM
Antimony	< 2 @^	ug/L	0.5	SW6020A	2 Aug 1	7 13:07	RMV
Arsenic	< 1 @	ug/L	0.5	SW6020A	1 Aug 1	7 20:10	RMV
Beryllium	< 0.1	ug/L	0.05	SW6020A	2 Aug 1	7 13:07	RMV
200	@See Narr	ative					
Cadmium	< 0.2 @	ug/L	0.1	SW6020A	1 Aug 1	7 20:10	RMV
Lead	< 1 @	ug/L	0.5	SW6020A	2 Aug 1		RMV
Molybdenum	14.1 @	ug/L	0.50	SW6020A	1 Aug 1		RMV
Selenium	8.82 @^	ug/L	0.50	SW6020A	1 Aug 1		RMV
Thallium	< 0.2 @	ug/L	0.1	SW6020A	2 Aug 1		RMV
Fluoride	0.510 #	mg/L	0.020	EPA 300.0	12 Jul 1		RC

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

^ The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

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

E = Due to sample metrix

| = Due to concentration of other analytes
| = Due to concentration of other analytes
| = Due to internal standard response
| = Due to internal standard response |
| = Due to MI LAB # 999447680 | ND MICRO # 1013-K | ND MW/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

Project Name: BIG STONE PLANT CCR

Sample Description: WELL H9

Report Date: 16 Aug 2017 Lab Number: 17-A32931 Work Order #: 31-0334 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 11 Jul 2017 14:03 Sampled By: MVTL FIELD PERSONNEL Date Received: 11 Jul 2017 17:46

PO #: 48680

Temp at Receipt: 4.2C

	As Receiv	red	Method RL	Method Reference	Date Analyzed				Analyst
MS Water Digestions					17	Jul	17		JMS
Water Digestions					17	Jul	17		JMS
Radium 226	See Attac	ched			15	Aug	17	15:58	ABL
Radium 228	See Attac	ched		EPA M9320				15:58	ABL
pH, Field	6,69	units	1,00	I-1586-85				14:03	MS
PH	* 6.8	units	1.0	SM 4500 H+ B-2000	12	Jul	17	10:25	AJM
Sulfate	1470 ~	mg/L	5.0	ASTM D516-07	18	Jul	17	8:59	MRW
Chloride	16.4	mg/L	3.0	SM 4500 C1 E	14	Jul	17	8:30	MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7	24	Jul	17	15:19	RMB
Solids, Total Dissolved	2770	mq/L	10	SM 2540 C-97	13	Jul	17	9:14	AJM
Calcium	548.0	mg/L	0.500	SW6010C	19	Jul	17	13:58	KAM
	~ See nar				6.3	11100		271104	
Lithium	0.132	mg/L	0.005	SW6010C	20	Jul	17	14:04	KAM
Barium	0.013	mg/L	0.005	SW6010C	19	Jul	17	13:58	KAM
Chromium	< 0.01	mg/L	0.01	SW6010C	19	Jul	17	13:58	KAM
Cobalt	< 0.005	mg/L	0.005	SW6010C	19	Jul	17	13:58	KAM
Boron	1.040	mg/L	0.100	SW6010C				13:58	KAM
Antimony	< 5 @^	ug/L	0.5	SW6020A	2	Aug	17	13:07	RMV
Arsenic	< 2.5 €	ug/L	0.5	SW6020A				20:10	RMV
Beryllium	< 0.25	ug/L	0.05	SW6020A				13:07	RMV
- And the state of	@See Narr								
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	1	Aug	17 :	20:10	RMV
Lead	< 2.5 €	ug/L	0.5	SW6020A				13:07	RMV
Molybdenum	< 2.5 @	ug/L	0.5	SW6020A				20:10	RMV
Selenium	< 2.5 @	ug/L	0.5	SW6020A				13:07	RMV
Thallium	< 0.5 @	ng/L	0.1	SW6020A				13:07	RMV
Fluoride	0.420 #	mg/L	0.020	EPA 300.0				13:24	RC

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

- Sample diluted due to result above calibration of linear range,
- The reporting limit (RL) was elevated due to instrument performance at the lower limit of quantitation (LLOQ). This will only impact results that are found to be below the elevated RL. Results above the elevated RL are unaffected.

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 analytea
| - Due to sample quantity + = Due to internal stendard response
CERTIFICATION: NO LAB # 027-D15-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040



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INORGANIC & METALS ANALYSES:

Due to the high concentration of calcium in the spiked sample, the recovery for calcium was outside the acceptance range in the matrix spike duplicate for samples 17-A32926 through 17-A32935. The data was reported based on the acceptable recoveries of the blank spike and relative percent difference of the matrix spikes.

The internal standard associated with beryllium was outside of acceptance range in the blank spike, matrix spike, and matrix spike duplicate in samples 17-A32926 through 17-A32933 and 17-A32935 through 17-A32938. Data was reported based on the acceptable recovery of beryllium in the blank spike, matrix spike, and matrix spike duplicate.

For samples 17-A32929 through 17-A32933 and 17-A32935 through 17-A32938, the beryllium recovery was elevated outside of acceptance range in the knowns. Data that was below the reporting limit was reported.

Lead was detected in the blank associated with samples 17-A32926 through 17-A32928 at 1.57 ug/L. Data that was below the reporting limit was reported,

No other problems were encountered with these analyses.

MINNESOTA VALLEY TESTING LABORATORIES, INC.

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Quality Control Report
Lab IDs: 17-A32926 to 17-A32938

ab IDs: 17-A32926 to 17-A32938 Project: BIG STONE PLANT CCR

Work Order: 201731-0334

ab IDs: 17-A32926 to	17-A32938	Pr	oject: Bit	2 2 LONI	E PLANT CCI	(Work		01731-03	34							
Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike 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
Antimony ug/L	25.0 25.0	98 98	85-115 85-115	25.0 25.0	17A32928q 17A32938q	<5 <5	26.3 26.4	105 106	75-125 75-125	26.3 26.4	27.8 26.3	111 105	5.5 0.4	10 10	102 102	90-110 90-110	< 0.5 < 0.5
Arsenic ug/L	25.0 25.0	98 98	85-115 85-115	25.0 25.0	17A32928q 17A32938q	< 2.5 1.60	28.1 28.4	112 107	75-125 75-125	28.1 28.4	29.6 28.1	118 106	5.2 1.1	10 10	98 100	90-110 90-110	< 0.5 < 0.5
Barium mg/L	1.000	100	85-115	1.00 1.00	17A32935q 17A32945q	0.036 0.070	1.050 1.080	101 101	75-125 75-125	1.050 1.080	1.060 1.090	102 102	0.9 0.9	10 10	97 99 98	90-110 90-110 90-110	< 0.005
Beryllium ug/L	2.50 2.50 2.50	98 98 102	85-115 85-115 85-115		17A32928q 17A32938q a32938qc	<0.25 <0.25 <0.25	2.36 2.53 2.63	94 101 105	75-125 75-125 75-125	2.36 2.53 2.63	2.56 2.54 2.58	102 102 103	8.1 0.4 1.9	10 10 10	104 110 108	90-110 90-110 90-110	<0.05 <0.05 <0.05
Boron mg/L	1.000	96	85-115	1.00 1.00	17A32935q 17A32945q	1.110 < 0.1	2.230 1.040	112 104	75-125 75-125	2.230 1.040	2.330 1.050	122 105	4.4 1.0	10 10	94 96 95	90-110 90-110 90-110	< 0.1
Cadmium ug/L	5.00 5.00	98 98	85-115 85-115	5.00 5.00	17A32928q 17A32938q	< 0.5 0.25	5.35 5.35	107 102	75-125 75-125	5.35 5.35	5.65 5.37	113 102	5.5 0.4	10 10	99 98	90-110 90-110	< 0.1 < 0.1
Calcium mg/L	50.00	98	85-115	50.0 50.0	17A32935q 17A32945q	229.0 117.0	279.0 170.0	100 106	75-125 75-125	279.0 170.0	303.0 169.0	148 104	8.2 0.6	10 10	94 97 96	90-110 90-110 90-110	< 0.5
Chloride mg/L		1	-	60.0 60.0	17-A32901 17-A32939	15.6 < 3	82.0 61.3	111 102	85-121 85-121	82.0 61.3	79.4 61.6	106 103	3.2 0.5	5 5	95 95	90-110 90-110	<3 <3
Chromium mg/L	1.000	101	85-115	1.00	17A32935q 17A32945q	< 0.01 < 0.01	0.994 1.020	99 102	75-125 75-125		1.010 1.010	101 101	1.6 1.0	10 10	98 102 100	90-110 90-110 90-110	< 0.01
Cobalt mg/L	1.000	102	85-115	1.00 1.00	17A32935q 17A32945q	< 0.005 < 0.005	0.923 0.959	92 96	75-125 75-125	The second secon	0.944 0.962	94 96	2.2 0.3	10 10	96 100 100	90-110 90-110 90-110	1
Fluoride mg/L		1	7	2.00 2.00	17-A32935 17-A32945	0.600 0.320	2.54 2.13	97 91	75-125 75-125		2.54 2.21	97 94	0.0 3.7	10 10	99 97	90-110 90-110	100000000000000000000000000000000000000

MINNESOTA VALLEY TESTING LABORATORIES, INC.



