

2017 Annual Groundwater Monitoring and Corrective Action Report

CCR Annual Monitoring Report

Slag Pond 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

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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. Coal combustion residuals (CCR) from plant operations are placed in an on-site surface impoundment, referred to as the Slag Pond. The Slag Pond is an incised impoundment that 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 surface impoundments.

CCR is temporarily stored in an on-site facility referred to as the Temporary Storage Area (TSA), which is required to comply with the applicable provisions of the CCR Rule for existing CCR landfills. The TSA is located adjacent to the Slag Pond.

The Slag Pond Area, in which the groundwater monitoring system is located, consists of the Slag Pond and TSA. The Slag Pond Area is shown on Figure 1. The Slag Pond Area is a multiunit groundwater monitoring system as allowed by § 257.91 (d).

This 2017 Annual Groundwater Monitoring and Corrective Action Report (Annual Report) describes the monitoring program and results for the Slag Pond 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 Slag Pond and TSA CCR units for the period starting with the effective date of the CCR 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 Slag Pond 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 56 (seven monitoring wells and 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.

No problems were encountered during the report period.

2.4 Key Activities for Upcoming Year

The following key groundwater monitoring program activities are planned for 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 Slag Pond 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 Slag Pond 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 OCT 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 Manager/Date Reviewed

Thanken Brumget 5 October 2016 Quality Assurance Director/Date Reviewed

RL = Reporting Limits

NQ = Not Present, Qualitative Only

PO = 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: SLAG1

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Report Date: 5 Oct 2016 Lab Number: 16-A46030 Work Order #: 31-0455 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 7 Sep 2016 12:08 Sampled By: MVTL FIELD PERSONNEL Date Received: 8 Sep 2016 10:55

PO #: 48680

Temp at Receipt: 3.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					9 Sep 16	TWB
Water Digestions					9 Sep 16	TWB
Appearance, Field	CTOUDY		NA	SM 2110	7 Sep 16 12:	
Temperature - Field	14.77	deg. C	NA	170.1	7 Sep 16 12:	
Specific Conductance, Fld	2182	umhos/cm	1	120.1	7 Sep 16 12:	
pH, Field	7.17	units	1,00	I-1586-85	7 Sep 16 12:	OB AMG
pH	* 7.2	units	1.0	SM 4500 H+B-96	8 Sep 16 15:	44 JFG
Radium 226	See Atta				0.2-2, 00	OL
Radium 228	See Atta			EPA M9320		OL
Sulfate	519 ~	mq/L	4.0	ASTM D516-02	15 Sep 16 8:	59 KCJ
Chloride	15.2	mg/L	3.0	SM 4500 CL E	15 Sep 16 7:	52 AKF
Mercury	0.027	ug/L	0.005	EPA 245.7	16 Sep 16 11:	40 TWB
Solids, Total Dissolved	1510	mq/L	10	SM 2540 C-97	9 Sep 16 9:	
Calcium	265.0	mg/L	0.500	SW6010C	13 Sep 16 14:	
Carcron	See Narra		0.000	200000	mg, 00% 12 6 00	
Lithium	0.095	mg/L	0.005	SW6010C	14 Sep 16 13:	7 RMB
Barium	0.186	mg/L	0.005	SW6010C	13 Sep 16 14;	
Beryllium	< 0.005	mg/L	0.005	SW6010C	13 Sep 16 14:	
Chromium	0.012	mg/L	0.010	SW6010C	13 Sep 16 14:	
Cobalt	< 0.005	mg/L	0.005	SW6010C	13 Sep 16 14:	
Cobaic	See Narra		0.005	Director	77 -74 -77	
Ma Tadedanam	< 0.015	mg/L	0.015	SW6010C	13 Sep 16 14:	7 RMB
Molybdenum	2.020	mg/L	0.100	SW6010C	13 Sep 16 14:	
Boron Antimony	< 2.5 @	ug/L	0.5	SW6020A	14 Sep 16 15:	
Arsenic	6.68	ug/L	0.50	SW6020A	13 Sep 16 18:	
Arsenic	@See Nari		0.00	On contain		
0-4-2	0.63	ug/L	0.10	SW6020A	13 Sep 16 18:	6 RMV
Cadmium	@See Nari		0.40	Ollookull		
\$403	10.1	ug/L	0.50	SW6020A	13 Sep 16 18:	6 RMV
Lead	@See Narr		0.50	DROOLON.	26 22 C C	40.000
with a state	14.7 @	ug/L	0.50	SW6020A	14 Sep 16 15:2	3 RMV
Selenium	0.28	ug/L	0.10	SW6020A	13 Sep 16 18:	Carlo
Thallium	@See Narr		0.10	DHOULDA	25 506 22 2010	
ma Constitution			0.020	EPA 300.0	12 Sep 16 12:	8 RMB
Fluoride	0.370	mg/L	0.020	BER SOULU		2 2000

RL = Reporting Limit RI = 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 sample quantity | + = Due to internal standard response

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



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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: SLAG1

Report Date: 5 Oct 2016 Lab Number: 16-A46030 Work Order #: 31-0455 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 7 Sep 2016 12:08
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 Realth Accreditation conform to the current TNI standards.
The raporting limit was elevated for any analyte requiring a dilution as coded below:

a = Due to sample matrix

1 = Due to sample quantity

CERTIFICATION: NO LAB # 027-015-125

WI LAB # 999447680

ND MICRO # 1013-N

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: SLAG4

Report Date: 5 Oct 2016 Lab Number: 16-A46031 Work Order #: 31-0455 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 7 Sep 2016 13:19 Sampled By: MVTL FIELD PERSONNEL Date Received: 8 Sep 2016 10:55

PO #: 48680

Temp at Receipt: 3.00

MS Water Digestions	Result		RL,	Reference	Att	alyz	Cu		Analyst
(1488 - William Coll. 15 17 18 18 18 18 18 18 18 18 18 18 18 18 18	2010								
(Park : "100명(10명) 기계 (10♥ (100 10명) 10 10명)					9	Sep	16		TWB
Water Digestions						Sep			TWB
Appearance, Field	CLEAR		NA	SM 2110				13:19	AMG
Temperature - Field	10.70	deg. C	NA	170.1	7	Sep	16	13:19	AMG
Specific Conductance, Fld	2898	umhos/cm	1	120.1	7	Sep	16	13:19	AMG
pH, Field	6.73	units	1,00	1-1586-85	7	Sep	16	13:19	AMG
Hq	* 6.8	units	1.0	SM 4500 H+B-96	8	Sep	16	15:44	JFG
Radium 225	See Attac	hed							OL
Radium 228	See Attac			EPA M9320					OL
Sulfate	1490 -	mg/L	4.0	ASTM D516-02	15	Sep	16	8:59	KCJ
Chloride	49.9	mg/L	3.0	SM 4500 C1 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	2540	mg/L	10	SM 2540 C-97	9	Sep	16	9:15	RC
Calcium	478.0 ~	mg/L	0.500	SW6010C	14	Sep	16	13:07	RMB
Lithium	0.201	mg/L	0.005	SW6010C	14	Sep	16	13:07	RMB
Barium	0.017	mg/L	0.005	SW6010C	13	Sep	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
	See Narra					W.			
Molybdenum	< 0.015	mq/L	0.015	SW6010C	13	Sep	16	14:07	RMB
Boron	0.875	mg/L	0.100	SW6010C	13	Sep	16	14:07	RMB
Antimony	< 2.5 @	ug/L	0.5	SW6020A	14	Sep	16	15:23	RMV
Arsenic	< 2.5 @	ug/L	0.5	SW6020A	14	Sep	16	15:23	RMV
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	14	Sep	16	15:23	RMV
Lead	< 1	ug/L	0.5	SW6020A	13	Sep	16	18:36	RMV
nead	@See Narr		7.17			-			
Selenium	< 2.5 @	ug/L	0.5	SW6020A	14	Sep	16	15:23	RMV
Thallium	< 0.2	ug/L	0.1	SW6020A				18:36	RMV
THETTTHE	@See Narr		4.4	3.05.500	7.5	-	28	C. A.Y.	
Fluoride	0.160	mg/L	0.020	EPA 300.0	12	Sep	16	12:58	RMB

RL - Reporting Limit



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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: SLAG4

Report Date: 5 Oct 2016 Lab Number: 16-A46031 Work Order #: 31-0455 Account #: 006106 Sample Matrix: GROUNDWATER

Date Sampled: 7 Sep 2016 13:19 Sampled By: MVTL FIELD PERSONNEL Date Received: 8 Sep 2016 10:55

PO #: 48680

Temp at Receipt: 3.0C

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.

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: SLAG5

Report Date: 5 Oct 2016 Lab Number: 16-A46032 Work Order #: 31-0455 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 7 Sep 2016 17:25 Sampled By: MVTL FIELD PERSONNEL Date Received: 8 Sep 2016 10:55

PO #: 48680

Temp at Receipt: 3.0C

	As Recei Result	ved	Method RL	Method Reference		ite nalyzed		Analyst
MS Water Digestions					9	Sep 1	5	TWB
Water Digestions					9	Sep 1	5	TWB
Appearance, Field	SLIGHTLY	CLOUDY	NA	SM 2110	7	Sep 1	17:25	DGF
Water Elevation	1083.53		NA	NA	7	Sep 1	17:25	DGF
Temperature - Field	11.45	deg. C	NA	170.1	7	Sep 1	17:25	DGF
Specific Conductance, Fld	894	umhos/cm	1	120.1	7	Sep 1	17:25	DGF
pH, Field	7.03	unite	1.00	I-1586-85	7	Sep 1	17:25	DGF
pH	* 7.2	units	1.0	SM 4500 H+B-96	8	Sep 1	15:44	JFG
Radium 226	See Atta	ched				77		OL
Radium 228	See Atta	ched		BPA M9320				OL
Sulfate	109 @	mg/L	4.0	ASTM D516-02	15	Sep 16	8:59	KCJ
Chloride	11.7	mg/L	3.0	SM 4500 C1 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	514	mg/L	10	SM 2540 C-97	9	Sep 16	9:15	RC
Calcium	118.0	mg/L	0.500	SW6010C	13	Sep 16	14:07	RMB
	See Narra	tive				12.3		
Lithium	0.026	mg/L	0.005	SW6010C	14	Sep 16	13:07	RMB
Barium	0.144	mg/L	0.005	SW6010C	13	Sep 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		Sep 16		RMB
	See Narra						Service.	
Molybdenum	0.017	mg/L	0.015	SW6010C	13	Sep 16	14:07	RMB
Boron	0.499	mg/L	0.100	SW6010C	13	Sep 16	14:07	RMB
Antimony	< 2.5 @	ug/L	0.5	SW6020A		Sep 16		RMV
Arsenic	1.70	ug/L	0.50	SW6020A	13	Sep 16	18:36	RMV
10.01.02	esee Narr							
Cadmium	0.30	ug/L	0.10	SW6020A	13	Sep 16	18:36	RMV
	@See Narr							
Lead	1.27	ug/L	0.50	SW6020A	13	Sep 16	18:36	RMV
	esee Narr						20000	
Selenium	< 2.5 @	ug/L	0.5	SW6020A	14	Sep 16	15:23	RMV
Thallium	< 0.2	ug/L	0.1	SW6020A		Sep 16		RMV
	@See Narr			2007 1200		0.00		140.74
Fluoride	0.250	mg/L	0.020	EPA 300.0	12	Sep 16	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:

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

CERTIFICATION: NN LAB # 027-015-125 NI LAB # 999447680 ND HIGRO 8 1013-M RD NW/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: SLAG5

Report Date: 5 Oct 2016 Lab Number: 16-A46032 Work Order #: 31-0455 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 7 Sep 2016 17:25 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 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

OL = Analysis performed by an Outside Laboratory.

RL = Reporting Limit
Analyses performed under our Minnesota Department of Health Accreditation conform to the current TWI 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 internal standard response

CERTIFICATION: NS LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WM/DW # R-040 RL = Reporting Limit



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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: SLAG6

Report Date: 5 Oct 2016 Lab Number: 16-A46033 Work Order #: 31-0455 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 7 Sep 2016 13:54 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		te alyze	ed	Analy	yst
MS Water Digestions					9	Sep	16	TWB	_
Water Digestions					9	Sep	16	TWB	
Appearance, Field	CLOUDY		NA	SM 2110	7	Sep	16 13:5	4 AMG	
Water Elevation	1086.45		NA	NA	7	Sep	16 13:5	4 AMG	
Temperature - Field	12.78	deg. C	NA	170.1	7	Sep	16 13:5	4 AMG	
Specific Conductance, Fld	1530	umhos/cm	1	120.1	7	Sep	16 13 15	4 AMG	
pH, Field	7.05	units	1.00	I-1586-85	7	Sep	16 13:5	4 AMG	
pH	* 7.1	units	1.0	SM 4500 H+B-96	8	Sep	16 15:4	4 JFG	
Radium 226	See Atta	ched						OL	
Radium 228	See Atta			EPA M9320				OL	
Sulfate	501 -	mg/L	4.0	ASTM D516-02	15	Sep	16 8:5	9 KCJ	
Chloride	5.8	mg/L	3.0	SM 4500 Cl B	15	Sep	16 7:5	2 AKF	
Mercury	0.028	ug/L	0.005	EPA 245.7	16	Sep	16 11:4	O TWB	
Solids, Total Dissolved	1160	mg/L	10	SM 2540 C-97	9	Sep	16 9:1	5 RC	
Calcium	221.0	mg/L	0.500	SW6010C	13	Sep	16 14:0	7 RMB	
Cartan	See Narra			0001013/43/25		-			
Lithium	0.139	mq/L	0.005	SW6010C	14	Sep	16 13:0	7 RMB	
Barium	0.204	mg/L	0.005	SW6010C	13	Sep	16 14:0	7 RMB	
Bervllium	< 0.005	mg/L	0.005	SW6010C	13	Sep	16 14:0	7 RMB	
Chromium	0.015	mg/L	0.010	SW6010C	13	Sep	16 14:0	7 RMB	
Cobalt	< 0.005	mg/L	0.005	SW6010C			16 14:0		
CODETC	See Narra		22,222			-			
Molybdenum	0.019	mg/L	0.015	SW6010C	13	Sep	16 14:0	7 RMB	
Boron	2.340	mg/L	0.100	SW6010C			16 14:0		
Antimony	< 2.5 @	ug/L	0.5	SW6020A			16 15:2		
Arsenic	7.35	ug/L	0.50	SW6020A			16 18:3		
AL DELIAC	@See Narr		5122				(A. 1672)		
Cadmium	0.63	ug/L	0.10	SW6020A	13	Sep	16 18:3	6 RMV	
-a-cont con	@See Narr		0.120	211002022				20.00000	
Lead	8,26	ug/L	0.50	SW6020A	13	Sep	16 18:3	6 RMV	
Jeau	@See Narr		0.00	2012 7 11 12 11	777		22 25 12	and and	
Selenium	4.93 €	ug/L	0.50	SW6020A	14	Sep	16 15:2	3 RMV	
Challium	0.28	ug/L	0.10	SW6020A			16 18:3		
TIGHTTEUM	@See Narr			-0.742630	-		3010		
Fluoride	0.530	mq/L	0.020	EPA 300.0	1.2	Sep	16 12:5	8 RMB	
LUGITUE	0.330	111974	0.020			-	7 - T		