1126 N. Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2616 E. Broadway Ave. ~ Bismarck, ND 58502 ~ 800-279-6885 ~ Fax 701-258-9724 1201 Lincoln Highway ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885 www.mvtl.com

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Page: 2 of 3

Quality Control Report Lab IDs: 17-A32926 to 17-A32938

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec	24 (C. 104) C. 24 (C. 2)	MSD/s Dup a Origit Result	MSD/- Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit(*)	Known Rec (%)	% Rec	Method Blank
Lead ug/L	25.0 25.0	91 101	85-115 85-115	25.0 25.0	17A32928q 17A32938q	<2.5 <2.5	26.3 26.7	105 107	75-125 75-125	26.3 26.7	27.8 27.0	111 108	5.5 1.1	10 10	97 102	90-110 90-110	1.57 < 0.5
Lithium mg/L	1.000	105	85-115	1.00 1.00	17-A32935 17-A32944	0.081 0.025	1.200 1.140	112 112	75-125 75-125	1.200 1.140	1.200 1.140	112 112	0.0	10 10	105 106 107	90-110 90-110 90-110	< 0.005
Mercury ug/L				0.10 0.10	17-A32931 17-A32942	< 0.005 < 0.005	0.102 0.099	102 99	63-111 63-111	0.102 0.099	0.102 0.099	102 99	0.0	18 18	103 99	76-113 76-113	< 0.005 < 0.005 < 0.005 < 0.005 < 0.005
Molybdenum ug/L	25.0 25.0	101 101	85-115 85-115	25.0 25.0	17A32928q 17A32938q	4.48 5.29	30.5 30.4	104 100	75-125 75-125	30.5 30.4	32.7 29.9	113 98	7.0 1.7	10 10	99 100	90-110 90-110	< 0.5 < 0.5
pH units	1							:	:	7.1 7.1	7.1 7.1	1	0.0	2.5 2.5	101 101	90-110 90-110	
Selenium ug/L	25.0 25.0 25.0 25.0	98 94 98 94	85-115 85-115 85-115 85-115	25.0 25.0 25.0 25.0 25.0	17A32928q 17A32938q 17A32928q 17A32938q	<5 <4 <2.5 <2.5	30.3 29.4 27.5 26.7	121 118 110 107	75-125 75-125 75-125 75-125	30.3 29.4 27.5 26.7	30.6 27.5 28.0 26.8	122 110 112 107	1.0 6.7 1.8 0.4	10 10 10 10	98 102 101 100	90-110 90-110 90-110 90-110	<2 <2 <0.5 <0.5
Solids, Total Dissolved mg/L	1	:	3	:		1,51		:	1	878 645	876 649		0.2	8	100 88	85-115 85-115	< 10
Sulfate mg/L	14.6			50.0 5000 500 500	17-A33239 17-A32926 17-A32936 17-A32946	57.6 2510 264 305	107 8350 816 917	99 117 110 122	74-128 74-128 74-128 74-128	107 8350 816 917	109 8360 823 909	103 117 112 121	1.9 0.1 0.9 0.9	5 5 5 5	100 105 102	80-120 80-120 80-120	<5 <5 <5
Thallium ug/L	5.00 5.00	99 99	85-115 85-115		17A32928q 17A32938q	< 0.5 < 0.5	5.38 5.32	108 106	75-125 75-125	1	5.54 5.38	111 108	2.9 1.1	10 10	105 104	90-110 90-110	<0.1 <0.1

The calcium matrix spike duplicate recovery was outside the acceptance limits, see narrative Lead was found in the laboratory blank at 1.57 ug/L, see narrative.

Approved by:



1673 Terra Avenue, Sheridan, Wyomlng 82801 ph: (307) 672-8945

Date: 8/15/2017

CLIENT:

MVTL Inc

CASE NARRATIVE

Project:

Ottertail Power Big Stone

Lab Order:

\$1707202

Report ID: S1707202001

Samples H-6-A32929, H-8-A32930, H-9-A32931, H2OX-A32926, H3OX-A32927, H4OX-A32928, SLAG-4-A32932, SLAG-5-A32933, SLAG-6-A32934, SLAG-7-A32935, SLAG-8-A32936, SLAG-9-A32937, and SLAG2B-A32938 were received on July 14, 2017.

All samples were received and analyzed within the EPA recommended holding times, except those noted below in this case narrative. Samples were analyzed using the methods outlined in the following references:

"Standard Methods For The Examination of Water and Wastewater", approved method versions Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition 40 CFR Parts 136 and 141 40 CFR Part 50, Appendices B, J, L, and O Methods indicated in the Methods Update Rule published in the Federal Register Friday, May 18, 2012 ASTM approved and recognized standards

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Reviewed by: all

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 1



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Otterfail Power Big Stone

Lab ID: ClientSample ID: COC:

H2OX-A32926

S1707202-001

wo#31-0334

Date Reported

8/15/2017

Report ID

S1707202001

WorkOrder:

\$1707202

CollectionDate: 7/11/2017 11:16:00 AM DateReceived: 7/14/2017 11:21:00 AM

FieldSampler:

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/init		
Radionuciides - Total								
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	08/11/2017 1129	MB	
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	08/11/2017 1129	MB	
Radium 228	ND	pCi/L		2	Ga-Tech	08/11/2017 2005	MB	
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	08/11/2017 2005	MB	

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range E

Holding times for preparation or analysis exceeded H

Analyzed by another laboratory Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits
Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 13



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName: Lab ID:

Ottertail Power Big Stone S1707202-002

COC:

ClientSample ID: H3OX-A32927 wo#31-0334

Report ID S1707202001

WorkOrder:

\$1707202

8/15/2017

CollectionDate: 7/11/2017 11:49:00 AM DateReceived: 7/14/2017 11:21:00 AM

FleidSampler:

Date Reported

Matrix:

Water

Comments								
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init		
Radionuclides - Total	-							
Radium 226	ND	pCi/L		1.	SM 7500 Ra-B	08/11/2017 1129	MB	
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	08/11/2017 1129	MB	
Radium 228	ND	pCI/L		2	Ga-Tech	08/11/2017 2308	MB	
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	08/11/2017 2308	MB	

These results apply only to the samples tested.

Qualiflers:

Analyle detected in the associated Method Blank

Value above quantitation range E

Holding times for preparation or analysis exceeded Analyzed by another laboratory Not Detected at the Reporting Limit H

ND

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits
Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 2 of 13



1673 Terra Avenue, Sheridan, Wyomlng 82801

ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Big Stone

Lab ID:

S1707202-003 ClientSample ID: H4OX-A32928

COC:

wo#31-0334

8/15/2017 Date Reported Report ID

S1707202001

WorkOrder: S1707202

CollectionDate: 7/11/2017 12:09:00 PM

DateReceived: 7/14/2017 11:21:00 AM

FieldSampler:

Matrix:

Water

Comments								
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init		
Radionuclides - Total								
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	08/11/2017 1129	MB	
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	08/11/2017 1129	MB	
Radium 228	ND	pCi/L		2	Ga-Tech	08/12/2017 212	MB	
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	08/12/2017 212	MB	

These results apply only to the samples tested.

Qualifiers:

В Analyle detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded H

Analyzed by another laboratory

Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 3 of 13



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName: Lab ID:

Ottertail Power Big Stone

ClientSample ID:

S1707202-004 H-6-A32929

COC:

wo#31-0334

Date Reported 8/15/2017

Report ID

\$1707202001

WorkOrder:

\$1707202

CollectionDate: 7/11/2017 12:37:00 PM 7/14/2017 11:21:00 AM

DateReceived:

FieldSampler:

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init		
Radionuclides - Total								
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	08/11/2017 1129	MB	
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	08/11/2017 1129	MB	
Radium 228	ND	pCi/L		2	Ga-Tech	08/12/2017 515	MB	
Radium 228 Precision (±)	NA	pCVL			Ga-Tech	08/12/2017 515	MB	

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded H

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Splke Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillelle laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 4 of 13



1673 Terra Avenue, Sheridan, Wyoming 82801

ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc.

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Big Stone

Lab ID: ClientSample ID:

S1707202-005 H-8-A32930

COC:

wo#31-0334

Date Reported

8/15/2017

Report ID

S1707202001

WorkOrder:

S1707202

CollectionDate: 7/11/2017 1:17:00 PM 7/14/2017 11:21:00 AM

DateReceived: FleldSampler:

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	08/11/2017 1129	ME
Radium 226 Precision (±)	NA.	pCi/L			SM 7500 Ra-B	08/11/2017 1129	ME
Radium 228	ND	pCI/L		2	Ga-Tech	08/12/2017 818	ME
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	08/12/2017 818	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range E

Holding times for preparation or analysis exceeded H

Analyzed by another laboratory

Not Detected at the Reporting Limit ND Spike Recovery outside accepted recovery limits RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits
Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 5 of 13



1673 Terra Avenue, Sheridan, Wyomlng 82801

ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Big Stone

Lab ID: ClientSample ID:

S1707202-006 H-9-A32931

COC:

wo#31-0334

Date Reported

8/15/2017

Report ID

S1707202001

WorkOrder:

S1707202

CollectionDate: 7/11/2017 2:03:00 PM

DateReceived: FieldSampler:

7/14/2017 11:21:00 AM

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	08/11/2017 1610	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	08/11/2017 1610	MB
Radium 228	ND	pCi/L		2	Ga-Tech	08/12/2017 1121	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	08/12/2017 1121	MB

These results apply only to the samples tested.