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

CERTIFICATION: NN LAB # 027-015-125 NI LAB # 999447680 ND MICRO # 1013-N 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.mytl.com



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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: SLAG6

Report Date: 5 Oct 2016 Lab Number: 16-A46033 Work Order #: 31-0455 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 7 Sep 2016 13:54
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 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: NN LAB # 027-015-125 WI LAB # 999447680 ND NICRO # 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: SLAG7

Report Date: 5 Oct 2016 Lab Number: 16-A46034 Work Order #: 31-0455 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 7 Sep 2016 14:37 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 Anal	yzed		Analyst
MS Water Digestions					9 8	ep I	5	TWB
Water Digestions						ep 16		TWB
Appearance, Field	CLOUDY		NA	SM 2110			14:37	AMG
Water Elevation	1098.81		NA	, NA			14:37	AMG
Temperature - Field	11.66	deg. C	NA	170.1			14:37	AMG
Specific Conductance, Fld	2237	umhos/cm	1	120.1			14:37	AMG
pH, Field	7.04	units	1.00	I-1586-85			14:37	AMG
pH	* 7.3	units	1.0	SM 4500 H+B-96	8 8	ep 16	15:44	JFG
Radium 226	See Attac	hed						OL
Radium 228	See Attac	ched		EPA M9320				OL
Sulfate	869 -	mq/L	4.0	ASTM D516-02	15 8	ep 16	8:59	KCJ
Chloride	5.3	mg/L	3.0	SM 4500 Cl E	15 8	ep 16	7:52	AKF
Mercury	0.013	ug/L	0.005	EPA 245,7	16 5	ep 16	11:40	TWB
Solids, Total Dissolved	1650	mg/L	10	SM 2540 C-97	9 8	ep 16	9:15	RC
Calcium	407.0 ~	mg/L	0.500	SW6010C	14 S	ep 16	13:07	RMB
Lithium	0.098	mg/L	0.005	SW6010C	14 5	ep 16	13:07	RMB
Barium	0.134	mg/L	0.005	SW6010C	13 S	ep 16	14:07	RMB
Beryllium	< 0.005	mg/L	0.005	SW6010C	13 9	ep 16	14:07	RMB
Chromium	< 0.01	mg/L	0.01	SW6010C			14:07	RMB
Cobalt	< 0.005	mg/L	0.005	SW6010C	13 S	ep 16	14:07	RMB
	See Narra	tive						
Molybdenum	0.017	mg/L	0.015	SW6010C	13 S	ep 16	14:07	RMB
Boron	1.220	mg/L	0.100	SW6010C	13 S	ep 16	14:07	RMB
Antimony	< 2.5 @	ug/L	0.5	SW6020A	14 S	ap 16	15:23	RMV
Arsenic	4.68 @	ug/L	0.50	SW6020A	14 S	ep 16	15:23	RMV
Cadmium	0.55	ug/L	0.10	SW6020A	13 S	ep 16	18:36	RMV
GEOGRAPHIC SHIP	@See Narr							
Lead	5.00	ug/L	0.50	SW6020A	13 S	ep 16	18:36	RMV
Doug	@See Narr							
Selenium	3.96 @	ug/L	0.50	SW6020A	14 5	ep 16	15:23	RMV
Thallium	< 0.2	ug/L	0.1	SW6020A	13 S	p 16	18:36	RMV
+ coupy will	@See Narr		7,07			9. 7.		
	GPGG Nati							





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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: SLAG7

Report Date: 5 Oct 2016 Lab Number: 16-A46034 Work Order #: 31-0455 Account #: 006106 Sample Matrix: GROUNDWATER Date Sampled: 7 Sep 2016 14:37 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 HL = Reporting Limit
Analyses performed under our Minnesota Department of Health Accreditation conform to the current TNI standards.
The reporting limit was clevated for any unalyte 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 NI LAB # 999447680 ND 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: SLAG8

Report Date: 5 Oct 2016 Lab Number: 16-A46035 Work Order #: 31-0455 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 7 Sep 2016 16:44 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	Data	e lyzed		Analys	t
MS Water Digestions					9 :	Sep 16		TWB	_
Water Digestions						Sep 16		TWB	
Appearance, Field	SLIGHTLY	CLOUDY	NA	SM 2110			16:44	AMG	
Water Elevation	1110.29	CHOODI	NA	NA			16:44	AMG	
Temperature - Field	12.75	deg. C	NA	170.1			16:44	AMG	
Specific Conductance, Pld	1329	umbos/cm	1	120.1			16:44	AMG	
pH, Field	7.24	units	1.00	I-1586-85			16:44	AMG	
ph, Field	* 7.4	units	1.0	SM 4500 H+B-96			16:06	JFG	
Radium 226	See Attac		-14	201 3452 0512 041		-		OL	
Radium 228	See Atta			EPA M9320				OL	
Sulfate	284 @	mg/L	4.0	ASTM D516-02	15 8	ep 16	9:17	KCJ	
Chloride	33.0	mg/L	3.0	SM 4500 C1 B		ep 16		AKF	
Mercury	< 0.005	ug/L	0.005	EPA 245.7			12:23	TWB	
Solids, Total Dissolved	839	mg/L	10	SM 2540 C-97			9:15	RC	
Calcium	126.0	mg/L	0.500	SW6010C			14:29	RMB	
Lithium	0.058	mg/L	0.005	SW6010C	14 8	ep 16	13:34	RMB	
Barium	0.052	mg/L	0.005	SW6010C			14:29	RMB	
Beryllium	< 0.005	mg/L	0.005	SW6010C	13 5	ep 16	14:29	RMB	
Chromium	< 0.01	mg/L	0.01	SW6010C	13 5	ep 16	14:29	RMB	
Cobalt	< 0.005	mg/L	0.005	SW6010C			14:29	RMB	
CODETE	See Narra		20000	DITTOTON .					
Molybdenum	< 0.015	mg/L	0.015	SW6010C	13 8	ep 16	14:29	RMB	
Boron	0.407	mg/L	0.100	SW6010C	13 8	ep 16	14:29	RMB	
Antimony	< 2.5 @	ug/L	0.5	SW6020A	14 5	ep 16	16:32	RMV	
Arsenic	< 2.5 @	ug/L	0.5	SW6020A	14 5	ep 16	16:32	RMV	
Cadmium	< 0.5 @	ug/L	0.1	SW6020A			16:32	RMV	
Lead	< 2.5 @	ug/L	0.5	SW6020A			16:32	RMV	
Selenium	19.9 @	ug/L	0.50	SW6020A			16:32	RMV	
Thallium	< 0.5 @	ug/L	0.1	SW6020A			16:32	RMV	
Fluoride	0.590	mg/L	0.020	EPA 300.0			20:17	RMB	
L THOL THE	0.222			macr. a call a		-			

* 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

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: SLAG9

Report Date: 5 Oct 2016 Lab Number: 16-A46036 Work Order #: 31-0455 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 7 Sep 2016 18:19 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 Analyza	ed	Analyst	
MS Water Digestions					9 Sep	16	TWB	
Water Digestions					9 Sep	16	TWB	
Appearance, Field	CLOUDY		NA	SM 2110	7 Sep	16 18:19	AMG	
Water Elevation	1105.04		NA	NA	7 Sep	16 18:19	AMG	
Temperature - Field	12.19	deg. C	NA	170.1	7 Sep	16 18:19	AMG	
Specific Conductance, Fld	2255	umhos/cm	1	120.1	7 Sep	16 18:19	AMG	
pH, Field	7.10	units	1.00	I-1586-85	7 Sep	16 18:19	AMG	
pH	* 7.2	units	1.0	SM 4500 H+B-96	8 Sep	16 16:06	JFG	
Radium 226	See Attac				1000		OL	
Radium 228	See Attac			EPA M9320			OL	
Sulfate	1110 -	mg/L	4.0	ASTM D516-02	15 Sep	16 9:17	KCJ	
Chloride	6.6	mg/L	3.0	SM 4500 Cl E	15 Sep	16 8:10	AKF	
Mercury	< 0.005	ug/L	0.005	EPA 245.7	16 Sep	16 12:23	TWB	
Solids, Total Dissolved	1920	mg/L	10	SM 2540 C-97	9 Sep	16 9:15	RC	
Calcium	416.0 -	mg/L	0.500	SW6010C	14 Sep	16 13:34	RMB	
Lithium	0.122	mg/L	0.005	SW6010C		16 13:34	RMB	
Barium	0.071	mg/L	0.005	SW6010C	13 Sep	16 14:29	RMB	
Beryllium	< 0.005	mg/L	0.005	SW6010C	13 Sep	16 14:29	RMB	
Chromium	< 0.01	mg/L	0.01	SW6010C	13 Sep	16 14:29	RMB	
Cobalt	< 0.005	mg/L	0.005	SW5010C	13 Sep	16 14:29	RMB	
CODAIL	See Narra		4,17,00					
Molybdenum	0.016	mg/L	0.015	SW6010C	13 Sep	16 14:29	RMB	
Boron	0.250	mg/L	0.100	SW6010C	13 Sep	16 14:29	RMB	
Antimony	< 2.5 @	ug/L	0.5	SW6020A	14 Sep	16 16:32	RMV	
Arsenic	< 2.5 @	ug/L	0.5	SW6020A	14 Sep	16 16:32	RMV	
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	14 Sep	16 16:32	RMV	
Lead	< 2.5 @	ug/L	0.5	SW6020A	14 Sep	16 16:32	RMV	
Selenium	< 2.5 @	ug/L	0.5	SW6020A		16 16:32	RMV	
Thallium	< 0.5 @	ug/L	0.1	SW6020A		16 16:32	RMV	
Fluoride	0.230	mg/L	0.020	EPA 300.0	12 Sep	16 20:17	RMB	
	0.000	31	C 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		-			

* 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: SLAG9 DEEP

Report Date: 5 Oct 2016 Lab Number: 16-A46037 Work Order #: 31-0455 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 7 Sep 2016 18:27 Sampled By: MVTL FIELD PERSONNEL Date Received: 8 Sep 2016 10:55

PO #: 48680

Temp at Receipt: 3.0C

	As Recei Result	ved	Method RL	Method Reference		ite palyzed		Analyst	
MS Water Digestions					9	Sep 1	5	TWB	-
Water Digestions					9	Sep 1	5	TWB	
Appearance, Field	CLOUDY		NA	SM 2110	7	Sep 1	18:22	DGF	
Water Elevation	1086.11		NA	NA	7	Sep 1	18:22	DGF	
Temperature - Field	13.82	deg. C	NA	170.1	7	Sep 16	18:22	DGF	
Specific Conductance, Fld	3345	umhos/cm	1	120.1	7	Sep 16	18:22	DGF	
pH, Field	11.60	units	1.00	T-1586-85	7	Sep 16	18:22	DGF	
PH	* 9.6	units	1.0	SM 4500 H+B-96	8	Sep 16	16:06	JFG	
Radium 226	See Attac	ched				- C		OL	
Radium 228	See Atta	ched		EPA M9320				OL.	
Sulfate	1510 ~	mg/L	4.0	ASTM D516-02	15	Sep 16	9:17	KCJ	
Chloride	16.5	mg/L	3.0	SM 4500 C1 E	15	Sep 16	8:10	AKF	
Mercury	0.009	ug/L	0.005	EPA 245.7	16	Sep 16	12:23	TWB	
Solids, Total Dissolved	2090	mg/L	10	SM 2540 C-97	9	Sep 16	9:15	RC	
Calcium	339.0	mg/L	0.500	SW6010C	13	Sep 16	14:29	RMB	
Lithium	0.212	mg/L	0.005	SW6010C	14	Sep 16	13:34	RMB	
Barium	0,126	mg/L	0.005	SW6010C	13	Sep 16	14:29	RMB	
Beryllium	< 0.005	mg/L	0.005	SW6010C	13	Sep 16	14:29	RMB	
Chromium	< 0.01	mg/L	0.01	SW6010C	13	Sep 16	14:29	RMB	
Cobalt	< 0.005	mg/L	0.005	SW6010C	13	Sep 16	14:29	RMB	
	See Narra	tive				1000			
Molybdenum	0.024	mg/L	0.015	SW6010C	13	Sep 16	14:29	RMB	
Boron	0.288	mg/L	0.100	SW6010C	13	Sep 16	14:29	RMB	
Antimony	< 2.5 @	ug/L	0.5	SW6020A	14	Sep 16	16:32	RMV	
Arsenic	4.16 @	ug/L	0.50	SW6020A	14	Sep 16	16:32	RMV	
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	14	Sep 16	16:32	RMV	
Lead	4.57 @	ug/L	0.50	SW6020A	14	Sep 16	16:32	RMV	
Selenium	< 2.5 @	ug/L	0.5	SW6020A		Sep 16		RMV	
Thallium	< 0.5 @	ug/L	0.1	SW6020A	14	Sep 16	16:32	RMV	
Fluoride	0.110	mg/L	0.020	EPA 300.0	12	Sep 16	20:17	RMB	

* Holding Time Exceeded

Radium 226 subcontracted to: Inter-Mountain Labs 1673 Terra Ave Sheridan, WY B2801

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





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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: SLAG2B

Report Date: 5 Oct 2016 Lab Number: 16-A46038 Work Order #: 31-0455 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 7 Sep 2016 18:52 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	Da	te alyze	d	Analyst
MS Water Digestions					9	Зер	16	TWB
Water Digestions					9	Sep	16	TWB
Appearance, Field	CLOUDY		NA	SM 2110	7	Sep	16 18:52	AMG
Water Elevation	1083.13		NA	NA	7	Sep	16 18:52	AMG
Temperature - Field	17.49	deg. C	NA	170.1	7	Sep	16 18:52	AMG
Specific Conductance, Fld	1919	umhos/cm	1	120.1	7	Sep	16 18:52	AMG
pH, Field	7.32	units	1.00	I-1586-85	7	Sep	16 18:52	AMG
pH TICLE	* 7.4	units	1.0	SM 4500 H+B-96	8	Sep	16 16:06	JFG
Radium 226	See Attac	ched						OL
Radium 228	See Attac	12.		EPA M9320				OL
Sulfate	830 -	mg/L	4.0	ASTM D516-02	15	Sep	16 9:17	KCJ
Chloride	57.8	mg/L	3.0	SM 4500 Cl E	15	Sep	16 8:10	AKF
Mercury	0.077	ug/L	0.005	EPA 245.7	16	Sep	16 12:23	TWB
Solids, Total Dissolved	1510	mg/L	10	SM 2540 C-97	9	Sep	16 9:15	RC
Calcium	358.0	mg/L	0.500	SW6010C	13	Sep	16 14:29	RMB
Lithium	0.055	mg/L	0.005	SW6010C	14	Sep	16 13:34	RMB
Barium	0.482	mg/L	0.005	SW6010C	13	Sep	16 14:29	RMB
Beryllium	< 0.005	mg/L	0.005	SW6010C	13	Sep	16 14:29	RMB
Chromium	0.068	mg/L	0.010	SW6010C	13	Sep	16 14:29	RMB
Cobalt	0.016 *	mg/L	0.005	SW6010C	14	Sep	16 13:34	RMB
Molybdenum	< 0.015	mg/L	0.015	SW6010C	13	Sep	16 14:29	RMB
Boron	3.830	mg/L	0.100	SW6010C	13	Sep	16 14:29	RMB
Antimony	< 5 @	ug/L	0.5	SW6020A	14	Sep	16 16:32	RMV
Argenic	18,3 @	ug/L	0.50	SW6020A	14	Sep	16 16:32	RMV
Cadmium	1.27 @	ug/L	0.10	SW6020A			16 16:32	RMV
ead	22.3 @	ug/L	0.50	SW6020A	14	Sep	16 16:32	RMV
Selenium	6.04 @	ug/L	0.50	SW6020A	14	Sep	16 16:32	RMV
Challium	< 1 @	ug/L	0.1	SW6020A	14	Sep	16 16:32	RMV
Fluoride	0.090	mg/L	0.020	EPA 300.0	12	Sep	16 20:17	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 to the current to t RL - Reporting Limit





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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: SLAG2B

Report Date: 5 Oct 2016 Lab Number: 16-A46038 Work Order #: 31-0455 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 7 Sep 2016 18:52 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 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.

OL = Analysis performed by an Outside Laboratory.

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.

8 * Due to sample matrix

9 * Due to concentration of other analytes

1 = Due to sample quantity

CERTIFICATION: MN LAB # 027-015-125 MI LAB # 599447680 MD MICRO # 1013-M ND WW/DH # R-040 RL - Reporting Limit



Sample Analysis Report

MVTL Inc Company:

1126 N Front St

New Ulm, MN 56073

ProjectName:

31-0455

Lab ID:

\$1609153-006 ClientSample ID: A46030 Slag 1

COC:

Date Reported 9/30/2016

Report ID

S1609153001

WorkOrder:

S1609153

CollectionDate: 9/7/2016 12:08:00 PM

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

FleidSampler:

Matrix:

Water

Comments								
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	lyzed/Init	
Radionuclides - Total					E. C. 1974			
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	
Radlum 228	4.1	pCi/L		2	Ga-Tech	09/24/2016 1957	MB	
Radium 228 Precision (±)	2.8	pCI/L			Ga-Tech	09/24/2016 1957	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 ND

Spike Recovery outside accepted recovery limits

Reviewed by: Ale

Wade Nieuwsma, Assistant Laboratory Manager

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Sample Analysis Report

Company: MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

31-0455

Lab ID:

S1609153-007 ClientSample ID: A46031 Slag 4

COC:

Date Reported 9/30/2016

Report ID

S1609153001

WorkOrder:

S1609153

CollectionDate: 9/7/2016 1:19:00 PM DateReceived: 9/9/2016 11:50:00 AM

FieldSampler:

Matrix:

Water

Commente

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total					70.		
Radium 226	ND	pCI/L		1	SM 7500 Ra-B	09/20/2016 1422	ME
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	09/20/2016 1422	ME
Radium 228	ND	pCi/L		2	Ga-Tech	09/24/2016 2258	MB
Radium 228 Precision (±)	NA.	pCVL			Ga-Tech	09/24/2016 2258	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

C 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: all

Wade Nieuwsma, Assistant Laboratory Manager

Page 7 of 14



Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

31-0455

Lab ID:

S1609153-008 ClientSample ID: A46032 Slag 5

COC:

Date Reported 9/30/2016

Report ID

\$1609153001

WorkOrder:

S1609153

CollectionDate: 9/7/2016 5:25:00 PM

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

FieldSampler:

Matrix:

Water

C	0	п	1	m	е	n	ts
_				_	_	_	_

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	pCVL.			SM 7500 Ra-B	09/20/2016 1422	MB
Radium 228	ND	pCi/L		2	Ga-Tech	09/25/2016 159	MB
Radium 228 Precision (±)	NA.	pCi/L			Ga-Tech	09/25/2016 159	MB

These results apply only to the samples tested.

Qualiflers:

Analyle 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 exceeded

ND

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

Reviewed by: All

Wade Nieuwsma, Assistant Laboratory Manager

Page 8 of 14



Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

31-0455

Lab ID:

\$1609153-009 ClientSample ID: A46033 Slag 6

COC:

Date Reported 9/30/2016

Report ID

S1609153001

WorkOrder:

S1609153

CollectionDate: 9/7/2016 1:54:00 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	09/25/2016 500	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	09/25/2016 500	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 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 9 of 14



Sample Analysis Report

MVTL Inc Company:

1126 N Front St

New Ulm, MN 56073

ProjectName:

31-0455

Lab ID:

S1609153-010 ClientSample ID: A46034 Slag 7

COC:

Date Reported 9/30/2016

Report ID

\$1609153001

WorkOrder:

S1609153

CollectionDate: 9/7/2016 2:37:00 PM

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

FleldSampler:

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	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	09/25/2016 801	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	09/25/2016 801	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range E

Analyte detected below quantitation finits
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 Delected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 10 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:

S1609153-011 ClientSample ID: A46035 Slag 8

COC:

Date Reported 9/30/2016

Report ID

S1609153001

WorkOrder:

S1609153

CollectionDate: 9/7/2016 4:44:00 PM

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

FleidSampler:

Matrix:

Water

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/init	
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	09/20/2016 1656	MB
Radium 226 Precision (±)	NA	pCI/L			SM 7500 Ra-B	09/20/2016 1656	MB
Radium 228	ND	pCi/L		2	Ga-Tech	09/25/2016 1102	MB
Radium 228 Precision (±)	NA	pCI/L			Ga-Tech	09/25/2016 1102	MB

These results apply only to the samples tested.

Analyte detected in the associated Method Blank B Qualifiers:

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

C 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 11 of 14



Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

31-0455

Lab ID:

S1609153-012 ClientSample ID: A46036 Slag 9

COC:

Date Reported 9/30/2016

Report ID

\$1609153001

WorkOrder:

S1609153

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

CollectionDate: 9/7/2016 6:19:00 PM

FieldSampler:

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/II	
Radionuclides - Total					5.97-7.5s		
Radium 226	ND	pCi/L		1.	SM 7500 Ra-B	09/20/2016 1656	ME
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	09/20/2016 1656	MB
Radium 228	ND	PCi/L		2	Ga-Tech	09/25/2016 1403	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	09/25/2016 1403	ME

These results apply only to the samples tested.

Qualiflars:

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

C 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

Page 12 of 14



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:

31-0455

Lab ID:

S1609153-013 ClientSample ID: A46037 Slag 9 Deep

COC:

Date Reported 9/30/2016

Report ID

\$1609153001

WorkOrder:

S1609153

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

CollectionDate: 9/7/2016 6:27:00 PM

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 1656	MB	
Radium 226 Precision (±)	NA	pCl/L			SM 7500 Ra-B	09/20/2016 1656	MB	
Radium 228	ND	pCi/L		2	Ga-Tech	09/25/2016 1705	MB	
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	09/25/2016 1705	MB	

These results apply only to the samples tested.

Qualiflers:

B Analyle 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

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: alk

Wade Nieuwsma, Assistant Laboratory Manager

Page 13 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:

S1609153-014 ClientSample ID: A46038 Slag 2B

COC:

Date Reported 9/30/2016

Report ID

S1609153001

WorkOrder:

S1609153

CollectionDate: 9/7/2016 6:52:00 PM DateReceived: 9/9/2016 11:50:00 AM

FleidSampler:

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 1656	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	09/20/2016 1656	MB
Radium 228	2.1	pCI/L		2	Ga-Tech	09/25/2016 2006	MB
Radium 228 Precision (±)	3.2	pCi/L			Ga-Tech	09/25/2016 2006	MB

These results apply only to the samples tested.

Qualifiers:

B 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

Page 14 of 14

New Ulm, MN 5607:

Groundwater A	ssessmer		Site:		Otter Tail Power Co./ Big S					
Sampling Personne	el				Facility ID;					
	leisner				Date: 7 Sept 10					
					Unique Station ID:					
		P			Sample ID			S	lag 1	
Well Condition			_							
Well Locked?	(es No				Protective	Posts?	Yes		No	
Well Labeled?	(es) No	_			State ID To	ag?	Yes		(NO)	
Casing Straight? ((Yes) No				Grout Seal		Yes		NO	-
Repairs Necessary:										
Well Information										
Well Depth:	35.13				Well Casin	g Elevation	on:		NA	
Constructed Depth:	34.90				Static Wat	er Elevation	on:			
Casing Diameter:	2"				Previous S	tatic:				-
Vater Level Before	Purge: 18	.08			Water Leve	el After Sa	ample:		3	3.67
ANTOI POACE DOLOIG		The second liverage in the second								
	2.73	Gallons			Measurem	ent Metho	od: (Elec.	WLD	Steel T
Well Volume:	2.73	Gallons	-		Measurem \	ent Metho	od: (Elec.	WLD	Steel T
Well Volume:		Gallons	_		Measurem \	ent Metho	od: (Elec.	WLD	Steel T
Well Volume: Sampling Inform	ation		Wind:	1.	1					Steel T
Vell Volume: Sampling Informations	ation Temp:	65	Wind:	_	-0		Sky:		221e	Steel T
Vell Volume: Sampling Informations Sampling Method:	ation Temp:		Wind:	_	· U Whale	Grab	Sky: Other:	Dr.	2212	Steel T
Nell Volume: Sampling Informations Sampling Method: Dedicated Equipment	ation Temp: Grundfos Yes	65		_	Whale	Grab	Sky: Other:	Dr.		
Vell Volume: Sampling Informations Veather Conditions Sampling Method: Dedicated Equipment Vell Purged Dry?	ation Temp: Grundfos Yes No	65		_	Whate Pumping R Time Pump	Grab ate: Began:	Sky: Other:	Dr. 5	gpm	@/p
Nell Volume: Sampling Informations Veather Conditions Sampling Method: Dedicated Equipment Vell Purged Dry? Time Purged Dry?	ation Temp: Grundfos Yes No	65		_	Whale Pumping R Time Pump	Grab ate: Began: mpling:	Sky: Other:	Dr. 5	gpm	
Nell Volume: Sampling Informations Veather Conditions Sampling Method: Dedicated Equipment Vell Purged Dry? Time Purged Dry? Duplicate Sample?	ation Temp: Grundfos IYes No 1203 Yes No	65 Kladder SS/T		aller	Whate Pumping R Time Pump Time of Sa Sample EH	Grab ate: Began: mpling:	Sky: Other:	Dr. 5	221e gpm	@/p
Nell Volume: Sampling Informations Veather Conditions Sampling Method: Dedicated Equipmer Vell Purged Dry? Time Purged Dry? Outlicate Sample? Sample Appearance	ation Temp: Grundfos IYes No 1203 Yes No	Bladder SS/T ID: — Cloudy	Olsp. B	aller	Whate Pumping R Time Pump Time of Sa Sample EH	Grab ate: Began: mpling:	Sky: Other: 0.25	Dr. 5	gpm 37.0	∰/p am/g
Well Volume: Sampling Informations Veather Conditions Sampling Method: Dedicated Equipment Vell Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance	ation Temp: Grundfos Yes No 1203 Yes General: Specific	ID: —	Color:	aller Too	Whate Pumping R Time Pump Time of Sa Sample EH Pha	Grab ate: Degan: mpling: : se:	Sky: Other: 6.25	Dr. 5	gpm 3 17. o Odor:	∰/p am/g
Vell Volume: Sampling Informations Veather Conditions Sampling Method: Dedicated Equipment Vell Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance Time ph 12.03 7.05	ation Temp: Grundfos Yes No 1203 Yes General:	Bladder SS/T ID: — Cloudy	Color:	aller	Whate Pumping R Time Pump Time of Sa Sample EH	Grab ate: Began: mpling: : se: N	Sky: Other: 6.25	Dr.: 5 1151 1208 100 SEQ 1	gpm 3 17. o Odor:	∰/p am/g
Well Volume: Sampling Informations Weather Conditions Sampling Method: Dedicated Equipment Well Purged Dry? Fime Purged Dry? Duplicate Sample? Sample Appearance Fime ph 12.03 7.05	ation Temp: Grundfos Yes No 1203 Yes General: Specific	ID: —	Color:	aller Too	Whate Pumping R Time Pump Time of Sa Sample EH Pha	Grab ate: Began: mpling: : se: N	Sky: Other: 6.25	Dr. 5 1151 1208 10 SEQ 1	gpm 3 17. o Odor:	∰/p am/g
Well Volume: Sampling Informations Weather Conditions Sampling Method: Dedicated Equipment Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance Time ph 12.03 7.05	ation Temp: Grundfos Yes No 1203 Yes General: Specific	ID: —	Color:	aller Too	Whate Pumping R Time Pump Time of Sa Sample EH Pha	Grab ate: Began: mpling: : se: N	Sky: Other: 6.25	Dr.: 5 1151 1208 100 SEQ 1	gpm 3 17. o Odor:	∰/p am/g
Well Volume: Sampling Informations Weather Conditions Sampling Method: Dedicated Equipment Well Purged Dry? Fime Purged Dry? Duplicate Sample? Sample Appearance Fime ph 12.03 7.05	ation Temp: Grundfos Yes No 1203 Yes General: Specific	ID: —	Color:	aller Too	Whate Pumping R Time Pump Time of Sa Sample EH Pha	Grab ate: Began: mpling: : se: N	Sky: Other: 6.25	Dr. 51 1208 100 1208 1208 3	gpm 3 27. o Odor:	∰/p am/g

Exceptions to Protocol:

- Very Slow Recharge

New Ulm, MN 56073

Groundwa	ater Assess	ment			Site: Otter Tail Power Co./ Bi							
Sampling Pe	ersonnel:				Facility I	D:						
P	Ilan bleisner	<u> </u>			Date:			7 Sep 16				
					Unique Station ID							
			_		Sample	ID:	-	Slag 4				
Well Condi	ition			-								
Well Locked'		Yes No				e Posts? Ye	\$	No				
Well Labeled		Yes No			State ID			NO				
Casing Straig		Yes No	1		Grout Se	al Intact? Ye	8	(OM)				
Repairs Nece	essary:											
Well Inform	nation				Bus C							
Well Depth:		37.23			Well Cas	ing Elevation	1:	NA				
Constructed	Depth:	39.00				ater Elevation						
Casing Diam	eter:	2"			Previous	Static:						
	Before Purge:	19.72				evel After Sar		74.98				
Well Volume:		3.18	Gallons	3	Measure	ment Method	d: Ete	c. WLDSteel Tape				
					1							
Sampling I	nformation											
Weather Con		Temp: 65	5	Wind:	LAN	Sky	/: T	Desale				
Sampling Me	thod:	Grundfos	Bladder			Grab Othe		C.L. C.				
Dedicated Eq		Yes No	5		Pumping		.25	gpm				
Well Purged I		Yes (No	7				1240					
Time Purged						Sampling	1319					
Duplicate Sar	mple?	Yes (No	ID:	_	Sample E		100.					
Sample Appe	earance:	General: (Clem	Color:	Non Pha		*	Odor: Nent				
Time (3)	lpH	Specific	Temp	D.O	Turbidity	Gallons	SE	Comments:				
1253	6.74	3019	10.72		NA	3.25	1					
1306	6.74	2909	10.06			6.50	2					
1319	6.73	2898	10,70		1	9.75	3					
	-,,,,	0010				71.0	4					
						1						
				4	+		15					
Stabilized?	(Yes)	No		Amou	nt Water F	9.75	5	Gallons				