Qualiflers:

- Analyte detected in the associated Method Blank
- Value above quantitation range
- Holding limes for preparation or analysis exceeded H
- Analyzed by another laboratory Not Detected at the Reporting Limit ND
- Splke Recovery outside accepted recovery limits

RL - Reporting Limit

- Calculated Value
- Analyzed at IML Gillette laboratory
- Analyte detected below quantitation limits
 Value exceeds Monthly Ave or MCL or is less than LCL
- Outside the Range of Dilutions
- Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 6 of 13



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

ANALYTICAL QC SUMMARY REPORT

CLIENT:

MVTL Inc

Date: 8/15/2017

Work Order:

S1707202

Report ID: S1707202001

Project:

Ottertall Power Big Stone

Sample Type MBLK		Units	: pCi/L			
RunNo: 148962	Prepl	Date: 07/1	9/17 12:00	Bat	chID 13543	
Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
ND	1					
Sample Type LCS		Units	: pCi/L			
RunNo: 148962	Prepl	Date: 07/1	9/17 12:00	Bate	chID 13543	
Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
33	1	39,5	172	83.8	65.9 - 132	
Sample Type MS		Units	: pCi/L			
RunNo: 148962	Prept	Date: 07/1	9/17 12:00	Bate	chID 13543	
Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
44	1.	39.5	ND	111	50 - 139	
Sample Type MSD		Units	: pCi/L			
RunNo: 148962	Prept	Date: 07/1	9/17 12:00	Bato	chID 13543	
Result	RL	Conc	%RPD	%REC	% RPD Limits	Qua
42	1	44	4.14	106	20	
Sample Type MBLK		Units	pCi/L			
RunNo: 148977	PrepD	ate: 07/3	1/17 0:00	Bato	hID 13532	
Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
ND	0.2					
Sample Type LCS		Units	pCi/L			
RunNo: 148977	PrepD	ate: 07/3	1/17 0:00	Bato	hID 13532	
Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
5.8	0.2	6.41		90.6	67.1 - 122	
Sample Type MS		Units	pCi/L		1.16.6	
RunNo: 148977	PrepD	ate: 07/3	1/17 0:00	Bato	hID 13532	
Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
5.8	0.2	6.41	ND	89.5	65 - 131	
Sample Type MSD		Units	pCi/L			
RunNo: 148977	PrepD	ate: 07/3	1/17 0:00	Bato	hID 13532	
Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
74.0				the second second		
	RunNo: 148962 Result ND Sample Type LCS RunNo: 148962 Result 33 Sample Type MS RunNo: 148962 Result 44 Sample Type MSD RunNo: 148962 Result 42 Sample Type MBLK RunNo: 148977 Result ND Sample Type LCS RunNo: 148977 Result 5.8 Sample Type MS RunNo: 148977 Result 5.8 Sample Type MSD RunNo: 148977 Result 5.8 Sample Type MSD RunNo: 148977	RunNo: 148962 Prepti Result RL ND 1 Sample Type LCS RunNo: 148962 Prepti Result RL 33 1 Sample Type MS RunNo: 148962 Prepti Result RL 44 1 Sample Type MSD RunNo: 148962 Prepti Result RL 44 1 Sample Type MSD RunNo: 148962 Prepti RL 42 1 Sample Type MBLK RunNo: 148977 Prepti Result RL ND 0.2 Sample Type LCS RunNo: 148977 Prepti Rt 5.8 0.2 Sample Type MSD RunNo: 148977 Prepti Rt Finance Sample Type MSD RunNo: 148977 Prepti Rt 5.8 0.2 Sample Type MSD RunNo: 148977 Prepti Rt Sample Type MSD	RunNo: 148962 PrepDate: 07/1 Result RL Spike ND	RunNo: 148962 PrepDate: 07/19/17 12:00 Result RL Spike Ref Samp	RunNo: 148962 PrepDate: 07/19/17 12:00 Bate	RunNo: 148962 PrepDate: 07/19/17 12:00 BatchID 13543 Result RL Spike Ref Samp %REC % Rec Limits ND

Qualifiers:

- Analyte delected in the associated Method Blank
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
 R RPD outside accepted recovery limits
- X Matrix Effect

- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- L Analyzed by another laboratory
- O Outside the Range of Dilutions
- S Spike Recovery outside accepted recovery limits



Inter-Mountain Labs

Sheridan, WY and Gillette, WY

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INT	R-MOUNTAIN LABS				This is a legal document:	any misrepre	sentation ma	y be c	onstrued	as frau	id.				#WEB	
Clien MV	Name			Project Identification Offertail Power Big S	tóne		Sampler (S	Ignatu				enticity)			Telephone #	E
	rt Address			Contact Name					ANA	YSE	SIP	ARA	METE	RS		
112	6 North Front St / Ulm, Mn.56073	A STATE OF	4-	Tim Portner Email tportner Phone 507-276	a to an amount of the at	to the same	- 12 - 4 - 4-1 4 - 1-1-1		NOT THE	7. 2 gr	235 1	e spane a			3	
	Ulm, Mn.56073 *		341	Email tportner	@mvtl.com	The state of		- 228			1.					
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ITEM	LAB ID (Lab Use Only)	DATE SAME	TIME PLED		IPLE ICATION	Matrix	# of Containers	Radium 226 +	12. 14. 14. 24						q.	
1	51767202-001	FIQUE 11	1116	H20X - A32	JE9	WT	2	x								
2	-00		1149	H30X - A 3	75.05	WT	2	x								
3	-003			H40X - A 3	2928	WT	2	x								
4	-004		1237	H-6 - A37	929	WT	2	x							1	
5	-005		1317	H-8 - A37		WT	2	x								
6	ملاه			H-9 - A 32	2931	WT	2	x		-51						
7	· -		-	Slag-1 No So		WT	2	x						= [
8	FCO-		1107	Slag-4 A329	132	WT	2	x								
9	-008		1433	Slag-5 A 32		WT	2	x								
10	P00-		1234		1934	WT	2	x	-							
11	-010		1212	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	935	WT	2	x						777		
12	-011	_			1936	WT	2	x								
13												-	-			
14					/						/					
	LAB COMMENTS		Relin	quished By (Signature/Pri	nted)	DATE	TIME		R	eceived	By (Sig	naturel	Printed)		DATE	TIME
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12	300						100									
0																
	SHIPPING INFO		CODES		OUND TIMES		MPLIANC			9 4000			-21	ADDIT	IONAL REMARK	S
	UPS FedEx	Water		Check desired serv		Program	nce Monito (SDWA,	NPD	ES)	Y /	4 k				_	_
a	USPS	Solid		RUSH - 5 Wor	king Days	PWSID	/ Permit #	17.79			6					
00	Hand Carried Other	Filter Other		URGENT - < 2 Rush & Urgent Sur	Working Days charges will be applied	Chlorina	ted? Disposal:	Lab	and the second	Cilent	. IN					



Inter-Mountain Labs

Sheridan, WY and Gillette, WY

CHAIN OF CUSTODY RECORD	Page	of
All shaded fields must be completed.	#WEB	
This is a legal document; any misrepresentation may be construed as fraud.	#AAED	

INTER-MOUNT	TAIN LABS				This is a legal document;	any misrepre	sentation ma	y be co	nstrued	as frau	d.					HAACT	
Client Name				Project Identification			Sampler (S	ignatur	re/Attes	tation o	f Auth	enticity)				Telephone #	
MVTL	granding of a market Standing of the second	199	47	Ottertail Power Big S	tone	W.	Bearing at the	15 and 10	1	and the	1 300	Dr. 1777	3.00	1		4,357.72	- Ariga Sala - Sala
Report Addres	5			Contact Name			Salada e		ANA	LYSE	SIP	ARA	MET	ERS			
1126 North	Front St	100		Tim Portner	Mr Marie Land	9 76 77 78	7.13	7 1 2 2		1							
New Ulm,	Mn 56073	8. 1	-67	Email tportne	r@mvtl.com	1 1 1 may	V = 25 Gregory	228	2 16								
Invoice Addres	S	W. 050.		Phone 507-276	8089	7.	HANNEY C.			2. 四季							
Same	the state of the state of			Purchase	Order#	Quote#	lo a grant	226									
Y	14			CE UNITED TO	MARCHAEL ST.	1		8	35	1 2			- 4		1	REM	MARKS
777	LAB ID Use Only)	DATE	TIME	SA	MPLE FICATION	Matrix	# of Containers	Radium 226 + 228	1	77							
1-	-q2	FICULII	1355	Slag 9 - A 3	2937	WT	2	x									
2	-		_	Slag 9 Deep - 1	10 Sample	WT	2	x									
3	-013	1	1137			WT	2	x									
4				MYTL WO	*31-0334	7		x		-							
5						1		×								/	
6		1					/	x							_	/	
7								x								/	
S			-			/		X				-	_		1		
9						/		X			-			1			
10		/	-					X		-			1				
12					-/-			x				1					
13	/				/			x				1					
14	/			1	/			x			1						
LABC	OMMENTS		Reli	nquished By (Signature/Pr	inted)	DATE	TIME		R	eceived	By (Si	gnature	Printe	d)		DATE	TIME
111111111111111111111111111111111111111	AND POS	150000				I POST	919	0	Tim-	1	1	of	30	1		1/14/12	11501
Average	Service of		-			-		6	VEC	0	TYE	-10	10	_	-	111117	11101
mi	500	4				1											
201	5°C						100										
	ING INFO	MATCH	K CODES	TURNAR	OUND TIMES	CC	MPLIANO	E INIC	OPM	ATION				AR	DITIO	NAL REMAR	V.C
UPS UPS	ING INFO	Water	Manager State of the Con-	Check desired ser			nce Monit			Y				AD	טוווט	NAL KEWAK	NO.
□ FedEx		Soil		Standard turn		Program	(SDWA.	NPDE	S)	7 15	10 M W						
USPS		Solid		RUSH - 5 Wo		PWSID	/ Permit # ited?	prom a	THE STATE OF	14	1						
□ Hand 0	Carried	Filter		U-URGENT - <													
□ Other	12.1	Other	r OT	Rush & Urgent Su	charges will be applied	Sample	Disposal:	Lab		Client							