Groundwater Assessme	1		Site:	Otte	er rail Po	ower Co./ B	ig S
Sampling Personn			Facility ID:	-			
Dusty Forgsyn	5		Date: Unique Stati	TSEPIG			
- 1	2		Unique Stati	on ID: ' -			
	-		Sample ID:		S	lag 5	_
Well Condition							
Well Locked? (@s) No	3.		Protective Po			No	
Well Labeled? Yes (No)			State ID Tag	? Yes		CNO	
Casing Straight? (7es) No			Grout Seal In	ntact? Yes		(NO)	
Repairs Necessan							
Well Information			1000	200			
Well Depth: 39,€0	_		Well Casing			1107.3	C
Constructed Deptr 38.80			Static Water		108	3.53	
	7		Previous Sta				
	- 1						
	3.77		Water Level			350	
Water Level Before Purge 23 Well Volume: 2,48 Sampling Information Weather Condition Temp:	Gallons 76e		Measuremen		Elec.	WALI Ste	dy
Nater Level Before Purge 2: Nell Volume: 2.48 Sampling Information Neather Conditior Temp: Sampling Method: Grundfos Dedicated Equipm Yes No Fime Purged Dry? 1720 Duplicate Sample: Yes No Duplica	Gallons 76 Bladder SS/T	Disp. Baile	Measuremen SEEC	Sky: Grab Other e: O Began: 17	Elec.	gpm am	dy
Water Level Before Purge 2: Well Volume: 2,48 Sampling Information Weather Condition Temp: Sampling Method: Grundfos Dedicated Equipm Yes No Fime Purged Dry? 1720 Duplicate Sample: Yes No	Gallons 76 Bladder SS/T	Disp. Baile	Measuremen SSF @ C er (Whale) Pumping Rat Time Pump B	Sky: Grab Other e: O Began: 17 pling: 17	Most	gpm am	dy
Water Level Before Purge 23 Well Volume: 2,48 Sampling Information Weather Conditior Temp: Sampling Method: Grundfos Dedicated Equipm Yes No Well Purged Dry? 8 No Time Purged Dry? 1720	Gallons 76 Bladder SS/T	Color: (D. O.	Measuremen SEEC	Sky: Grab Other e: O Began: 17	Most	gpm am	dy
Nater Level Before Purge 2: Nell Volume: 2,48 Sampling Information Neather Conditior Temp: Sampling Method: Grundfos Dedicated Equipm Yes No Fime Purged Dry? (Ps No Duplicate Sample Yes No Sample Appearant General: 4)	Gallons 76 Bladder SS/T ID:	Disp. Baile	Measuremen SEE & C Time Pump E Time of Sam Sample EH: Cray Phase	Sky: Grab Other e: O Began: 17 HSO e: Nove	Most	gpm am am Odor: A	dy
Water Level Before Purge 23 Well Volume: 2,48 Sampling Information Weather Condition Temp: Sampling Method: Grundfos Dedicated Equipm Yes No Fime Purged Dry? (Ps No Fime Purged Dry? (1720 Duplicate Sample Yes (No Sample Appearant General: 4) Fime (10) pH Specific	Gallons 7Ce Bladder SS/T ID: Clauday	Color: (D. O.	Measuremen SE & C Whale Pumping Rat Time Pump E Time of Sam Sample EH: Cay Phase	Sky: Grab Other e: O Began: 17 pling: 17 HS C	Elec. Most 1 2	gpm am am Odor: A	dy
Water Level Before Purge 23 Well Volume: 2,48 Sampling Information Weather Conditior Temp: Sampling Method: Grundfos Dedicated Equipm Yes No Fime Purged Dry? (Ps No Fime Purged Dry? (1720 Duplicate Sample Yes (No Sample Appearant General: 4) Fime (D) pH Specific	Gallons 7Ce Bladder SS/T ID: Clauday	Color: (D. O.	Measuremen SE & C Whale Pumping Rat Time Pump E Time of Sam Sample EH: Cay Phase	Sky: Grab Other e: O Began: 17 pling: 17 HS C	Elec. Most 25 10 25 10 2 3	gpm am am Odor: A	dy
Water Levei Before Purge 23 Well Volume: 2,48 Sampling Information Weather Conditior Temp: Sampling Method: Grundfos Dedicated Equipm Yes No Purged Dry? 1720 Duplicate Sample Yes No Sample Appearant General: 4	Gallons 76 Bladder SS/T ID: Cloudy Temp	Color: (D. O.	Measuremen SE & C Whale Pumping Rat Time Pump E Time of Sam Sample EH: Cay Phase	Sky: Grab Other e: O Began: 17 HS C E: Nowe	SEQ 1 2 3 4	gpm am am Odor: A	dy ore
Water Level Before Purge 23 Well Volume: 2,48 Sampling Information Weather Conditior Temp: Sampling Method: Grundfos Dedicated Equipm Yes No Fime Purged Dry? (Ps No Fime Purged Dry? (1720 Duplicate Sample Yes (No Sample Appearant General: 4) Fime (D) pH Specific	Gallons 7Ce Bladder SS/T ID: Clauday	Color: (Color:	Measuremen SE & C Whale Pumping Rat Time Pump E Time of Sam Sample EH: Cay Phase	Sky: Grab Other e: O Began: 17 Pling: 17 H5 C E: Nowe	Elec. Most 25 10 25 10 2 3	gpm am am Odor: A	dy ore

O. Cuill	dwater ass	essment			Site:	- 0	Otter Ta	ill Power Co./ Big Stone		
Sampling	Personnel:				Facility ID);				
	Alan blei	snrr			Date:		75	+ 16		
	4.115-03.2113		-		Unique Station ID:					
					Sample II			Slag 6		
Well Co	ndition									
Well Loc	ked?	Mes No			Protective	Posts?	es	No		
Well Lab	eled?	Yes No	7		State ID 7		es	NO		
Casing S		Yes No			Grout Sea		es	WD .		
	Necessary:									
Well Inf	ormation									
Well Dep	th:	37.50	5		Well Casi	ng Elevation		1111.51		
Construc	ted Depth:	37.30			Static Wa	ter Elevation		1086.45		
Casing D	iameter:	2"			Previous :	Static:				
	vel Before Pu	rge: 25	.06		Water Lev	vel After Sam	np qu	34.40		
Well Volu	ime:	2.02	Gallons		Measuren	nent Method:	Riec	WLD Steel Tape		
					1					
Samplir	g Informati	on								
Weather	Conditions:	Temp:	105	Wind:	L+U	S	ky:	Cloudy		
Sampling	Method:	Grundfos	Bladder SS/	Disp. Bailer	Whale		her:	0		
Dedicated	Equipment:	Yes No			Pumping I	Rate:	1.25	gp m		
Well Purg	ed Dry?	(es) No			Time Pum		134			
Time Pur		1349			Time of S		135			
	Sample?	Yes No	ID:	-	Sample E		96.			
Sample A	ppearance:	General:	Cloudy	Color: Br	Pha Pha	se: Lt Se				
T' A	C-O	1016-	,	In 0	Territoria.	0-11	IOFO	10		
	pH	Specific	Temp	D. O.	Turbidity	Gallons		Comments:		
1349	7.10	1352	12.81	NA	NA	2.25	1			
1358				1-1	-	7.50	2			
।पछर				1		TO. 75	3			
1354	2.5	1530	12.78	1	1	2	5	2 1		
	7.05		12.18	Amount M	ater Remov	2.25		Bechange Gallons		
Stabilized Yes (5) Comments:				WILLOUIT AA	ater Remov	e z.z	3	Gallotis		

Ground	dwater A	ssessmen	t		Site:	Site: Otter Tail Power Co					
Sampling	Personnel				Facility ID	Facility ID:					
n	Ian Gleis	nec			Date:		- 3	7 Sep 16			
					Unique St	Unique Station ID:					
			-		Sample ID			Slag 7			
Well Co	ndition	0					_	00.0			
Well Loc	ked?	Yes No			Protective			No			
Well Lab		Yes No			State ID T	ag? Yes	3	(NO)			
Casing S	traight?	(Yes) No			Grout Sea	Intact? Yes	3	NO			
Repairs N	lecessary:										
Well Inf	ormation										
Well Dep	th:	49.00			Well Casir	ng Elevation:		1114.39			
	ted Depth:	48.70	7			er Elevation:		1098.81			
Casing D		2"			Previous S	Static:					
	vel Before I	Purge: 15	.58		Water Lev	el After Sam	pl	46.91			
Well Volu		5.45	Gallons					ec WL Steel Tape			
	g Informa		u5	Wind: 4	-+0	Sky		Claudy			
Sampling			Bladder SS/ID		Whale	Grab Othe		laury			
		tYes (No)	Company of	Diep. Dane.	Pumping F		_	gpm			
Well Purg		Yes No	-		Time Pum		410				
Time Pur		1432	-		Time of Sa		143				
	Sample?	Yes do	ID: -		Sample El-			01.0			
	ppearance:			Color: Tan				Odor: None			
	рH	Specific	Temp	D. O.	Turbidity	Gallons		Comments:			
14 32	7.20	1938	10.77	NA	NA	5.5	1				
1454						11.0	2				
1516						1606	- 3				
							4				
1437	7.04	2237	11.66	1	1	5.5	5	Becharge			
Stabilized		COM	14	Amount Wa	ter Remove	d: 5.5		Gallons			
Commen	ts:										

New Ulm, MN 56073

Ground	lwater As	sessment			Site:	Otter tail	Power	Co. / Big 56		
Sampling	Personnel:				Facility ID):				
	Alan O	leisner	_		Date: 7 Sep 16					
		new.			Unique Station ID:					
					Sample II):	5 la	4 8		
Well Co	ndition									
Well Lock		(es) No	-		Protective	- Salar		No		
Well Labe Casing St		(es) No	-		State ID T	ag? Yes		No		
	ecessary:	163 140	-		Giodi Gea	i intacti (165		NO		
	rmation									
Well Dept	h:	52.20	,		Well Casin	ng Elevation:		1127.26		
Construct	ed Depth:	52.0	9_		Static Wat	ter Elevation:		1110.29		
Casing Di	Casing Diameter: 2 "				Previous 8	Static:		-		
Water Lev	Vater Level Before Purge: 11, 98				Water Level After Sample: 27.37					
Well Volu	me:	5.75	Gallons	_	Measurem	ent Method:	Elec.	WLI) Steel Tape		
Sampling	Informat	ion								
Weather (Conditions:	Temp:	650	Wind:	LVU	Sky:	Co	udy		
Sampling	Method:	Grundfos	Bladder SS/T) Disp. Bailer	Whale	Grab Other		0		
Dedicated	Equipment	Yes (No			Pumping F	Rate: 6	.25	gpm		
Well Purg	ed Dry?	Yes (No			Time Pum	p Began:	1535	am / (prg		
Time Purg	ed Dry?	_			Time of Sa	ampling:	1644	am / DD		
Duplicate	Sample?	Yes (No	ID: -	-	Sample El	1: 9	2.9			
Sample A	pearance:	General:	SI Cloud,	Color: 7	An Pha			Odor: None		
	100	Specific	Temp	D. O.	Turbidity	Gallons	SEQ			
Time	pH	Cond.	°c	mg/L	NTU	Removed	#	Comments:		
1558	7.14	1329	13.03	NA	NA	5.75	1			
1621	7.34	1322	12.86			11.50	2			
1644	7.24	1329	12.75			17.25	3			
		114			1000		4			
				11			5			
Stabilized	(Vac)	No		Amount W	ofee Demarks	d: /7.2		Gallons		

Ground	dwater As	ssessmen	t		Site:	Otte	r Ta	il Power Co./ Big Stone			
Sampling	Personnel				Facility ID						
7374	Alan ble	isnee			Date:						
			_		Unique St	Unique Station ID:					
					Sample ID);		Slag 9			
Well Co	ndition										
Well Loc	ked?	(Yes) No			Protective	Posts? Yes		No			
Well Lab	eled?	Yes Md			State ID T	ag? Yes		No			
Casing S	traight?	Yes No			Grout Sea	Intact? Yes		NO			
Repairs N	Vecessary:		_		171						
Well Inf	ormation										
Well Dep	th:	51.27	KI I		Well Casir	g Elevation:		1122.35			
	ted Depth:	49.80	-			er Elevation:		1105.04			
Casing D	iameter:	2"			Previous S	Static:					
Water Le	vel Before F	ourge:	7.31		Water Lev	el After Samp	ole	41.44			
Well Volu		5.53	Gallons			ent Method:		ec. W Steel Tape			
					1		_				
Samplin	g Informa	tion									
	Conditions:		45	Wind:	40	Sky:	-	loudy			
Sampling		Grundfos	Ptadder SS/D			Grab Other		0			
	Equipmen				Pumping R			gpm			
Well Purg		Yes (No)	-		Time Pum		71				
Time Pur		-	-		Time of Sa		181				
	Sample?	Yes (10)	ID: -		Sample El-		00.				
	ppearance:		Cloudy	Color: 7	Pha		_	Odor: None			
			7								
Time 23	pH	Specific	Temp	D. O.	Turbidity	Gallons	S	Comments:			
1733	7.08	23.58	11.77	NA	NA	5.75	1				
1756	7.11	2332	12.00			11.5	2				
1819	7.10	2255	12.19	-31	11.5.1	17.25	3				
							4				
	0			1	1		5				
Stabilized	Yes	No		Amount W	later Remove	d: 17.2	5	Gallons			
Commen	ts:										

Groundwater Assessm	1 o r		Site:	Otte	er Tail	Power Co./ Big Stone
Sampling Personne			Facility ID		-	
Dusty Farasy	0_		Date:	75	016	
			Unique St	ation ID:	_	
	-		Sample ID):		Slag 9 Deep
Well Condition				- IV. 20		
Well Locked? Yes No			Protective	Posts? Yes		(NB)
Well Labeled? Yes 🐠			State ID T			Ø5
Casing Straight? YES No			Grout Sea	I Intact? Yes	0.00	(NO).
Repairs Necessary						
Well Information						
Well Depth: 70.9	8			ng Elevation:		1121.72
Constructed Depth: 68.00				ter Elevation:	10	086.11
Casing Diameter: 2"	200		Previous S		-	
Water Level Before Purge	35.81			el After Samp		68.33
Well Volume: 5.73	Gallons	_	Measurem	ent Method:	5/fe	c. Wb Steel Tape
			1			
Weather Conditions Temp: Sampling Method: Grundfos Dedicated Equipms Yes No Well Purged Dry? Yes No Time Purged Dry? Yes No Duplicate Sample? Yes No Sample Appearanc General:		Wind: Disp. Bailer Color: Br	Pumping F Time Pum Time of Sa Sample Election	Grab Other Rate: 0,2 p Began 17 ampling: 15	5 259 227	gpm am / km am / pm Odor: Alexe
Time 13 pH Specific	Temp	D. O.	Turbidity	Gallons	ISE	Comments:
1822 11.60 3345		NA	NA	5.75	1	
1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	17.00	1	1		2	
					3	
				1	4	
1827		1	1	5.75	-6-	Recharge
Stabilizer Yes (No)		Amount W	ater Remove			Gallons
Comments:	-1	les 4	slow (recharge!		
Exceptions to Protocol:	-)	ns afficien	nt volu	recharge! ome for	(recharge reading

Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 5607

507 354 8517

		Assessm	er		Site:		er Ta	il Power Co./ Big Stone
Samplin	g Person				Facility ID:		-	
	Alen	bleisner	_		Date:		7	Sepile
			_		Unique Sta			
_			-		Sample ID	:	_	Slag 2B
Well Co	ondition						_	
Well Loc	ked?	Yes (No			Protective	Posts? Yes		(No)
Well Lab	eled?	Yes No			State ID To	ag? Yes		(No)
Casing S	Straight?	(es) No	7			Intact? Yes		(10)
	Necessar							
	formatio				York days			
Well Dep		40.9	3			g Elevation:		1111.26
	ted Dept					er Elevation:		1083.13
	Diameter:	2"			Previous S			_
	evel Befor	re Purge	28.13			el After Samp		39.83
Nell Vol	ume:	2.08	Gallons	_	Measurem	ent Method:	E	ec. WLDSteel Tape
					1		_	
	ng Infor							7
	Condition		45		-+0	Sky:	-	loudy / Rain
	Method:		Bladder SS/T	Disp. Baller	Whale	Grab Other	:	
		€Yes ∰			Pumping R			gpm
	ged Dry?				Time Pum		183	
	ged Dry?				Time of Sa		185	z am / pp
Duplicate	Sample'	Yes (10)	ID:	- 25 10	Sample El-	1:	w.	8
Sample A	Appearan	c General:	Clandy	Color: Be	Phas	e: Nonz		Odor: None
ime 9	lpH	Specific	Temp	D. O.	Turbidity	Gallons	S	Comments:
1847	7.41	1894	15.68	NA	NA	2.25	1	
1856	1	10.7				9.50	2	
1905						6.75	3	
		No.	11-20-20				4	
1852	7,32	1919	17.49	1	1	2.25	5	Bechares
Stabilized		NO		Amount Wa	ter Remove	2.25	1	Gallons
omme						-163	_	T

Exceptions to Protocol:

- Very Slow Recharge

- Limited Sample

be able to get

- 1000 Wone

- 500 HWO3

- 33 Igallon None



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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

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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1 of 3

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

Malyte	LCS Spike Amt	LGS 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	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		16A46029q 16A46035q A46029qc	1.210 0.407 1.160	2.390 1.520 2.110	118 111 95	75-125 75-125 75-125	1.520	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	
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	< 0.1
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	178.0 644.0	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	137	i		60.0 60.0	16-A46034 16-A46405	5.3 95.2	63.7 151	97 93	85-120 85-120	3.1	63.5 152	97 95	0.3 0.7	5	101 98	90-110 90-110	
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 1.000	116 108	85-11: 85-11:		16A46029q 16A46035q 16A46035q	<0.005 <0.005 <0.005	1.080	103 108 106	75-12: 75-12: 75-12:	1.080	1.080	108	1.9 0.0 2.9	10 10 10	110 108 105	90-110 90-110 90-110	0

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Page: 2 of 3

Quality Control Report

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

nalyte	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	3		* * * * *	0.10 0.10	16-A46034 16-A46215	0.013 < 0.005	0.104 0.072	91 72	67-106 67-106	0.104 0.072	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		1.050 1.050	105 105	3.9 0.9	10 10	101 100	90-110 90-110	100 200 200 200 200 200 200 200 200 200
pH units			-			:			2	7.3	7.3	1	0.0	2.5	101 101	90-110 90-110	
Selenium ug/L	25.0 25.0	102 102	85-115 85-115	100000000000000000000000000000000000000	16A46025q a46292qc	27.2 1.38	56.3 28.9	116 110	75-125 75-125		54.5 30.0	109 114	3.2 3.7	10 10	100 97	90-110 90-110	
Solids, Total Dissolved mg/L		i i	i è		\$:		5		925 1510	940 1500		1.6 0.7	10 10	105	85-115	< 10
Sulfate mg/L	10.	18	:	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	
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	75-12: 75-12: 75-12:	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:



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

Date: 9/30/2016

CLIENT: Project: MVTL Inc

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



Inter-Mountain Labs

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

ANALYTICAL QC SUMMARY REPORT

CLIENT:

MVTL Inc

S1609153

Work Order: Project:

51009103

Date: 9/30/2016

Report ID: S1609153001

Radium 228 by Ga/Tech Sample Type MBLK Units; pCi/L

		7 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 -						
			The same of the					Qua
		103837	1.00	Орто	The Carry	707.02.0	70 TYOU LIITHIO	Gu
- C2-70 A 17-717-0 D 1	Sample Type		Á	Unit	s: pCl/L			
-386 (09/23/16 13:44)	,	RunNo: 139110	Prep	Date: 09/	14/16 12:00	Bal	chID: 12333	
Analyte		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
Total Radium 228	Tanksan	44	1	38.5		113	61.3 - 120	
by Ga/Tech	Sample Type	MS		Unița	s: pCi/L			
386 (09/23/16 19:47)	F	RunNo: 139110	Prepi	Date: 09/1	4/16 12:00	Bate	hID: 12333	
Analyte		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228 by Ga/Tech	Sample Type	36 MSD	1	38.5 Units	ND : pCi/L	94.6	64.3 - 120	
-386 (09/23/16 22:48)	R	unNo: 139110	Prepi	Date: 09/1	4/16 12:00	Bato	hID: 12333	
Analyte		Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Total Radium 228		43	1	36	16.1	111	20	
In Water - Total by SM7500RA_B	Sample Type	MBLK		Units	: pCi/L			
663 (09/20/16 14:22)	R	unNo: 138896	Prept	Date: 09/1	4/16 0:00	Bato	hID: 12315	
Analyte		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	- S.W.S.A.De.	ND	0.2					
In Water - Total by SM7500RA_B	Sample Type	LCS		Units	pCi/L			
1663 (09/20/16 14:22)	R	unNo: 138896	PrepD)ale: 09/1	4/16 0:00	Batc	hID: 12315	
Analyte		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226		5.4	0.2	5.99		89.6	67.1 - 122	
in Water - Total by SM7500RA_B	Sample Type	MS		Units:	pCi/L			
663 (09/20/16 14:22)	Ru	unNo: 138896	PrepD	ate: 09/14	/16 0:00	Batch	ID: 12315	
Analyte		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	Land Francisco	5.1	0.2	5.99	0.2	81.5	65 - 131	
in Water - Total by SM7500RA_B	Sample Type	MSD		Units:	pCVL		100	
1663 (09/20/16 14:22)	Ru	ınNo: 138896	PrepD	ate: 09/14	/16 0:00	Batch	ID: 12315	
Analyte		Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Radium 226		5.7	0.2	5.1	10.8	91.3	20	
	Total Radium 228 8 by Ga/Tech 386 (09/23/16 19:47)	Total Radium 228 8 by Ga/Tech Sample Type -386 (09/23/16 13:44)	Analyte Result	Analyte Result RL Total Radium 228 ND 1 8 by Ga/Tech Sample Type LCS F386 (09/23/16 13:44) RunNo: 139110 Prep Analyte Result RL Total Radium 228 44 1 8 by Ga/Tech Sample Type M5 386 (09/23/16 19:47) RunNo: 139110 Prep Analyte Result RL Total Radium 228 36 1 8 by Ga/Tech Sample Type MSD -386 (09/23/16 22:48) RunNo: 139110 Prep Analyte Result RL Total Radium 228 36 1 -386 (09/23/16 22:48) RunNo: 139110 Prepl Analyte Result RL Total Radium 228 37 1 In Water - Total by SM7500RA_B Sample Type MBLK Radium 226 Radium 226 ND 0.2 In Water - Total by SM7500RA_B Sample Type LCS In Water - Total by SM7500RA_B Sample Type LCS In Water - Total by SM7500RA_B Sample Type LCS Analyte Result RL Radium 226 5.4 0.2 In Water - Total by SM7500RA_B Sample Type MS 663 (09/20/16 14:22) RunNo: 138896 PrepL Result RL Radium 226 5.4 0.2 In Water - Total by SM7500RA_B Sample Type MS 663 (09/20/16 14:22) RunNo: 138896 PrepL Result RL Radium 226 5.1 0.2 In Water - Total by SM7500RA_B Sample Type MSD In Water - Total by SM7500RA_B Sample Type MSD Result RL Radium 226 5.1 0.2 In Water - Total by SM7500RA_B Sample Type MSD In Water - Total by SM7500RA_B Sample Type MSD Result RL Radium 226 5.1 0.2 In Water - Total by SM7500RA_B Sample Type MSD In Water - Total by SM7500RA_B Sample Type MSD Result RL Radium 226 5.1 0.2 In Water - Total by SM7500RA_B Sample Type MSD In Water - Total by SM7500RA_B Sample Type MSD In Water - Total by SM7500RA_B Sample Type MSD In Water - Total by SM7500RA_B Sample Type MSD	Analyte Result RL Spike	Analyte Result RL Spike Ref Samp	Analyte Result RL Spike Ref Samp %REC	Result Result Ref Samp Rec Rec Limits Total Radium 228 Sample Type LCS LUnits: pcl/L

Qualifiers:

- B Analyte detected in the associated Method Blank
- 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
- E Value above quantitation range
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- X Matrix Effect

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 SSeptice

Project Otter Tail Power Company Project Type: Big Stone Plant CCR Name of Samplers: Alan Gleisner Report Otter Tail Power Company Carbon Copy: Dusty Farasyn Paul Vukonich Quote Number: Attn: Work Order Number: 31-0455 Address P.O. Box 496 Address: Lab Numbers: Fergus Falls, MN 56538-0496 Phone: 218-739-8349

		Sample In	forma	ation								-	3ottl	e Ty	pe					Analysis
Lab Number	Sample ID	Unique Station ID	Date		Time	Sample Type	Sample Location	1 Gallon none	Fillered Yor N	1000 none	SOO HINGS	Filler? Y or M	304	Filter? Y or M	1000 Amberna	1000 Amber	500 NaOH	Other: 150 Hage	Other 150 Mc	Analysis Required
ALGEN 25	H2OX		750	016	1230	GW		1		1	1	N	1	4.		1				See Attached
26	НЗОХ	1	- 1	1	1316	GW		1		1	1	N						10	The same	
	H4OX				NS	GW		-1		-	1	N					1			
27	H-6				1418	GW		1		1	1	N	. 10				1	0.7	100	
	H-8				1512	GW		1		1	1	N	-							
	H-9	7			1612	GW		1		1	1	N	14.3						111	
	Slag 1		75	ra 16	1208	GW		1		1	1	N	-	-3		1			1111	
	Slag 4	11/		1	1319	GW		1		1	1	N					E			
	Slag 5				1725	GW	-	1		1	1	N				-		1		
					1354	GW		1		1	11	N						V.	1	

Comments:

Samples Relinqu		Mai		Samples Received By	r. (1 7	Lu de	a)	
Date: 85	e 16 Time:	1055	Temp: 3.027	Date: 8 Supt 16	-	Time:	1055	Temp: 3. (C
Samples Relinq		Log in Cart	Other:					
Samples Reling	uished By:			Samples Received B	y:			
Date:	Time:		Temp:	Date:		Time:		Temp:
Delivery:	Samplers Other:			Seal Number(s) - If U	sed			
Transport:	Ambient Ice		Other:	Seals Intact?	Yes	3	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

Report '	Otter Tail F	Power Comp		Project Ty Carbon Co	_	Big Stor	ne Pl	ant C	CR					s:		Ala	us b	lei's	mer aresyn
Address	Paul Vukor P.O. Box 4 Fergus Fal 218-739-83	96 Is, MN 565	38-0496	Attn: Address:						Quot Work Lab	c Ore	der N	lumb	er:					
		Sample In	formation									Bott	le T	ype					Analys
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	1 Gallon none	Fillered Yor N	1000 nons	SOU HNOS	Filler? Y OF M.	500 H2SO4	Filler? Y or M	1000 Amber no	1000 Amber	500 NaOH	Other: 150 Hogs	Other 150 Mc	Analysis Required
34	Slag 7		75016	1437	GW		1		1	1	N								See Attached
35	Slag 8	7-11		1644	GW		1		1	1	N				(19			E Comment
36	Slag 9			1819	GW		1		1	1	N				1				
	Slag 9 De	ер		1827	GW	1	1		1	1	N								
38	Slag 2B		-	1852	GW		1		1	1	N								
Comme		Cimited :				Joog No			16. 1-										

		1	1.1			- 1		
Samples Relin	quished By:	as	- 206-		Samples Received B	By: 11. Kude	()	
Date:	85416	Time:	1055	Temp:30°C	Date: 8 SIDFIL	Time:	1055	Temp: 3 oc
Samples Relin	quished into:	Fridge	Log in C	art Othe	er:			
Samples Relin	quished By:				Samples Received I	Ву:		
Date:		Time:		Temp:	Date:	Time:		Temp:
Delivery:	Samplers	Other.			Seal Number(s) - If	Used		
Transport:	Ambient	dee		Other:	Seals Intact?	Yes	No	

Big Stone Sampling

Site*	Parameter	Well	Diameter	Well	Sample	Dedicated?	Pump Rate	Goes	Sampling
18601.46	List	Depth	(Inches)	Elevation	Equipment	Dedicated	(ml/minute)	Dry?	Seasons*
WELL10	A	47.43	4	1098.70	Keck/Tsunami	No	3,000	No	
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	Baller	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
85	В	46.72	2	1091,40	Baller	Yes	N/A	Yes	1,3
S6	В	62.05	2	1090.71	Baller	Yes	N/A		1,3
H1OX	C,-CCR	32.91	2	1115.89	Bailer	Yes	100	No	1,3
HINT	C	60.11	2	1115.81	Keck/Tsunami	No		Yes	1,3
H2OX	C. CCR	32.20	2	1103.91	Bladder	Yes	1500	No	1,3
H2INT	C	62,30	2	1103.91	Baller		100	Yes	1,3
H3OX	C. CCR	22.55	2	1095.19		Yes	N/A	Yes	1,3
H3INT	C	54.31	2	1095.17	Bladder	Yes	100	Yes	1,3
H4OX	C, CCR	27.20	2		Whale	No	2000	No	1,3
H4INT	1.0		2	1108.22	Bladder	Yes	100	No	1,3
H5	C	60.01	2	1108.61	Keck/Tsunami	No	2000	Yes	1,3
H6		43.30	2	1122.80	Whale	No	1000	No	1,3
H7	C, CCR	15.00	2	1097.76	Bladder	Yes	100	Yes	1,3
	C	33.20	2	1106.06	Whale	No	1000	Yes	1,3
He	C, CCR	22.05	2	1081.23	Bladder	Yes	100	TBD	1,3
H9	CCR	30.20	2	1086.21	Bladder	Yes	100	TBD	1,0
BC1	В	16,26	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	Bailer	Yes	N/A	No	1,3
BC3R	В	35.15	2	1114.42	Bailer	Yes	NVA	Yes	1,3
BC4R	В	34.60	2	1113.86	Baller	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
SLAG2	CCR	TRO	2	4111.06	LOW FLOW	TBD	100	TBD	110
SLAG3	CCR	TBD	2	TBD	LOW FLOW	TBD	100	780	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		1,3
SLAG6	CCR	37.30	2	1111.51	LOW FLOW	No		TBD	4,3
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		100	TBD	1.3
SLAG9 DEEP***	CCR	68.00	2	1121.92	LOW FLOW	No	100	TBD	
SLAG2B	CCR	40.80	2	1111.26		No	100	TBD	
COOLING POND	A	N/A	N/A	N/A	LOW FLOW	No	100	TBD	
EVAPORATION POND	Ä	NA	N/A		Grab	N/A	N/A	No	1,3
HOLDING POND	Â	NA	N/A	N/A	Grab	N/A	N/A	No	1,3
RECLAIM POND	ĉ	N/A	N/A	N/A	Grab	N/A	N/A	No	1,3
	· ·	1417	INIA	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: 2001016 A

Date Reported: 5 Dec 2016

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

160 cc 2016 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: SLAG 1

Report Date: 5 Dec 2016 Lab Number: 16-A56133 Work Order #: 31-0543 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 17 Oct 2016 14:20 Sampled By: MVTL FIELD PERSONNEL Date Received: 18 Oct 2016 14:40

PO #: 48680

Temp at Receipt: 0.0C

	As Receive	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 15:5	ABL
Radium 228	See Attac	ched		EPA M9320	2 Dec 16 15:5	ABL
pH, Field	7.38	units	1.00	1-1586-85	17 Oct 16 14:2) AMG
pH	* 7.5	units	1.0	SM 4500 H+B-96	19 Oct 16 17:1:	2 RC
Sulfate	435 ~	mg/L	4.0	ASTM D516-02	20 Oct 16 8:3	AKE
Chloride	14.9	mg/L	3.0	SM 4500 CL E	21 Oct 16 8:4	MRW
Mercury	0.054 @	ug/L	0.005	EPA 245.7	21 Oct 16 11:11	TWB
Solids, Total Dissolved	1460	mq/L	10	SM 2540 C-97	20 Oct 16 15:5	RC
Calcium	280.0	mg/L	0.500	SW6010C	25 Oct 16 10:34	RMV
	See Narra				The state of the s	
Lithium	0.095	mg/L	0.005	SW6010C	25 Oct 16 10:34	RMV
Barium	0.216	mg/L	0.005	SW6010C	25 Oct 16 10:34	RMV
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	25 Oct 16 10:34	RMV
Boron	1.970	mg/L	0.100	SW6010C	25 Oct 16 10:36	RMV
	^See Narr		43.332	2000		
Antimony	< 2.5	ug/L	0.5	SW6020A	27 Oct 16 20:19	RMB
and an order of the second	@See Narr					
Arsenic	8.86 @	ug/L	0.50	SW6020A	3 Nov 16 16:42	RMB
Beryllium	0.66 @	ug/L	0.05	SW6020A	15 Nov 16 10:36	RMB
Cadmium	0.61	ug/L	0.10	SW6020A	27 Oct 16 20:19	RMB
	@See Narr			Patricia de la companya della companya della companya de la companya de la companya della compan		
Chromium	24,1	ug/L	0.50	SW6020A	27 Oct 16 20:19	RMB
	@See Narr	ative				
Lead	10.8	ug/L	0.50	SW6020A	27 Oct 16 20:19	RMB
	@See Narr	ative		44.44.44.4	Didn'th and	
folybdenum	6.30	uq/L	0.50	SW6020A	27 Oct 16 20:19	RMB
	@See Narra	ative				
Selenium	15.5 @	ug/L	0.50	SW6020A	3 Nov 16 16:42	RMB
hallium	< 0.5	ug/L	0.1	SW6020A	27 Oct 16 20:19	RMB
	@See Narra			The state of the s		
luoride	0.380	mg/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: SLAG 1

Report Date: 5 Dec 2016 Lab Number: 16-A56133 Work Order #: 31-0543 Account #: 006106 Sample Matrix: GROUNDWATER

Date Sampled: 17 Oct 2016 14:20 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: SLAG 4

Report Date: 5 Dec 2016 Lab Number: 16-A56134 Work Order #: 31-0543 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 17 Oct 2016 15:28 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 Analyz	ed	Analyst
MS Water Digestions					21 Oct	16	JMS
Water Digestions					20 Oct	16	JMS
Radium 226	See Attac	hed			2 Dec	16 15:50	ABL
Radium 228	See Attac			EPA M9320	2 Dec	16 15:50	ABL
pH, Field	6.83	units	1.00	1-1586-85	17 Oct	16 15:28	AMG
pH	* 6.9	units	1.0	SM 4500 H+B-96	19 Oct	16 17:12	RC
Sulfate	1400 ~	mq/L	4.0	ASTM D516-02	20 Oct	16 8:34	AKF
Chloride	52.5	mg/L	3.0	SM 4500 C1 E	21 Oct	16 8:47	MRW
Mercury	0.007	ug/L	0.005	EPA 245.7	21 Oct	16 11:18	TWB
Solids, Total Dissolved	2450	mg/L	10	SM 2540 C-97	20 Oct	16 15:54	RC
Calcium	471.0	mg/L	0.500	SW6010C	25 Oct	16 10:34	RMV
Calcium	-See Narr		0.000	2000200	30.75	***	6577
Lithium	0.205	.mg/L	0.005	SW6010C	25 Oct	16 10:34	RMV
Barium	0.026	mq/L	0.005	SW6010C		16 10:34	RMV
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	25 Oct	16 10:34	RMV
Boron	0.881	mg/L	0.100	SW6010C		16 10:34	RMV
BOLON	^See Narr		0,100	director			6567
Antimony	< 0.5	ug/L	0.5	SW6020A	3 Nov	16 16:42	RMB
Arsenic	1.27	ug/L	0.50	SW6020A	(m) (m) 7 m	16 16:42	RMB
Beryllium	< 0.25 @	ug/L	0.05	SW6020A		16 10:36	RMB
Cadmium	0.25	ug/L	0.10	SW6020A		16 16:42	RMB
Chromium	2.16	ug/L	0.50	SW6020A		16 20:19	RMB
CITOMICUM	See Narra		0.50	SHOOLON	5, 000	20 20120	
****	0.75	ug/L	0.50	SW6020A	3 Nov	16 16:42	RMB
Lead	See Narra		0.50	BHOOZON	5 1101	20 20115	4400
and a deal and a second	1.43	ug/L	0.50	SW6020A	3 Nov	16 16:42	RMB
Molybdenum	0.76		0.50	SW6020A		16 16:42	RMB
Selenium	< 0.1	ug/L	0.1	SW6020A		16 16:42	RMB
Thallium	See Narra	ug/L	0.1	SWOODON	3. MOV	20 20145	1430
managed		J.P. W.	0.020	EPA 300.0	1 Nov	16 19:54	RMB
Fluoride	0.180	mg/L	0.020	BFA 300.0	I MOV	10 13.54	rann.

RL = Reporting Limit
Analyzes 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**
| ** RL - Reporting Limit



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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: SLAG 4

Report Date: 5 Dec 2016 Lab Number: 16-A56134 Work Order #: 31-0543 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 17 Oct 2016 15:28 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

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 RI = 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 matrix

1 = Due to concentration of other analytes

1 = Due to sample quantity

+= Due to internal standard response

CZRTIFICATION: MN LAB # 027-015-125

NI LAB # 999447680

ND MICRO # 1013-M

ND GW/DW # R-040 CERTIFICATION: MN LAB # 027-015-125



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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: SLAG 5

Report Date: 5 Dec 2016 Lab Number: 16-A56135 Work Order #: 31-0543 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 18 Oct 2016 10:59 Sampled By: MVTL FIELD PERSONNEL Date Received: 18 Oct 2016 14:40

PO #: 48680

Temp at Receipt: 0.0C

	As Receiv Result	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 15:50	ABL
Radium 228	See Attac	hed		EPA M9320	2 Dec 16	ABL
pH, Field	6.96	units	1.00	I-1586-85	18 Oct 16 10:59	BMW
pH	* 7.1	units	1.0	SM 4500 H+B-96	19 Oct 16 17:12	RC
Sulfate	127 @	mq/L	4.0	ASTM D516-02	20 Oct 16 9:32	AKF
Chloride	10.0	mg/L.	3.0	SM 4500 C1 E	21 Oct 16 8:47	MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7	21 Oct 16 11:18	TWB
Solids, Total Dissolved	491	mg/L	10	SM 2540 C-97	21 Oct 16 18:38	RC
Calcium	124.0	mg/L	0.500	SW6010C	25 Oct 16 10:34	RMV
a Lorent	See Narra		21/252	Tell-see		
ithium	0.026	mg/L	0.005	SW6010C	25 Oct 16 10:34	RMV
arium	0.125	mg/L	0.005	SW6010C	25 Oct 16 10:34	RMV
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	25 Oct 16 10:34	RMV
Boron	0.377	mq/L	0.100	SW6010C	27 Oct 16 12:56	RMV
ntimony	< 0.5	ug/L	0.5	SW6020A	27 Oct 16 20:19	RMB
шенному	See Narra		915	T. King-ordero		
rsenic	1.10	ug/L	0.50	SW6020A	3 Nov 16 16:42	RMB
eryllium	< 0.25 €	ug/L	0.05	SW6020A	15 Nov 16 10:36	RMB
admium	< 0.1	ug/L	0.1	SW6020A	27 Oct 16 20:19	RMB
a carc care	See Narra			201224201		
hromium	< 0.5	ug/L	0.5	SW6020A	27 Oct 16 20:19	RMB
TI OHILLIN	See Narra			2,12,62,64		
ead	< 0.5	ug/L	0.5	SW6020A	27 Oct 16 20:19	RMB
eau	-See Narra		77.7			
olybdenum	13.1	ug/L	0.50	SW6020A	27 Oct 16 20:19	RMB
OLYDGERGII	See Narra		4.92			
elenium	< 0.5	ug/L	0.5	SW6020A	27 Oct 16 20:19	RMB
CICIII	See Narra			2024936		
hallium	< 0.1	ug/L	0.1	SW6020A	27 Oct 16 20:19	RMB
HGT 7 Tenti	See Narra		3.14	GILLES TO A	24 222 20 22.25	
luoride	0.290	mg/L	0.020	EPA 300.0	1 Nov 16 19:54	RMB

RL = Reporting Limit
Analyses performed under our Minnearota Department of Health Accreditation conform to the current INI 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: HN LAB # 027-015-125 WI LAB # 999447690 MD 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

Sample Description: SLAG 5

Report Date: 5 Dec 2016
Lab Number: 16-A56135
Work Order #: 31-0543
Account #: 006106
Sample Matrix: GROUNDWATER

Date Sampled: 18 Oct 2016 10:59 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

^ 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: SLAG 6

Report Date: 5 Dec 2016 Lab Number: 16-A56136 Work Order #: 31-0543 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 17 Oct 2016 16:02 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 15:50	ABL
Radium 228	See Attac			EPA M9320	2 Dec 16 15:50	ABL
pH, Field	7.31	units	1.00	I-1586-85	17 Oct 16 16:02	AMG
pH	* 7.4	units	1.0	SM 4500 H+B-96	19 Oct 16 17:12	RC
Sulfate	447 ~	mg/L	4.0	ASTM D516-02	20 Oct 16 9:32	AKF
Chloride	5.3	mq/L	3.0	SM 4500 C1 E	21 Oct 16 9:04	MRW
Mercury	0.027 @	ug/L	0.005	EPA 245.7	21 Oct 16 11:18	TWB
Solids, Total Dissolved	1130	mq/L	10	SM 2540 C-97	20 Oct 16 15:54	RC
Calcium	234.0	mg/L	0.500	SW6010C	25 Oct 16 10:34	RMV
Calcium	See Narra			3.00	75 750 65, 5655	
Lithium	0.142	mg/L	0.005	SW6010C	25 Oct 16 10:34	RMV
Barium	0.140	mg/L	0.005	SW6010C	25 Oct 16 10:34	RMV
Cobalt	< 0.01 ^	mq/L	0.005	SW6010C	25 Oct 16 10:34	RMV
Boron	2.360	mg/L	0.100	SW6010C	25 Oct 16 10:34	RMV
301011	^See Narr		0,100	51100100	20 000 11 1111	0.44
and the land and t	< 2.5 @	ug/L	0.5	SW6020A	11 Nov 16 16:46	RMB
Antimony	5.84	ug/L	0.50	SW6020A	3 Nov 16 16:42	RMB
rsenic	0.34 @	ug/L	0.05	SW6020A	15 Nov 16 10:36	RMB
Beryllium	0.34	ug/L	0.10	SW6020A	3 Nov 16 16:42	RMB
Cadmium	11.3	ug/L	0.50	SW6020A	27 Oct 16 20:19	RMB
Chromium			0.50	3400208	27 000 10 20115	turn
20 m 4	See Narra		0.50	SW6020A	27 Oct 16 20:19	RMB
lead	5.89	ug/L	0.50	SWOUZUM	27 000 10 20,13	1071
2 S A S	See Narra		0.50	SW6020A	27 Oct 16 20:19	RMB
folybdenum	6,33	ug/L	0.50	SWOUZUA	27 000 10 20.15	1410
14 10 2 10	See Narra	6-3-12	0.50	SW6020A	3 Nov 16 16:42	RMB
elenium	4.87	ug/L	0.50	, more and and	27 Oct 16 20:19	RMB
Challium	0.23	ug/L	0.10	SW6020A	21 OGE 10 20:19	MID
G1 4-2 0-	See Narra	The state of the s		200 0	1 West 16 10-54	RMB
Fluoride	0.530	mg/L	0.020	EPA 300.0	1 Nov 16 19:54	PUB

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 ample matrix
Due to concentration of other analytes
Due to sample quantity
CERTIFICATION; MN LAB # 027-015-125 WI LAB # 999447680 MD MICKO # 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

Sample Description: SLAG 6

Report Date: 5 Dec 2016 Lab Number: 16-A56136 Work Order #: 31-0543 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 17 Oct 2016 16:02 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.

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

Pure to sample matrix
| = Due to sample quantity
| = Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 NI 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

Sample Description: SLAG 7

Report Date: 5 Dec 2016 Lab Number: 16-A56137 Work Order #: 31-0543 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 17 Oct 2016 16:45 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 15:51	ABL
Radium 228	See Attac			EPA M9320	2 Dec 16 15:51	ABL
pH, Field	7.22	units	1.00	I-1586-85	17 Oct 16 16:45	AMG
pH PH	* 7.2	units	1.0	SM 4500 H+B-96	19 Oct 16 17:12	RC
Sulfate	910 ~	mg/L	4.0	ASTM D516-02	20 Oct 16 9:32	AKF
Chloride	5.5	mg/L	3.0	SM 4500 C1 E	21 Oct 16 9:04	MRW
Mercury	0.012	ug/L	0.005	EPA 245.7	21 Oct 16 11:18	TWB
Solids, Total Dissolved	1730	mg/L	10	SM 2540 C-97	20 Oct 16 15:54	RC
Calcium	447.0	mg/L	0.500	SW6010C	25 Oct 16 10:34	RMV
Carcium	~See Narr		0.000	Diidozoo	97 755 77 7517	
Lithium	0.109	mg/L	0.005	SW6010C	25 Oct 16 10:34	RMV
Barium	0.068	mg/L	0.005	SW6010C	25 Oct 16 10:34	RMV
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	25 Oct 16 10:34	RMV
	1.170	mg/L	0.100	SW6010C	25 Oct 16 10:34	RMV
Boron	^See Narr		0.100	Budge	20 000 20 20101	1011
4 C 4 C 1 C 1 C 1 C 1 C 1 C 1 C 1 C 1 C	< 0.5		0.5	SW6020A	3 Nov 16 17:54	RMB
Antimony	2.47	ug/L	0.50	SW6020A	3 Nov 16 17:54	RMB
Arsenic		ug/L	0.05	SW6020A	14 Nov 16 14:11	RMB
Beryllium	< 0.25 @	ug/L	0.10	SW6020A	3 Nov 16 17:54	RMB
Cadmium	0.32	ug/L	0.50	SW6020A	27 Oct 16 21:32	RMB
Chromium	6.75	ug/L	0.50	SWOUZUM	27 000 10 21.52	TATE
	See Narra		0.00	SW6020A	3 Nov 16 17:54	RMB
Lead	2.28	ug/L	0.50	SW6020A	3 NOV 10 17.54	IVID
Service To	See Narra		0.00	and Change	3 Nov 16 17:54	RMB
Molybdenum	6.03	ug/L	0.50	SW6020A	3 Nov 16 17:54	RMB
Selenium	2.40	ug/L	0.50	SW6020A		RMB
Phallium	0.11	ug/L	0.10	SW6020A	3 Nov 16 17:54	Pulb
	See Narra		4 444		4 10-16 10-54	DAM
Fluoride	0.380	mg/L	0.020	EPA 300.0	1 Nov 16 19:54	RMB

RL = Reporting Limit RL = Reporting Limit
Analyses performed under our Minnesots Department of Resith 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
1 = Due to cample quantity
+ Due to internal standard response

CERTIFICATION: NN 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

Sample Description: SLAG 7

Lab Number: 16-A56137 Work Order #: 31-0543 Account #: 006106 Sample Matrix: GROUNDWATER Date Sampled: 17 Oct 2016 16:45 Sampled By: MVTL FIELD PERSONNEL Date Received: 18 Oct 2016 14:40

Report Date: 5 Dec 2016

PO #: 48680

Temp at Receipt: 0.0C

As Received Result

Method RI.