Minnesota Valley Testing Laboratories

1126 North Front Street Phone: 800 782 3557 New Ulm, MN 56003 Fax: 507 359 2890

Field Service Chain of Custody Record

This is an el	Lyochineni
By ax	Date 12 12
pages	51-17

Project Otter Tail Power Company	Project Type:	Big Stone Plant CCR	Name of Samplers: Ber Wolf, Mattstein
Report Otter Tail Power Company	Carbon Copy:		De Voit, I GITStein
Attn: Paul Vukonich	Attn:		Quote Number:
Address P.O. Box 496	Address:		Work Order Number: 3 1-0334
Fergus Falls, MN 56538-0496			Lab Numbers:
Phone: 218-739-8349			The state of the s

		Sample In	formation									Bott	le Ty	pe					Analysis
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	1000 HNO3	Filtered Yor M	1000 none	500 HNO3	14	500 H2SO4	Filler? Y or M		1000 Amber	500 NaOH	Other: 150 Hoz	Other 150 No.	Analysis Required
A32926			11 July 17	1116	GW		2	N	1	1	N								See Attached
	НЗОХ			1149	GW	-	2	N	1	1	N	100	1			La			
23	H4OX			1209	GW		2	N	1	1	N	m	land.		104		0.1	1	
29	H-6			1237	GW		2	N	1	1	N	L.							
	H-8			1317	GW		2	N	1	1	N				ĬΩ,				
3\	H-9			1400	GW		2	N	1	1	N								
-	Slag 1				GW		2	N	4	1	N								
32	Slag 4	1		1107	GW		2	N	1	1	N						1	W i	VI
	Slag 5			1433	GW		2	N	1	1	N							1.0	
34	Slag 6		1	1234	GW		2	N	1	1	N						1 11	111	

Comments:

WORK ORDER #2

		00			0 0	
Samples Reline	uished By: 2	en wow		Samples Received By:	the Alertan	
Date: //ゴルト	417	Time: 1746	Temp:, 2 7	746 Date: 12 -110 17	Time: 900	Temp: 4.21
Samples Reline	uished into:	Fridge Log in	Cart Oth	er:		
Samples Reline	quished By:	<u> </u>		Samples Received By:		
Date:		Time:	Temp:	Date:	Time:	Temp:
Delivery:	Samplers	Other:		Seal Number(s) - If Us	ed	
Transport:	:Ambient	Ice	Other:	Seals Intact?	Yes No	

Minnesota Valley Testing Laboratories

1126 North Front Street Phone: 800 782 3557

Samples Relinquished into:

Samples Relinquished By:

Date:

Delivery:

Transport:

(Fridge)

Time:

Samplers Other:

Ambient Ice

Log in Cart

Temp:

Other:

New Ulm, MN 56003 Fax: 507 359 2890

Field Service Chain of Custody Record

Lab Number Sample ID Unique Station ID Sample Type Location 1000 HNO3 Fillered Yor N 1000 none 500 HNO3 Filler? Y or N 1000 Amber none HZSO4 Filler? Y or N 1000 Amber 150 None HZSO4 Other 150 None Analysis Required	2 1	H (4	Ma	olf.	W	en	s: (pler	Sam	e of	Nan	CR	ant C	ne Pl	Big Stor		Project Ty			Power Com		
Sample Information Bottle Type Sample Information Bottle Type Sample Information Bottle Type Sample Information Sample	Terr	11 21	7 (0-	7117				r. lumb	imbe der N	te Nu k Ord	Quo Wor					<u>py:</u>	Attn:			nich 96 Is, MN 565	Paul Vukor P.O. Box 4 Fergus Fal	Attn: Address
35 Slag 7	Analy	1					уре	le Ty	Bott									mation	nfori			
35 Slag 7	Palinho	Analysis Required	Wher 150 None	Other: 150 Hoge	HOBN OO	1000 Amber	1000 Amber no	Ther? Y or M	100 H2SO4	Illery Y Or M	100 HINOS	000 none	Wered Yor M	1000 HNO3	Sample -ocation	Sample Type	Time	<u></u>	Jato	Jnique Station D	Sample ID	ab Number
37 Slag 9	Attached	See Attr			4,				4,	N	1	1	N	2		GW	12/2	July17	113		Slag 7	35
Slag 9 Deep GW 2 N 1 1 N						-	-	-			-	1			Marie Co.			-				
										_	1	1	N	_			1355	1				37
38 Slag 28										14	1	1	N					1		р		_
										N			N	2		GW	1/3/	7			Slag 2B	28
omments:																					nts:	mme

Samples Received By:

Seal Number(s) - If Used

Time:

No

Yes

Temp:

Date:

Seals Intact?

Big Stone Plant CCR Appendix III Parameters

CCR - Appendix III Detection Monitoring Field Parameters pH*

* Field and Laboratory Measurements

Total Concentration Parameters

Boron

Calcium

Chloride

Fluoride

pH

Sulfate

Dissolved Solids, Total

Big Stone CCR Appendix IV Parameters CCR - Appendix IV - Assessment Monitoring



Total Concentration Parameters

Antimony

Arsenic

Barium

Beryllium

Cadmium

Chromium, Total

Cobalt

Fluoride

Lead

Lithium

Mercury

Molybdenum

Selenium

Thallium

Radium 226 + 228

Groundwater Asse	essment			Site:	Otter	Tail P	ower Co./ Big Stor
Sampling Personnel:				Facility ID:			
Mart	Sten			Date:// Du	14/7		
				Unique Sta	ation ID:		
				Sample ID:		V	Vell H2OX
Well Condition Well Locked? Well Labeled? Casing Straight?	No No No			Protective State ID Ta Grout Seal			No No
Repairs Necessary: Well Information							
	18.28			Well Casin	g Elevation:		1103.91
Constructed Depth:	32.20			Static Water	er Elevation:	100	75718
Casing Diameter:	2"	15. 10.		Previous S	tatic: 1097	.36	
	ne C.	73		Water Leve	el After Sample		ow Pam
Water Level Before Pury	90.						<
Well Volume:	3.92	Gallons		Measurem	ent Method:	Elec	Steel Ta
Well Volume: Sampling Informatio Weather Conditions: Sampling Method:	N Temp: 7	Gallons Bladder SS/T	Wind: S	Measurement Me	Sky: Grab Other:	Clo	⊒MALI Steel Ta
Well Volume: Sampling Informatio Weather Conditions: Sampling Method: Dedicated Equipment:	7 Temp: 7	180		Whate Pumping R	Sky: Grab Other:	Clo	udy gpm
Well Volume: Sampling Information Weather Conditions: Sampling Method: Dedicated Equipment: Well Purged Dry?	Temp: 7 Gundfos Yes No	180		Whale Pumping R Time Pump	Sky: Grab Other: ate: O, 2 Began: 1	(10	gpm @m/pn
Well Volume: Sampling Information Weather Conditions: Sampling Method: Dedicated Equipment: Well Purged Dry? Time Purged Dry?	Temp: 7 Grundfos Yes No ILIII	Bladder SS/T		Whate Pumping R Time Pump	Sky: Grab Other: ate: O, 2 D Began: /	(10 5	gpm @m/pn
Well Volume: Sampling Information Weather Conditions: Sampling Method: Dedicated Equipment: Well Purged Dry? Time Purged Dry? Duplicate Sample?	Temp: 7 Gundfos Yes No ILIII Yes No	Bladder SS/T	Disp. Bailer	Whale Pumping R Time Pump Time of Sa Sample EH	Sky: Grab Other: Late: O, 2 D Began: / Impling:	(10	gpm (am)/pm (am)/pm
Well Volume: Sampling Information Weather Conditions: Sampling Method: Dedicated Equipment: Well Purged Dry? Time Purged Dry? Duplicate Sample?	Temp: 7 Grundfos Yes No ILIII	Bladder SS/T	Disp. Bailer	Whale Pumping R Time Pump Time of Sa Sample EH	Sky: Grab Other: ate: O, 2 D Began: /	(10	gpm @m/pn
Well Volume: Sampling Information Weather Conditions: Sampling Method: Dedicated Equipment: Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance:	Temp: 7 Gundfos Yes No ILIII Yes No	Bladder SS/T	Color: //u	Whale Pumping R Time Pump Time of Sa Sample EH	Sky: Grab Other: Late: O, 2 D Began: / Impling:	(10	gpm am/pn Odor: nen
Well Volume: Sampling Information Weather Conditions: Sampling Method: Dedicated Equipment: Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: 16 Time pH	Temp: 7 Grundfos Yes No (U! Yes No) General: C	Bladder SS/T	Disp. Bailer Color: //u	Whale Pumping R Time Pump Time of Sa Sample EH	Sky: Grab Other: ate: O, 2 Began: / mpling: : (44), 3 se: now Gallons Removed	(16) S 0.53	gpm am/pn am/pn Odor: nen
Well Volume: Sampling Information Weather Conditions: Sampling Method: Dedicated Equipment: Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: 16 pH	Temp: Grundfos Yes No [L! L Yes No General: C Specific Cond.	Bladder SS/T	Color: //u D. O. mg/L	Whate Pumping R Time Pump Time of Sa Sample EH Turbidity NTU	Sky: Grab Other: Late: O, 2 Began: / Impling: L: (44), 3 Se: Nove	(10 S 0.53 1/10 SEQ #	gpm am/pn am/pn Odor: nen
Well Volume: Sampling Information Weather Conditions: Sampling Method: Dedicated Equipment: Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: 16 Time pH	Temp: Grundfos Yes No [L! L Yes No General: C Specific Cond.	Bladder SS/T	Color: //u D. O. mg/L	Whate Pumping R Time Pump Time of Sa Sample EH Turbidity NTU	Sky: Grab Other: ate: O, 2 Began: / mpling: : (44), 3 se: now Gallons Removed	(10 5 0.53 1110	gpm am/pn Odor: nen
Well Volume: Sampling Information Weather Conditions: Sampling Method: Dedicated Equipment: Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: 16 pH 11:11 6.76	Temp: 7 Grundfos Yes No U! Yes No General: Cond. Li 24	Bladder SS/T	Color: //u D. O. mg/L	Whate Pumping R Time Pump Time of Sa Sample EH Turbidity NTU	Sky: Grab Other: ate: O, 2 Began: / mpling: : (44), 3 se: now Gallons Removed	(10 S 0.53 (1) 1 (SEQ #	gpm am/pn am/pn Odor: nen