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

Analyses performed under our Minnesota Department of Realth Accreditation conform to the current TMI standards.

The reporting limit was elevated for any enalyte 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: BN LAB # 027-015-125 WI LAB # 999447680 ND NICRO # 1013-M ND RW/DW # R-040

^{*} 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

Sample Description: SLAG 8

Report Date: 5 Dec 2016 Lab Number: 16-A56138 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
MS Water Digestions					21 Oct 1	6	JMS
Water Digestions					20 Oct 1	.6	JMS
Radium 226	See Attac	hed			2 Dec 1	6 15:51	ABL
Radium 228	See Attac	hed		EPA M9320	2 Dec 1	6 15:51	ABL
pH, Field	7.45	units	1.00	I-1586-85	17 Oct 1	6 18:15	DMA
pH	* 7.4	units	1.0	SM 4500 H+B-96	19 Oct 1	6 17:21	RC
Sulfate	292 -	mq/L	4.0	ASTM D516-02	20 Oct 1	6 9:32	AKF
Chloride	39.0	mg/L	3.0	SM 4500 CL E	21 Oct 1	6 9:04	MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7	21 Oct 1	6 11:18	TWB
Solids, Total Dissolved	865	mg/L	10	SM 2540 C-97	20 Oct 1	6 15:54	RC
Calcium	125.0	mg/L	0.500	SW6010C	25 Oct 1	6 10:34	RMV
Jarorum .	See Narra	San Section Se					
Lithium	0.060	mq/L	0.005	SW6010C	25 Oct 1	6 10:34	RMV
Barium	0.048	mg/L	0.005	SW6010C	25 Oct 1	6 10:34	RMV
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	25 Oct 1	6 10:34	RMV
Boron	0.486	mg/L	0.100	SW6010C	27 Oct 1	6 12:56	RMV
Antimony	< 0.5	ug/L	0.5	SW6020A	3 Nov 1	6 17:54	RMB
Arsenic	1.18	ug/L	0.50	SW6020A	3 Nov 1	6 17:54	RMB
Beryllium	< 0.25 @	ug/L	0.05	SW6020A	14 Nov 1	6 14:11	RMB
Cadmium	< 0.1	ug/L	0.1	SW6020A	3 Nov 1	6 17:54	RMB
Chromium	1.47	ug/L	0.50	SW6020A	27 Oct 1	6 21:32	RMB
	See Narra						
Lead	< 0.5	ug/L	0.5	SW6020A	3 Nov 1	6 17:54	RMB
	See Narra		3.00				
Molybdenum	8,61	ug/L	0.50	SW6020A	27 Oct 1	6 21:32	RMB
ANA A PROPERTY	See Narra						
Selenium	21.5	uq/L	0.50	SW6020A	3 Nov 1		RMB
Challium	< 0.1	ug/L	0.1	SW6020A	3 Nov 1	6 17:54	RMB
	See Narrative						
Pluoride	0.570	mg/L	0.020	EPA 300.0	1 Nov 1	6 19:54	RMB

RL = Reporting Limit



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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: SLAG 8

Report Date: 5 Dec 2016 Lab Number: 16-A56138 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

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 sample matrix
| = Due to concentration of other analytes
| = Due to sample quantity
| + Due to internal atandard response
| = Due to sample quantity
| CERTIFICATION: MN LAB | 027-015-125 | MI LAB | 999447660 | 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

Sample Description: SLAG 9

Report Date: 5 Dec 2016 Lab Number: 16-A56139 Work Order #: 31-0543 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 18 Oct 2016 9:41 Sampled By: MVTL FIELD PERSONNEL Date Received: 18 Oct 2016 14:40

PO #: 48680

Temp at Receipt: 0.00

	As Received Result		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 15:51	ABL
Radium 228	See Attac	00.000		EPA M9320	2 Dec 16 15:52	ABL
pH, Field	6.96	units	1.00	I-1586-85	18 Oct 16 9:41	AMG
Н	* 7.0	units	1.0	SM 4500 H+B-96	19 Oct 16 17:21	RC
Sulfate	864 ~	mg/L	4.0	ASTM D516-02	20 Oct 16 9:32	AKF
Chloride	6.8	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	1700	mg/L	10	SM 2540 C-97	20 Oct 16 15:54	RC
Calcium	376.0	mg/L	0.500	SW6010C	25 Oct 16 10:34	RMV
JALCZUM.	See Narra					
ithium	0.114	mq/L	0.005	SW6010C	25 Oct 16 10:34	RMV
Barium	0.038	mg/L	0.005	SW6010C	25 Oct 16 10:34	RMV
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	25 Oct 16 10:34	RMV
oron	0.266	mg/L	0.100	SW6010C	27 Oct 16 12:56	RMV
intimony	< 0.5	ug/L	0.5	SW6020A	3 Nov 16 17:54	RMB
rsenic	1.08	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.
admium	0.25	ug/L	0.10	SW6020A	3 Nov 16 17:54	RMB
hromium	3.34	ug/L	0.50	SW6020A	27 Oct 16 21:32	RMB
MALE WALLE SAME	See Narrative					
ead	1.12	ug/L	0.50	SW6020A	3 Nov 16 17:54	RMB
70114	See Narra		2000			
olybdenum	9.70	ug/L	0.50	SW6020A	3 Nov 16 17:54	RMB
elenium	1.95	ug/L	0.50	SW6020A	3 Nov 16 17:54	RMB
Challium	< 0.1	ug/L	0.1	SW6020A	3 Nov 16 17:54	RMB
	See Narra		212	4012010		
luoride	0.240	mg/L	0.020	EPA 300.0	1 Nov 16 19:54	RMB
AMOLANIC				Get alunia		

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

The reporting limit was slewated for any snalyte requiring a dilution as coded below:

Due to sample matrix
Due to concentration of other analytes
Due to sample quantity

CERTIFICATION; MN LAS # 027-015-125 NI LAS # 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

Sample Description: SLAG 9

Report Date: 5 Dec 2016 Lab Number: 16-A56139 Work Order #: 31-0543 Account #: 006106 Sample Matrix: GROUNDWATER Date Sampled: 18 Oct 2016

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.

RL = Reporting Limit

Analyses performed under our Hinnesota 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 concentration of other analytes

Due to internal standard response

CERTIFICATION: NO LAB # 027-015-125 NI LAB # 999447680 ND MICRO # 1013-M ND NW/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: SLAG 9 DEEP

Report Date: 5 Dec 2016 Lab Number: 16-A56140 Work Order #: 31-0543 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 18 Oct 2016 10:23 Sampled By: MVTL FIELD PERSONNEL Date Received: 18 Oct 2016 14:40

PO #: 48680

Temp at Receipt: 0.0C

	As Receiv Result	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	ched			2 Dec 16 15	52 ABL
Radium 228	See Attac			EPA M9320	2 Dec 16	ABL
pH, Field	8.97	units	1.00	I-1586-85	18 Oct 16 10	23 AMG
Hq	* 10.7	units	1.0	SM 4500 H+B-96	19 Oct 16 17	21 RC
Sulfate	1290 ~	mg/L	4.0	ASTM D516-02	20 Oct 16 9	32 AKF
Chloride	23.0	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	2050	mg/L	10	SM 2540 C-97	20 Oct 16 15	54 RC
Calcium	479.0	mg/L	0.500	SW6010C	25 Oct 16 10	34 RMV
	~See Narr		A COUNTY			
Lithium	0.411	mg/L	0.005	SW6010C	25 Oct 16 10	34 RMV
Barium	0.078	mg/L	0.005	SW6010C	25 Oct 16 10	34 RMV
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	25 Oct 16 10	34 RMV
Boron	0.152	mg/L	0.100	SW6010C	27 Oct 16 12	56 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 8	ug/L	0.1	SW6020A	3 Nov 16 17:	54 RMB
Chromium	26.9 @	ug/L	0.50	SW6020A	15 Nov 16 10:	36 RMB
Lead	< 2.5	ug/L	0.5	SW6020A	3 Nov 16 17:	54 RMB
	@See Narr					
Molybdenum	27.9 @	ug/L	0.50	SW6020A	3 Nov 16 17:	54 RMB
Selenium	4.39 @	ug/L	0.50	SW6020A	3 Nov 16 17:	54 RMB
Thallium	< 0.5	ug/L	0.1	SW6020A	3 Nov 16 17:	54 RMB
With the same of t	@See Narra	ative				
Fluoride	0.100	mg/L	0.020	EPA 300.0	1 Nov 16 19:	54 RMB

RL - Reporting Limit



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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: SLAG 9 DEEP

Report Date: 5 Dec 2016 Lab Number: 16-A56140 Work Order #: 31-0543 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 18 Oct 2016 10:23 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.

RL = Reporting Limit



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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: SLAG 2B

Report Date: 5 Dec 2016 Lab Number: 16-A56141 Work Order #: 31-0543 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 18 Oct 2016 10:59 Sampled By: MVTL FIELD PERSONNEL Date Received: 18 Oct 2016 14:40

PO #: 48680

Temp at Receipt: 0.0C

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					21 Oct 16	JMS
Water Digestions					20 Oct 16	JMS
Radium 226	See Attach	ned			2 Dec 16 15:52	ABL
Radium 228	See Attack	0.00		EPA M9320	2 Dec 16 15:52	ABL
pH, Field	7.38	units	1.00	1-1586-85	18 Oct 16 10:59	AMG
pH	* 7.8	units	1.0	SM 4500 H+B-96	19 Oct 16 17:21	RC
Sulfate	794 ~	mq/L	4.0	ASTM D516-02	20 Oct 16 9:32	AKF
Chloride	42.2	mg/L	3.0	SM 4500 C1 E	21 Oct 16 9:04	MRW
Mercury	< 0.025 @	ug/L	0.005	EPA 245.7	21 Oct 16 11:18	TWB
Solids, Total Dissolved	1460	mq/L	10	SM 2540 C-97	20 Oct 16 15:54	RC
Calcium	312.0	mg/L	0.500	SW6010C	25 Oct 16 10:34	RMV
Carcran	See Narrat				49, 646, 63, 634, 63	
Lithium	0.026	mg/L	0.005	SW6010C	25 Oct 16 10:34	RMV
Barium	0.139	mq/L	0.005	SW6010C	25 Oct 16 10:34	RMV
Cobalt	< 0.01 ^	mq/L	0.005	SW6010C	25 Oct 16 10:34	RMV
Boron	3.870	mg/L	0.100	SW6010C	25 Oct 16 10:34	RMV
BOLOII	^See Narra		01200	01140344	and the last through	
Antimony	< 2.5	ug/L	0.5	SW6020A	27 Oct 16 21:32	RMB
HILLIMOTTY	@See Narra		0.0	BROODSII	41 222 23 2222	1000
Arsenic	4.70	ug/L	0.50	SW6020A	27 Oct 16 21:32	RMB
Arsenic	@See Narra		0.50	Swodzon	2. 500 00 00.	4440
Beryllium	0.36 @	ug/L	0.05	SW6020A	14 Nov 16 14:11	RMB
Cadmium	0.60	ug/L	0.10	SW6020A	27 Oct 16 21:32	RMB
admituik	@See Narra		0110	Ziioozor.		Artin.
Chromium	20.0	ug/L	0,50	SW6020A	27 Oct 16 21:32	RMB
CULOUITUM	@See Narra		0.50	SHOOLON	20 200 50 55:35	
Lead	5.73	ug/L	0.50	SW6020A	27 Oct 16 21:32	RMB
Jeao	@See Narra		0.30	DIIOOZON	27 000 20 2210	1.50
ra 1 alle di manus	6.81	ug/L	0.50	SW6020A	27 Oct 16 21:32	RMB
Molybdenum	@See Narra		0.50	SWOOZOA	27 000 10 22122	
Carabina.	< 2.5 @		0.5	SW6020A	15 Nov 16 10:36	RMB
Selenium	< 0.5	ug/L	0.1	SW6020A	27 Oct 16 21:32	RMB
Challium		ug/L	0.1	SHOUZUK	27 000 10 21,52	-030
	@See Narra		0.020	EPA 300.0	1 Nov 16 19:54	RMB
Fluoride	0.110	mg/L	0.020	EFA SUU.U	1 104 10 13.51	*****

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:

8 = Due to sample matrix
1 = Due to sample quantity
1 = Due to internal standard response

CERTIFICATION: MN LAB \$ 027-015-125 MI LAB \$ 999447680 ND NICRO \$ 1013-K 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: SLAG 2B

Report Date: 5 Dec 2016 Lab Number: 16-A56141 Work Order #: 31-0543 Account #: 006106 Sample Matrix: GROUNDWATER

Date Sampled: 18 Oct 2016 10:59 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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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, molybdenum, 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

Work Order: 201631-0543

90 ms: 10-W30133 to 10-W	2014/	FIL	ilect Dic	STOK	DITTAIN LOCA		WOLK	Oruer: 2	01001-00	43	Leaven .						
nalyte	LCS Spike Amt	LCS: Rec.	% Rec	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Spike	Spike	% Rec	Dup Original	17d 发表。275701 2561	Rec	MSD/ Dup	MSD/s- Dup. RPD. Limit (<	Known Rec	ACCURATION AND ALL TO	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	VI -28-33.	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		1.070 1.080	106 105	0.9	10 10	93 94	90-110 90-110	< 0.00
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		2.56 2.77 2.72 2.55	102 111 109 102	75-125 75-125 75-125 75-125	2.77 2.72	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 < 0.05

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

Project: BIG STONE PLANT

Work Order: 201631-0543

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nalyte	LCS Spike Amt	LCS Rec.	% Rec	I THE SAME OF THE PARTY OF	Matrix Spike :	Matrix Spike Orig Result	President Company of the Control of	Spike	Matrix Spike % Rec Limits	Dup	A PROPERTY AND ADMINISTRATION OF THE PARTY AND ADMINISTRATION	MSD Rec	MSD Dup RPD		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	<0.1 <0.1 <0.1
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	< 0.5
Chloride mg/L	:			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	64.1 78.4 83.5	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

to 16-A56147 Project: BIG STONE PLANT Work Order: 201631-0543

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All green and a second a second and a second a second and	LCS Spike Amt	The form of the first of the fi	HERMAN STATE OF THE PARTY OF TH	The state of the state of the	Matrix Spike ID 25	Matrix Spike Origi Result	Matrix	Matrix Spike Rec	Spike % Rec-	MSD/ Dup Orig Result	MSD/ Dup Result	ALC: The second second	MSD/ Dup RPD	以上の内では、一つをような。	Rec	The Committee of the Co	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	26.2 26.9 25.8	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	
Lithium mg/L	1.000	105	85-115	1.00	16-A56142 a56085qc	0.436 0.008	1.600 1.110	116 110	75-125 75-125	7 7 7 7 7 7 7	1.620 1.120	118 111	1.2 0.9	10 10	97 99	90-110 90-110	The second second

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: 4 of 5

Quality Control Report

Project: BIG STONE PLANT

Work Order: 201631-0543

Dis: 16-A56133 to 16-A56147 Project: BIG STONE PLANT						Work Order: 201631-0543											
Analyte Table	Spike 1	LCS Rec		Spike	Matrix Spike: TD		Matrix Spike	Spike . Rec	Spike	Dup Orig	MSD/ Dup Result	MSD Rec %	MSD/	MSD/ Dup RPD Limit (<	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	< 0.003 < 0.003 < 0.003 < 0.003
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	(a)		1	:	:	1:1	12	i a i		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	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	31.1 35.9 27.4	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 <0.5



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: 5 of 5

Quality Control Report

Lab IDs: 16-A56133 to 16-A56147 Project: BIG STONE PLANT Work Order: 201631-0543

rialyte	WHICH THE THE	LCS Rec %	And the state of t	TOTAL LANGETT COMMENT	Matrix Spike ID	Matrix (Spike Orig Results	Matrix Spike Result	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
Solids, Total Dissolved mg/L				14 14	:			:		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		2	7	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
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.