	iwater As	sessment		Site:	Ot	ter Tail	Power Co./ Big Stone				
Sampling	Personnel:				Facility ID:						
	W	att Sten			Date: //3	2:11 July 17					
		<i>D</i> 10.	-		Unique Sta						
					Sample ID:			Well H3OX			
Well Co	ndition							-			
Well Lock	ked?	(Yes No			Protective	Posts? Ye	s (THE .			
Well Lab	eled?	Yes No	-		State ID Ta	g? Ye	s	(NO)			
Casing S		(Yes No			Grout Seal		s	(No)			
	lecessary:	0									
Well Inf	ormation										
Well Dep	th:	22.55			Well Casin	g Elevation:		1095.19			
Construc	ted Depth:	22.55			Static Water	er Elevation:	100	79,71			
Casing D	iameter:	2"			Previous Static: (1904L)						
Water Le	vel Before P	urge: 5.	48			el After Samp	4	Selow Pump			
	me.	2.81	Gallons		Measurem	ent Method:	Blec	WE Steel Tape			
Well Volu		~, 0	77 7544 6 7 1 1 1 1								
Well Volu		٠,٠٠٠			1						
					1		٨				
Samplin	g Informa		78	Wind:	1		1	in the			
Samplin Weather	g Informa Conditions:	tion	Bladder SG/T		5 <u>E</u> 510		y: Par	in the			
Sampling Weather Sampling	g Informa Conditions: Method:	tion Temp:	18		5 <u>E</u> 510	Sk Grab Oth	y: Par	dy Swry			
Sampling Weather Sampling	g Informa Conditions: Method: d Equipment	tion Temp:	18		545-10 Whale	Sk Grab Oth	y: Par	dy Swry			
Samplin Weather Sampling Dedicated Well Purg	g Informa Conditions: Method: d Equipment	tion Temp: Grundfos	18		Whale Pumping R	Sk Grab Oth ate:	y: Par	gpm 2 am/pm			
Sampling Weather Sampling Dedicated Well Purg Time Pur	ng Informations: Method: d Equipment ped Dry?	tion Temp: Grundfos No	18		Whale Pumping R Time Pump Time of Sa	Sk Grab Oth ate:	y: lar	gpm 2 m/pm			
Sampling Weather Sampling Dedicated Well Purg Time Pur Duplicate	ng Informa Conditions: Method: d Equipment ped Dry? ged Dry?	tion Temp: Grundfos No (es) No 1) 44 Yes (No)	Bladder SG/T	Disp. Bailer	Whale Pumping R Time Pump Time of Sa Sample EH	Sk Grab Oth ate: 🔿 🕹 Began: mpling:	y: lar	gpm 2 m/pm			
Sampling Weather Sampling Dedicated Well Purg Time Pun Duplicate Sample A	ng Informa Conditions: Method: d Equipment ged Dry? ged Dry? Sample?	tion Temp: Grundfos INO No 1\44 Yes (No) General: (Bladder SG/T	Disp. Bailer	Whale Pumping R Time Pump Time of Sa Sample EH	Sk Grab Oth late: O 2: D Began: mpling: I: 207.6 e: Adne	y: far ier: 113 1121	gpm 2 m/pm 7 m/pm			
Sampling Weather Sampling Dedicated Weil Purg Time Pur Duplicate Sample A	ng Informations: Method: d Equipment ged Dry? ged Dry? Sample? Appearance:	tion Temp: Grundfos No	Bladder SS/T	Color: //	Whale Pumping R Time Pump Time of Sa Sample EH	Sk Grab Oth late: Och Began: mpling: I: 207.6 e: Adne	y: ar ler: 113 1121 °	gpm 2 am/pm 7 am/pm Odor: 1212			
Sampling Weather Sampling Dedicated Well Purg Time Pur Duplicate Sample A	ng Informa Conditions: Method: d Equipment ped Dry? ged Dry? Sample? sppearance:	tion Temp: Grundfos No (es) No 1\44 Yes (No) General: (Specific Cond.	Bladder Sis/T	Color: //	Whale Pumping R Time Pump Time of Sa Sample EH Phase Turbidity NTU	Sk Grab Ott late: Od Began: mpling: l: 207.6 e: Adne Gallons Removed	y: ar ler: 1 3 1)2 5	gpm 2 (m)/pm 7 (m)/pm			
Sampling Weather Sampling Dedicated Well Purg Time Pur Duplicate Sample A	ng Informa Conditions: Method: d Equipment ged Dry? ged Dry? Sample? appearance:	tion Temp: Grundfos Ces No No 1144 Yes (No) General: (Specific Cond.	Bladder SG/T	Color: //	Whale Pumping R Time Pump Time of Sa Sample EH	Sk Grab Oth late: Och Began: mpling: I: 207.6 e: Adne	y: ar ler: 1 3 1)2 °	gpm 7 am/pm 7 am/pm Odor: 1210			
Sampling Weather Sampling Dedicated Well Purg Time Pur Duplicate Sample A	ng Informa Conditions: Method: d Equipment ped Dry? ged Dry? Sample? sppearance:	tion Temp: Grundfos No (es) No 1\44 Yes (No) General: (Specific Cond.	Bladder Sis/T	Color: //	Whale Pumping R Time Pump Time of Sa Sample EH Phase Turbidity NTU	Sk Grab Ott late: Od Began: mpling: l: 207.6 e: Adne Gallons Removed	y: ar ler: 1 3 1)2 * SEQ # 1	gpm 2 am/pm 7 am/pm Odor: 1210			
Sampling Weather Sampling Dedicated Well Purg Time Pur Duplicate Sample A	ng Informa Conditions: Method: d Equipment ged Dry? ged Dry? Sample? appearance:	tion Temp: Grundfos Ces No No 1144 Yes (No) General: (Specific Cond.	Bladder SG/T	Color: //	Whale Pumping R Time Pump Time of Sa Sample EH Phase Turbidity NTU	Sk Grab Ott late: Od Began: mpling: l: 207.6 e: Adne Gallons Removed	y: ar ler: 1 3 1)2 * SEQ # 1 2 3	gpm 7 am/pm 7 am/pm Odor: 1210			
Sampling Weather Sampling Dedicated Well Purg Time Pur Duplicate Sample A	ng Informa Conditions: Method: d Equipment ged Dry? ged Dry? Sample? appearance:	tion Temp: Grundfos Ces No No 1144 Yes (No) General: (Specific Cond.	Bladder SG/T	Color: //	Whale Pumping R Time Pump Time of Sa Sample EH Phase Turbidity NTU	Sk Grab Ott late: Od Began: mpling: l: 207.6 e: Adne Gallons Removed	y: ar ler: 1 3 1)2 * SEQ # 1	gpm gpm man/pm man/pm Odor: nanp Comments:			



Groundwat	er Assessm			Site:	O	ter Tai	Power Co./ Big Stor		
Sampling Pers	onnel:	2.2			Facility ID:				
200	May	H Ster				July 17	,		
					Unique S	tation ID:			
					Sample I	D:		Well H4OX	
Well Conditi	on ×	wal cho	Kest A	s 43	ocden f	ost.			
Well Locked?		Yes No			Protectiv	e Posts? Ye	s	(MB)	
Well Labeled?		Yes No	-		State ID	Tag? Ye	S	(Nos	
Casing Straigh	t?	(es)No			Grout Se	al Intact? Ye	(s)	No	
Repairs Neces									
Well Informa Well Depth:	ition	7.48			Well Cas	ing Elevation:		1108.22	
Constructed De		27.20	-			ater Elevation:	10	89.9LI	
Casing Diamet		2"			Previous	Static: 1091.			
Water Level Be		18.28			Water Le	vel After Samp	le:	_	
Well Volume:	1,5		Gallons		Measure	ment Method:	Elec	. WLISteel Tape	
					1		-		
Sampling Inf	formation					7. 7.			
Weather Cond		Temp: 7	79_	Wind	1: 55E3	5-10 Sk	y: Cle	nds	
Sampling Meth		Grundfos	Rladder 6S			Grab Oth		1	
Dedicated Equ		(YES) NO		-	Pumping	Rate: 6.	25	gpm	
Well Purged D		(Yes) No			Time Pur		1158		
Time Purged D	ry?	1304			Time of S		1209		
Duplicate Sam	ple?	Yes (No)	ID: -	3.0	Sample E	H. 225,	9		
Sample Appea	rance:	General:	Clear	Colo	rinene Pha	se: neme		Odor: none	
					No.				
6		Specific	lemp	D.	Turbidity	Gallons	SE		
Time	pH	Cond.	°C	0.	NTU	Removed	Q#	Comments:	
1204	7119	3007	13.37	WA	res	1.5	1		
		I Continue Tour	10.00		1	1	2		
A COLUMN				1			3		
1209	7.00	2647	11.11	1		-	4	recharge	
		5		12	1		5		
Stabilized?	Yes	(No)		Amo	unt Water	1 1.5		Gallons	
Comments:		7							

Groundwater Assessment			Site:		Tall Po	ower Co./ Big Stone
Sampling Personnel:			Facility ID:	0.1.1.1		
MOURT Sto	m		Date: 7	July	7	
			Unique Sta	ation ID:	-/-	
			Sample ID		- 12	Well H6
Well Condition						
Well Locked? (Nes) No			Protective	Posts? (Yes)		No
Well Labeled? (Yes) No			State ID Ta	ag? (TES	*	(Ma)
Casing Straight? Yes No				Intact? Yes		(No)
Repairs Necessary:						
Well Information						
Well Depth: 17.9 2 Constructed Depth: 17.70	Į		Well Casin	g Elevation:		MA
Constructed Depth: 17.70	-			er Elevation:		1
Casing Diameter: 2"			Previous S	tatic:		
Water Level Before Purge: 13.	09		Water Leve	el After Sampl	e:	- Below Pu
Trace Level Deloie I dige.						Wel Steel Tape
	Gallons		Measurem	ent ivietnoa:	Frec	. vvei Steel labe
Well Volume: 0-79 Sampling Information	Gallons		Measurem			
Well Volume: 0-79 Sampling Information Weather Conditions: Temp: 8 Sampling Method: Gundfos	Gallons BISGUE SS/T)	Wind: S	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Sky: Grab Other:	Ru	
Well Volume: 0-79 Sampling Information Weather Conditions: Temp: Sampling Method: Gundfos Dedicated Equipment: No	33		Whale Pumping R	Sky: Grab Other:	R	gpm
Sampling Information Weather Conditions: Temp: Sampling Method: Gundfos Dedicated Equipment: Ves No Well Purged Dry? (Yes) No	33		Whale Pumping R Time Pump	Sky: Grab Other: Late: Ø.3	Ru 5	gpm 9 am /@m,
Well Volume: 0-79 Sampling Information Weather Conditions: Temp: Sampling Method: Gundfos Dedicated Equipment: No Well Purged Dry? Yes No Time Purged Dry? 1233	BISSON SS/T)		Whale Pumping R Time Pump	Sky: Grab Other: Late: Ø.3 Degan Impling:	R	gpm 9 am /@m,
Well Volume: 0-79 Sampling Information Weather Conditions: Temp: Sampling Method: Goundfos Dedicated Equipment: No Well Purged Dry? Yes No Time Purged Dry? 733 Duplicate Sample? Yes No	BISSUL SS/T)	Disp. Bailer	Whale Pumping R Time Pump Time of Sa Sample El-	Sky: Grab Other: Late: Ø.ð Began mpling:	Ru 5	gpm 9 am/gm 37 am/gm
Well Volume: 0-79 Sampling Information Weather Conditions: Temp: Sampling Method: Goundfos Dedicated Equipment: No Well Purged Dry? Yes No Time Purged Dry? 733 Duplicate Sample? Yes No	BISSUL SS/T)	Disp. Bailer	Whale Pumping R Time Pump	Sky: Grab Other: Late: Ø.ð Began mpling:	Fu 122	gpm 9 am /@m,
Sampling Information Weather Conditions: Temp: Sampling Method: Gundfos Dedicated Equipment: Ves No Well Purged Dry? Yes No Time Purged Dry? / 233 Duplicate Sample? Yes No Sample Appearance: General: C/	BISSUL SS/T)	Disp. Bailer Color:	Whale Pumping R Time Pump Time of Sa Sample El-	Sky: Grab Other: Late: Ø. d D Began Impling: L: 17.5 Se:	F. 122 123 123 5.3	gpm 9 am / pm 37 am / pm
Sampling Information Weather Conditions: Temp: Sampling Method: Gundfos Dedicated Equipment: No Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: General: Cf	BISCOL SS/TO	Color: p.	Whale Pumping R Time Pump Time of Sa Sample El-	Sky: Grab Other: Cate: Ø. do Began Impling: H: 17. Se: Gallons	F. 122 123 123 123 123 123	gpm 9 am / pm 37 am / pm
Sampling Information Weather Conditions: Temp: Sampling Method: Gundfos Dedicated Equipment: No Well Purged Dry? Yes No Time Purged Dry? 1233 Duplicate Sample? Yes No Sample Appearance: General: Cl	ID:	Color: No.	Whale Pumping R Time Pump Time of Sa Sample El- Phase Turbidity NTU	Sky: Grab Other: Late: Ø. d D Began Impling: L: 17.5 Se:	F. 122 123 123 5,3	gpm 9 am / pm 37 am / pm
Sampling Information Weather Conditions: Temp: Sampling Method: Goundfos Dedicated Equipment: No Well Purged Dry? Yes No Time Purged Dry? Time Purged Dry? Duplicate Sample? Yes No Sample Appearance: General: Cond. Cond.	ID: ————————————————————————————————————	Color: p.	Whale Pumping R Time Pump Time of Sa Sample El-	Sky: Grab Other: Cate: Ø. do Began Impling: H: 17. Se: Gallons	FU 122 123 5.3 SEQ #	gpm 9 am / pm 87 am / pm Odor:
Sampling Information Weather Conditions: Temp: Sampling Method: Gundfos Dedicated Equipment: No Well Purged Dry? Yes No Time Purged Dry? 1233 Duplicate Sample? Yes No Sample Appearance: General: Cl	ID:	Color: No.	Whale Pumping R Time Pump Time of Sa Sample El- Phase Turbidity NTU	Sky: Grab Other: Cate: Ø. do Began Impling: H: 17. Se: Gallons	SEQ # 122 23 5,3 SEQ # 1	gpm 9 am / pm 37 am / pm
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Well Volume: 0-79 Sampling Information Weather Conditions: Temp: Sampling Method: Goundfos Dedicated Equipment: No Well Purged Dry? Yes No Time Purged Dry? 1233 Duplicate Sample? Yes No Sample Appearance: General: C U Specific Time pH Cond.	ID: ————————————————————————————————————	Color: No.	Whale Pumping R Time Pump Time of Sa Sample El- Phase Turbidity NTU	Sky: Grab Other: Cate: Ø. do Began Impling: H: 17. Se: Gallons	SEQ # 123 23 33 4	gpm 9 am / 6m 9 am / 6m Odor: 0
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Sampling	Personnel:				Site:	Olle	rianPo	ower Co./ Big Sto
					Facility ID:			
	100	itt Sb	10			Telle 17		
			4		Unique Sta			
			-		Sample ID:			Well H8
					cample ib.			VVCII 110
Well Co	ndition	~				-		
Well Lock	ed?	(Yes) No	,		Protective I	osts? Yes)	No
Well Labe	eled?	(Xes No			State ID Ta	g? Yes	/	(No
Casing St		Yes No			Grout Seal		1	No
	ecessary:		3				-	
Well Info	rmation				7.53 (2.5)	V Sale		Territoria.
Well Dept	h;	22.33	1		Well Casing			1081.23
Construct	ed Depth:	22.05	3.7		Static Water	r Elevation:	1072	163
Casing Di	ameter:	2"			Previous St	atic: 107	4.68	
	el Before P	urge: 🛠	60		Water Leve	After Sample		9:15
Well Volu		2.24	Gallons			ent Method:	(Elec.	
					1		-	
Sampling	Equipment	Temp: Gendfos Yes No Yes No	Bladder S/T	Disp. Bail	Pumping R			gpm am //p
			_		Time of Sar		17	am / p
Time Pure	ACCUSATION OF	Yes (No)	ID:	_	Sample EH		1	MIII 7 P
Time Purg				Color		20'	_	Odor: none
Duplicate	Sample?	General	~ _	00101.				odo. none
Duplicate		General: C	ox-		nur c	· · · · · ·		
Duplicate	Sample?		Temp	D.O.	10.00	Gallons	SEQ	
Duplicate	Sample?	Specific Cond.	-14		Turbidity NTU		SEQ #	Comments:
Duplicate Sample A Time	Sample? ppearance:	Specific Cond.	oC C	mg/L	Turbidity NTU	Gallons Removed	#	
Duplicate Sample A Time	Sample? ppearance: pH 7.47	Specific Cond.	lemp °C 9.26		Turbidity	Gallons Removed	#	
Duplicate Sample A Time	pH 7.47	Specific Cond. 1376 /379	lemp °C 9.26	mg/L	Turbidity NTU	Gallons Removed	# 1 2	
Duplicate Sample A Time	pH 7.47	Specific Cond.	oC C	mg/L	Turbidity NTU	Gallons Removed	# 1 2 3	
Duplicate Sample A Time	pH 7.47	Specific Cond. 1376 /379	lemp °C 9.26	mg/L	Turbidity NTU	Gallons Removed	# 1 2	
				Color:	none Phas			Odor:

New	Ulm.	MN	560
New	OIIII,	IVIIA	201

	inwater !	Assessment			Site:	Otter	Tail Po	wer Co./ Big S		
Samplin	ng Personn	ie			Facility ID:					
		Mary Str			Date: U July 17					
					Unique Station I'					
					Sample ID		We	ell H9		
Well C	ondition	0				6				
Nell Lo	cked?	Yes No			Protective			No		
	beled?	No No			State ID T			NO		
Casing	Straight?	Ves No			Grout Sea	Intagres	1	No		
Repairs	Necessar	y:								
Vell In	formatio							فتر		
Vell De	epth:	30.7			Well Casir	g Elevation	:	1086:21		
Constru	icted Depth				Static Wat	er Elevation	: 10	75.16		
Casing	Diameter:	2"			Previous S	static:	107			
Vater L	evel Before	e Purge: 10	. 55		Water Lev	el After Sar	n I	12.02		
	himo:	3,22	Gallons		Measurem	ant Mathod	Flor V	VI Steel		
Vell Vo	nume.	710146	Canonic		MCGGGGG	eur Menion	LICC. V	VL OLOCI		
/Vell Vo	iume.	3,002	Callotto		I	ent Metrico	race. V	VIII OICCI		
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Sampli Veathe	ing Informer Condition	nation as Temp:		Wind: Sa	16		Sum			
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Sampli Veathe Samplin Dedicate Vell Pur Time Pu Duplicat Sample	ing Information Condition Method: ed Equipmarged Dry? te Sample? Appearance	nation Is Temp: Gundfos e (e): No Ves No O'Yes No C'General: Clo Specific Cond. 3713	ID: Temp OC 16:66 10:32	Disp, Bailer Color: Ao. D. O. mg/L	Whale Pumping F Time Pum Time of Sa Sample Eleve Ph Turbidity NTU	Sky: Grab Other: Rate: O. p Beg implin (40 d: 212.3 ase: Ase Gallons Removed	Sum 132 132 132 132	gpm am / am /		
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Samplin Veathe Samplin Dedicate Vell Pur Time Pur Duplicat Sample	ing Information Condition Method: ed Equipmarged Dry? te Sample? Appearance	nation Is Temp: Gundfos e (e): No Ves No O'Yes No C'General: Clo Specific Cond. 3713	ID: Temp OC 16:66 10:32	Disp, Bailer Color: Ao. D. O. mg/L	Whale Pumping F Time Pum Time of Sa Sample Eleve Ph Turbidity NTU	Sky: Grab Other: Rate: O. p Beg Implin (40) d: 212.3 ase: 10	Sum 132 3 53 SEQ# 1	gpm am / am /		



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Page:

FINAL REPORT COMPLETION DATE:

Date Reported: 11 Sep 2017

1 of 3

MEGAN LISBURG OTTER TAIL POWER CO PO BOX 496 FERGUS FALLS MN 56538-0496 Work Order #: 31-0400 Account #: 006106 PO #: 48680

Project Name: BIG STONE PLANT CCR

Field Service Manager/Date Reviewed

Chemistry Manager/ Date Reviewed Lab

11 September 2017 anno Quality Assurance Director/Date Reviewed

RL = Reporting Limits

NQ = Not Present, Qualitative Only

PQ = Present, Qualitative Only

ND = Not Determined



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2 of 3 Page:

CERTIFICATE of ANALYSIS - CCR

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

Project Name: BIG STONE PLANT CCR

Sample Description: H40X

Report Date: 11 Sep 2017 Lab Number: 17-A39211 Work Order #: 31-0400 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 14 Aug 2017 11:21 Sampled By: MVTL FIELD PERSONNEL Date Received: 14 Aug 2017 15:10

PO #: 48680

Temp at Receipt: 0.7C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed		Analyst
MS Water Digestions					17 Aug 17		JMS
Water Digestions					16 Aug 17		JMS
Radium 226	SEE ATTAC	משעי			6 Sep 17	17.12	ABL
Radium 228	SEE ATTAC			EPA M9320	6 Sep 17		ABL
pH, Field	6.81	units	1.00	I-1586-85	14 Aug 17		DGF
pH PH	* 6.9	units	1.0	SM 4500 H+ B-2000	15 Aug 17		MCS
Sulfate	1000 ~	mg/L	5.0	ASTM D516-07	17 Aug 17		MRW
Chloride	48.8	mg/L	3.0	SM 4500 C1 E	17 Aug 17		AKF
Mercury	< 0.005	ug/L	0.005	EPA 245.7	18 Aug 17		RMB
Solids, Total Dissolved	2300	mg/L	10	SM 2540 C-97	16 Aug 17		JFG
Calcium	369.0 ~	mg/L	0.500	SW 2340 C-37			KAM
Lithium	0.097 #		0.005	SW6010C SW6010C	21 Aug 17		
		mg/L	200 70 30 40 70 70		21 Aug 17		KAM
Barium	0.011	mg/L	0.005	SW6010C	18 Aug 17		KAM
Chromium	< 0.01	mg/L	0.01	SW6010C	18 Aug 17		KAM
Cobalt	< 0.005	mg/L	0.005	SW6010C	18 Aug 17		KAM
Boron	0.317	mg/L	0.100	SW6010C	18 Aug 17		KAM
Antimony	< 0.5	ug/L	0.5	SW6020A	24 Aug 17	9:31	RMV
Arsenic	0.54	ug/L	0.50	SW6020A	21 Aug 17		DS
Beryllium	< 0.05	ug/L	0.05	SW6020A	21 Aug 17	10:14	DS
White are an area	See Narra		Win La	and the second of the second			
Cadmium	< 0.1	ug/L	0.1	SW6020A	21 Aug 17		DS
Lead	< 0.5	ug/L	0.5	SW6020A	21 Aug 17		DS
Molybdenum	3.50	ug/L	0.50	SW6020A	24 Aug 17	9:31	RMV
Selenium	< 2.5	ug/L	0.5	SW6020A	24 Aug 17	9:31	RMV
	@See Narr	ative					
Thallium	< 0.1	ug/L	0.1	SW6020A	21 Aug 17	10:14	DS
Fluoride	0.490 @	mg/L	0.020	EPA 300.0	23 Aug 17	13:45	RMV

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

Radium 228 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY 82801

~ Sample diluted due to result above calibration of linear range.

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 analy
! = Due to sample quantity + Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WM/DW # R-040 # = Due to concentration of other analytes + = Due to internal standard response ND MICRO # 1013-M ND WW/DW # R-040



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INORGANIC AND METALS ANALYSES:

One of the beryllium knowns associated with 17-A39211 was above acceptance limits. Data that was below the reporting limit of 0.05 ug/L was reported.

The internal standard associated with selenium was outside of acceptance range in the laboratory control spike for sample 17-A39211. The data was reported based on the acceptable recovery of selenium in the laboratory control spike.

No other problems were encountered with these analyses.

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Page: 1 of 2

Quality Control Report Lab ID: 17-A39211

Lab ID: 17-A39211 Project: BIG STONE PLANT CCR Work Order: 201731-0400

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike 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
Antimony ug/L	25.0	102	85-115	25.0	17-A39211	< 0.5	26.0	104	75-125	26.0	26.2	105	0.8	10	100	90-110	< 0.5
Arsenic ug/L	25.0	101	85-115	25.0 25.0	17-A39131 17-A39211	< 0.5 0.54	25.6 27.4	102 107	75-125 75-125	25.6 27.4	26.9 27.8	108 109	5.0 1.4	10 10	101	90-110	< 0.5
Barium mg/L	1.000	97	85-115	1.00	17-A39302	0.061	1.050	99	75-125	1.050	1.040	98	1.0	10	95	90-110	< 0.005
Beryllium ug/L	2.50	112	85-115	2.50	17-A39211	< 0.05	2.13	85	75-125	2.13	2.10	84	1.4	10	106	90-110	< 0.05
Boron mg/L	1,000	97	85-115	1.00	17-A39302	0.214	1.240	103	75-125	1.240	1.210	100	2.4	10	94	90-110	< 0.1
Cadmium ug/L	5.00	105	85-115	4.00	17-A39211	< 0.1	4.71	118	75-125	4.71	4.89	122	3.7	10	103	90-110	< 0.1
Calcium mg/L	50.00	113	85-115	50.0	17-A39302	90.90	142.0	102	75-125	142.0	139.0	96	2.1	10	105	90-110	< 0.5
Chloride mg/L			100	60.0	17-A38499	26.6	84.6	97	85-120	84.6	86.1	99	1.8	6	95	90-110	< 3
Chromium mg/L	1.000	100	85-115	1.00	17-A39302	< 0.01	1.020	102	75-125	1.020	0.990	99	3.0	10	100	90-110	< 0.01
Cobalt mg/L	1.000	101	85-115	1.00	17-A39302	< 0.005	1.000	100	75-125	1.000	0.966	97	3.5	10	99	90-110	< 0.005
Fluoride mg/L	-	-		0.20	17-A39660	0.540	0.770	115	75-125	0.770	0.770	115	0.0	10	105	90-110	< 0.02
Lead ug/L	25.0	108	85-115	25.0 25.0	17-A39131 17-A39211	< 0.5 < 0.5	26.7 25.7	107 103	75-125 75-125	26.7 25.7	27.7 26.5	111 106	3.7 3.1	10 10	106	90-110	< 0.5
Lithium mg/L	1.000	112	85-115	1.00	17-A39211	0.097	1.160	106	75-125	1.160	1.100	100	5.3	10	106	90-110	< 0.005
Mercury ug/L	2	1	-	0.10	17-A39426	< 0.005	0.105	105	63-111	0.105	0.102	102	2.9	18	98	76-113	< 0.005
Molybdenum ug/L	25.0	98	85-115	25.0	17-A39211	3.50	27.8	97	75-125	27.8	27.7	97	0.4	10	96	90-110	< 0.5
pH units	(·		-	1		-		4		6.9	7.0		1.4	2.5	101	90-110	
Selenium ug/L	25.0	105	85-115	25.0	17-A39211	< 2.5	29.8	119	75-125	29.8	29.0	116	2.7	10	100	90-110	< 0.5
Solids, Total Dissolved mg/L	4	-	-	-	1 20	-	-	-	-	3360	3360	-	0.0	8	102	85-115	< 10

MVTL

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Page: 2 of 2

Quality Control Report

Lab ID: 17-A39211

Project: BIG STONE PLANT CCR

Work Order: 201731-0400

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Christian Continued	Spike	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Rec	Known % Rec Limits	Method Blank
Sulfate mg/L	1 2	:	1	500 500	17-A39211 17-A39659	1000 125	1520 601	104 95	74-128 74-128	200 200	1510 623	102 100	0.7	5	93	80-120	< 5
Thallium ug/L	5.00	109	85-115	5.00	17-A39211	< 0.1	5.38	108	75-125	5.38	5.55	111	3.1	10	108	90-110	< 0.1

Approved by:



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Date: 9/6/2017

CLIENT:

MVTL Inc

Project:

Ottertail Power Big Stone

Lab Order:

S1708284

CASE NARRATIVE

Report ID: S1708284001

Sample H4OX-A39211 was received on August 16, 2017.

All samples were received and analyzed within the EPA recommended holding times, except those noted below in this case narrative. Samples were analyzed using the methods outlined in the following references:

"Standard Methods For The Examination of Water and Wastewater", approved method versions Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition 40 CFR Parts 136 and 141 40 CFR Part 50, Appendices B, J, L, and O Methods indicated in the Methods Update Rule published in the Federal Register Friday, May 18, 2012 ASTM approved and recognized standards

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Reviewed by: All

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 1



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Inc

1126 N Front St New Ulm, MN 56073

ProjectName:

Ottertail Power Big Stone

Lab ID:

S1708284-001 ClientSample ID: H4OX-A39211

COC:

WO#31-0400

Date Reported

9/6/2017

Report ID

S1708284001

WorkOrder:

S1708284

CollectionDate: 8/14/2017 11:21:00 AM 8/16/2017 10:34:00 AM

DateReceived: FieldSampler:

Matrix:

Water

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total						No. of the last of	
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	08/28/2017 1047	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	08/28/2017 1047	MB
Radium 228	ND	pCi/L		2	Ga-Tech	08/30/2017 032	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	08/30/2017 032	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

E Value above quantitation range

Holding times for preparation or analysis exceeded H

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 1



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

ANALYTICAL QC SUMMARY REPORT

CLIENT: MVTL Inc

Date: 9/6/2017

Work Order:

S1708284

Report ID: S1708284001

Project: Ottertail Power Big Stone

Radium 228 by Ga/Tech	Sample Type MBLK	Units: pCi/L	
MB-457 (08/29/17 09:16)	RunNo; 149627	PrepDate: 08/23/17 12:00	BatchID 13621
Analyte	Result	RL Spike Ref Samp	%REC % Rec Limits Qu
Total Radium 228	ND	1	
Radium 228 by Ga/Tech	Sample Type LCS	Units: pCi/L	
LCS-457 (08/29/17 12:20)	RunNo: 149627	PrepDate: 08/23/17 12:00	BatchID 13621
Analyte	Result	RL Spike Ref Samp	%REC % Rec Limits Qu
Total Radium 228	44	1 39.5	110 65.9 - 132
Radium 228 by Ga/Tech	Sample Type MS	Units: pCi/L	
MS-457 (08/29/17 18:26)	RunNo: 149627	PrepDate: 08/23/17 12:00	BatchID 13621
Analyte	Result	RL Spike Ref Samp	%REC % Rec Limits Qu
Total Radium 228	40	1 39.5 ND	101 50 - 139
Radium 228 by Ga/Tech	Sample Type MSD	Units: pCi/L	
MSD-457 (08/29/17 21:29)	RunNo: 149627	PrepDate: 08/23/17 12:00	BatchID 13621
Analyte	Result	RL Conc %RPD	%REC % RPD Limits Qua
Total Radium 228	41	1 40 2.30	104 20
Radium 226 in Water -	Sample Type MBLK	Units: pCi/L	
MB-1788 (09/01/17 09:29)	RunNo: 149629	PrepDate: 08/23/17 0:00	BatchID 13620
Analyte	Result	RL Spike Ref Samp	%REC % Rec Limits Qua
Radium 226	ND	0.2	
Radium 226 in Water -	Sample Type LCS	Units: pCi/L	
LCS-1788 (08/28/17 10:47)	RunNo: 149629	PrepDate: 08/23/17 0:00	BatchID 13620
Analyte	Result	RL Spike Ref Samp	%REC % Rec Limits Qua
Radium 226	6.5	0.2 6.41	102 67.1 - 122
Radium 226 in Water -	Sample Type LCSD	Units: pCi/L	
LCSD-1788 (08/28/17 10:47)	RunNo: 149629	PrepDate: 08/23/17 0:00	BatchID 13620
Analyte	Result	RL Conc %RPD	%REC % RPD Limits Qua
Radium 226	7.0	0.2 6.5 7.12	109 20
Radium 226 in Water -	Sample Type MS	Units: pCi/L	
S1708355-008AMS (08/28/17 14:12)	RunNo: 149629	PrepDate: 08/23/17 0:00	BatchID 13620
Analyte	Result	RL Spike Ref Samp	%REC % Rec Limits Qua
Radium 226	12.6	0.2 12.8 ND	98.4 65 - 131

Qualifiers:

- B Analyte detected in the associated Method Blank
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- X Matrix Effect

- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- L Analyzed by another laboratory
- O Outside the Range of Dilutions
- S Spike Recovery outside accepted recovery limits

Minnesota Valley Testing Laboratories 1126 North Front Street New Ulm, MN 56003

Phone: 800 782 3557

Fax: 507 359 2890

Field Service Chain of Custody Record

Big Stone Plant CCR	Name of Samplers: Ben wolf	
	Quote Number: Work Order Number: 31-0 400 Lab Numbers:	
	Eas Hambers.	
		Dette Time

Sample Information							Bottle Type						Analysis							
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	1000 HNO3	Filtered Yor M	1000 none	500 HNO3	14	500 H2SO4	Filter? Y or M.	1 4	1000 Amber H2SO4	OOO NaOH	Other: 150 H2SO.	Other 150 No.	Analysis Required	
A39211	H4OX	P	14 Augin	1121	GW		2	N	1	1	N								See Attached	
					GW						U.B									
					GW															
					GW								1 - 1							1
					GW					DI T										
					GW															
					GW					TET!										
					GW		1								21					7
					GW										= 1					
					GW							23			Li ch					

Comments:

WORK ORDER #2

	n	Da			2 1	4.	
Samples Relinc	uished By: 🤇	en uce		Samples Received	By: 11 - 1111	den	
Date: 14 Aug	117	Time: 1510	Temp: 7 t	M619 Date: 14 Aug	17 Time	: 1510	Temp: 0.70
Samples Relind	uished into:	Fridge Log in	Cart Oth	er:			
Samples Relino	uished By:			Samples Received	By:		
Date:		Time:	Temp:	Date:	Time	e:	Temp:
Delivery:	Samplers	Other:		Seal Number(s) - I	f Used		
Transport:	Ambient	Ice	Other:	Seals Intact?	Yes	No	

Groundwater /	Assessm	ent			Site:	Ot	ter Tail	Power Co./ Big Stor					
Sampling Personn	el:	.0			Facility II	D:							
	Ber	wolf			Date: [U Aug]] Unique Station ID:								
			7		Unique S	station ID:							
			_		Sample I	D:		Well H4OX					
Well Condition								8					
Well Locked?		(es/No			Protectiv	e Posts? Ye	es	(No)					
Well Labeled?		Yes) No			State ID			(No					
Casing Straight?		Yes)No			Grout Se	al Intact?	es)	No					
Repairs Necessary	J:												
Well Informatio													
Well Depth:	2	7.48			Well Cas	ing Elevation:		1108.22					
Constructed Depth);	27.20			Static Wa	ater Elevation:	108	9.81					
Casing Diameter:		2"			Previous Static: 1691,47								
Water Level Before		18,41			Water Level After Sample: 24,4)								
Well Volume:	1.48		Gallons		Measurement Method: Elec. WLP Steel Tap								
					1								
Sampling Inform	nation		^ -		+1								
Weather Condition	IS:	Temp: (91	Wind	d: Hu	/ Sk	y: Cl	oudy					
Sampling Method:		Gundfos	Bladder SS	Disp.	EWhale	Grab Oth	ner:						
Dedicated Equipm	ent:	(Yes/No	_		Pumping	Rate: 2	5	gpm					
Well Purged Dry?		(Yes No			Time Pump Began: /// (am// p								
Time Purged Dry?		1110 6					21	(am) pm					
Duplicate Sample?)	Yes (No)	ID: ~			1043							
Sample Appearance	ce:	General:	Clear	Colo	r: Pha	se: NOW		Odor: 107e					
, ,		Specific	Temp	D.	Turbidity	Gallons	SE						
Time 6	Н	Cond.	°C	0.	NTU	Removed	Q#	Comments:					
1116	6.65	2829	9.21	NA	NA	15	1	Comments.					
110	W.(9C)	1200	71.64	IV/-	1	1.3	2	-					
1121	10.81	2845	9.40	++			3	Recharge					
11.03/	W.O.	5 (3 1.3	100	(Males			4	15000					
							5						
Stabilized?	/es	(No)	-	Amo	unt Water	1 1.5		Gallons					
Comments:													