Date: 11/30/2016

CLIENT:

MVTL Inc

WO # 31-0543

Project: Lab Order:

S1610332

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



Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName: Lab ID:

WO#31-0543 \$1610332-001

ClientSample ID: A56133 Slag 1

COC:

WO #31-0543

Date Reported

11/30/2016

Report ID

S1610332001

WorkOrder:

S1610332

CollectionDate: 10/17/2016 2:20:00 PM

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

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuciides - Total	NY AV	1.336				201111111111111111111111111111111111111	
Radium 226	ND	pCi/L		1	SM 7500 Re-B	10/31/2016 2307	ME
Radium 226 Precision (±)	NA.	pCi/L			SM 7500 Ra-B	10/31/2016 2307	ME
Radium 228	ND	pCi/L		2	Ga-Tech	11/17/2016 638	MB
Radium 228 Precision (±)	NA	pCI/L			Ga-Tech	11/17/2016 638	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 Renge of Dilutions

Matrix Effect

RL - Reporting Limit

C 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:

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 15



Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName: Lab ID:

WO#31-0543

ClientSample ID:

S1610332-002 A56134 Slag 4

COC:

WO #31-0543

Date Reported 11/30/2016

Report ID

S1610332001

WorkOrder:

S1610332

CollectionDate: 10/17/2016 3:28:00 PM

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

FieldSampler:

Matrix:

Water

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuciides - Total							
Radium 226	ND	pCl/L		1	8M 7500 Ra-B	10/31/2016 2307	MB
Radium 226 Precision (±)	NA	pCI/L			SM 7500 Ra-B	10/31/2016 2307	MB
Radium 228	ND	pCl/L		2	Ga-Tech	11/17/2016 942	MB
Radium 228 Pracision (±)	NA	pCI/L			Ga-Tech	11/17/2016 942	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation 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

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

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

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Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

WO#31-0543 S1610332-003

Lab ID: ClientSample ID: A56135 Slag 5

WO #31-0543

Date Reported 11/30/2016

Report ID

51610332001

WorkOrder:

\$1610332

CollectionDate: 10/18/2016 10:59:00 AM

DateReceived:

10/21/2016 2:23:00 PM

FieldSampler:

Matrix:

Water

COC:

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionucildes - Total					A Roy Loke		
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	10/31/2016 2307	MB
Radium 226 Precision (±)	NA	pCl/L			SM 7500 Ra-B	10/31/2016 2307	MB
Radium 228	ND	pCI/L		2	Ga-Tech	11/17/2016 1247	MB
Radium 228 Precision (±)	NA	pCI/L			Ga-Tech	11/17/2016 1247	MB

These results apply only to the samples tested.

Qualiflers: Analyte detected in the associated Method Blank

Value above quantitation range Analyte delected 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

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:

Wade Nieuwsma, Assistant Laboratory Manager

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Sample Analysis Report

MVTL Inc Company:

1126 N Front St

New Ulm, MN 56073

ProjectName: Lab ID:

WO # 31-0543 S1610332-004 ClientSample ID: A56136 Slag 6

COC:

WO #31-0543

Date Reported 11/30/2016 Report ID

S1610332001

WorkOrder:

S1610332

CollectionDate: 10/17/2016 4:02:00 PM

DateReceived: 10/21/2016 2:23:00 PM 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	10/31/2016 2307	MB
Radium 226 Precision (±)	NA	pCVL			SM 7500 Ra-B	10/31/2016 2307	MB
Radium 228	ND	pCI/L		2	Ga-Tech	11/17/2016 1552	MB
Radium 228 Precision (±)	NA	pCI/L			Ga-Tech	11/17/2016 1552	MB
A CONTRACTOR OF THE PROPERTY O							

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 tess than LCL

0 **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 limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 4 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: Lab ID:

WO # 31-0543 \$1610332-005

ClientSample ID: COC:

A56137 Slag 7

WO #31-0543

Date Reported 11/30/2016

Report ID

\$1610332001

WorkOrder:

S1610332

CollectionDate: 10/17/2016 4:45:00 PM DateReceived: 10/21/2016 2:23:00 PM

FieldSampler:

Matrix:

Water

Result	Units	Qual	RL	Method	Date Analyzed/I	nit
ND	pCi/L		1	SM 7500 Ra-B	10/31/2016 2307	ME
NA	pCl/L			SM 7500 Ra-B	10/31/2016 2307	ME
ND	pCI/L		2	Ga-Tech	11/17/2016 1857	MB
NA	pCi/L			Ga-Tech	11/17/2016 1857	MB
	ND NA ND	ND pCi/L NA pCV/L ND pCi/L	ND pCi/L NA pCi/L ND pCi/L	ND pCi/L 1 NA pCi/L ND pCi/L 2	ND pCi/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 10/31/2016 2307 NA pCI/L SM 7500 Ra-B 10/31/2016 2307 ND pCi/L 2 Ga-Tech 11/17/2016 1857

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 S

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 5 of 15



Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName: Lab ID:

WO#31-0543 \$1610332-006

ClientSample ID: A56138 Slag 8 COC:

WO #31-0543

Date Reported 11/30/2016

Report ID

S1610332001

WorkOrder:

S1610332

CollectionDate: 10/17/2016 6:15:00 PM DateReceived:

10/21/2016 2:23:00 PM

FieldSampler:

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init			
Radionucildes - Total									
Radium 226	ND -	pCI/L		1	SM 7500 Ra-B	10/31/2016 2307	MB		
Radium 226 Precision (±)	NA	pCI/L			SM 7500 Ra-B	10/31/2016 2307	MB		
Radium 228	ND	pCI/L		2	Ga-Tech	11/17/2016 2201	MB		
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	11/17/2016 2201	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 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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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: Lab ID:

WO # 31-0543 S1610332-007

COC:

ClientSample ID: A56139 Slag 9 WO #31-0543

Report ID

Date Reported 11/30/2016

S1610332001

WorkOrder:

S1610332

CollectionDate: 10/18/2016 9:41:00 AM

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

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nlt
Radionuciides - Total							
Radium 226	1.4	pGI/L		1	SM 7500 Ra-B	10/31/2016 2307	MB
Radium 226 Precision (±)	0.2	pCi/L			SM 7500 Ra-B	10/31/2016 2307	MB
Radium 228	2.3	pCI/L		2	Ga-Tech	11/18/2016 105	MB
Radium 228 Precision (±)	2.9	pCi/L			Ga-Tech	11/18/2016 105	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

0 Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

Celculated 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: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 7 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:

\$1610332-008 ClientSample ID: A56140 Slag 9 deep

COC:

WO #31-0543

Date Reported Report ID

11/30/2016

51610332001

WorkOrder:

S1610332

CollectionDate: 10/18/2016 10:23:00 AM

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

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init		
Radionuclides - Total								
Radium 226	ND	pCl/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	2,5	pCi/L		2	Ga-Tech	11/18/2016 409	MB	
Radium 228 Precision (±)	2.9	pCI/L			Ga-Tech	11/18/2016 409	MB	

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation 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

C Calculated Value

Holding times for preparation or analysis exceeded

Analyzed by another laboratory

Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery fimits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 8 of 15



Sample Analysis Report

MVTL Inc. Company:

1126 N Front St

New Ulm, MN 56073

ProjectName: Lab ID:

WO#31-0543 S1610332-009 ClientSample ID: A56141 Slag 2B

COC:

WO #31-0543

Date Reported 11/30/2016

Report ID

S1610332001

WorkOrder:

S1610332

CollectionDate: 10/18/2016 10:59:00 AM DateReceived:

10/21/2016 2:23:00 PM

FieldSampler:

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/	Init
Radionucildes - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	11/01/2016 824	MB
Radium 226 Precision (±)	NA	pCl/L			SM 7500 Ra-B	11/01/2016 824	MB
Radium 228	ND	pGI/L		2	Ga-Tech	11/18/2016 714	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	11/18/2016 714	MB

These results apply only to the samples tested.

B Analyte detected in the associated Method Blank Qualifiers:

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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ANALYTICAL QC SUMMARY REPORT

CLIENT:

MVTL Inc

Work Order: S1610332

Date: 11/30/2016

Report ID: S1610332001

Project: WO # 31-0543

Radium 228 by Ga/Tech	Sample Type MBLK		Unit	ts: pCi/L			
MB-397 (11/15/16 14:37)	RunNo: 1410	68 P	repDate: 11/	02/16 14:00) Ba	tchID: 12558	-
Analyte	Result	R	L Spike	Ref Sam	p %REC	% Rec Limits	Qua
Total Radium 228	ND	- 1					
Radium 228 by Ga/Tech	Sample Type LCS		Unit	s: pCi/L			
LCS-397 (11/15/16 17:41)	RunNo: 14106	88 PI	repDate: 11/	02/16 14:00	Ba	tchID: 12558	
Analyte	Result	R	L Spike	Ref Sam	%REC	% Rec Limits	Qua
Total Radium 228	39	1	39.1		98.6	61.3 - 120	
Radium 228 by Ga/Tech	Sample Type MS		Unit	s: pCl/L			
MS-397 (11/15/16 23:50)	RunNo: 14106	8 Pr	epDate: 11/	02/16 14:00	Bat	chID: 12558	
Analyte	Result	RI	Spike	Ref Samp	%REC	% Rec Limits	Qua
Total Radium 228	43	1	39.1	ND	110	61,3 - 120	
Radium 228 by Ga/Tech	Sample Type MSD		Units	s: pCI/L			
MSD-397 (11/16/16 02:55)	RunNo: 14106	8 Pr	epDate: 11/0	2/16 14:00	Bal	chID: 12558	
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qua
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: 14041	3 Pre	epDate: 10/2	6/16 0:00	Bate	chID: 12484	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	ND	0.2					
Radium 226 in Water - Total by SM7500RA_B	Sample Type LCS		Units	: pCi/L			
LCS-1680 (10/31/16 23:07)	RunNo: 140413	9 Pre	pDate: 10/2	6/16 0:00	Bato	hID: 12484	
Analyte	Result	RL	Spike	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		Units	pCI/L			
LCSD-1680 (10/31/16 23:07)	RunNo: 140413	Pre	pDate: 10/2	8/16 0:00	Bato	hID: 12484	70
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Radium 226	6.2	0.2	5.4	13.7	104	20	
adium 226 In Water - Total by SM7500RA_B	Sample Type MS		Units:	pCi/L			
S1610228-007AMS (10/31/16 23:07)	RunNo: 140413	Pre	pDate: 10/26	6/16 0:00	Bato	hID: 12484	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	11.0	0.2	12	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
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- X Matrix Effect

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, Das	ty Farasyn
Report Otter Tail Power Company	Carbon Copy:			Bon Walf	
Attn: Paul Vukonich	Attn:		Quote Number:		
Address P.O. Box 496	Address:		Work Order Number:		
Fergus Falls, MN 56538-0496	1		Lab Numbers:		
Phone: 218-739-8349					

	Sample Information								Bottle Type								Analysis		
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	1000 HIVO3	Filtered Yor M	1000 none	500 HIVO3	Fillen? Y or M.	1 g	Filter? Y or N	1000 Amber p.	1000 Amber	500 NaOH	Other: 150 H2SC	Other 150 Mag	Analysis Required
156142	H2OX		170c+16	1815	GW		2	N	1	1	N	-				, T.			See Attached
43	НЗОХ		180x+16	845	GW		2	N	1	1	N	-	10						
44	H4OX		1	1001	GW	=	2	N	1	1	N	V-			1				
	H-6		1702116	1634	GW		2	N	1	1	N	100		V III P					
46	H-8			1727	GW		2	N	1	1	N	1							
	H-9	,		1921	GW		2	N	1	1	N								
6133	Slag 1			1426	GW		2	N	1	1	N								
	Slag 4			1528	GW		2	N	1	1	N	100	1 - 1					-	-
	Slag 5	1	180416	1059	GW		2	N	1	1	N	150			3.4	-			
	Slag 6		170416	1602	GW		2	N	1	1	N				1			1	

WORK ORDER #2

		1/ /	,		_ ^ /		
Samples Reline	quished By:	Masta	-	Samples Received By	: U. Tread	(1)	
Date: 180	et16	Time: 1440	Temp: 6.0	Date: 1800+10	Time:	1440	Temp:0_0C
Samples Reline	quished into:	Eridge Log in C	art Othe	er.			
Samples Reline	quished By:			Samples Received By	<i>r</i> .		
Date:		Time:	Temp:	Date:	Time:		Temp:
Delivery:	Samplers	Other:		Seal Number(s) - If U	sed		
Transport:	Ambient	-tce>	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 Glaisner,	Dusty Foresun
Report Otter Tail Power Company	Carbon Copy:		Contract Con	Benwolf	10.00
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				T	
Comple Informatio	m		Pottle Type		Analys

_		-	Bottle Type							Analysis									
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	1000 HNO3	Filtered Yor N	1000 none	500 HNO3	1 4	18	Filter? Y or N		1000 Amber	500 NaOH	Other: 150 Hag	Other 150 No.	Analysis Required
37	Slag 7		170c+16	1645	GW	100	2	N	1	1	N				1			100	See Attached
	Slag 8		1	1815	GW		2	N	1	1	N			151		1			
	Slag 9		1800+16	941	GW		2	N	1	1	N		1						
	Slag 9 Dec	ep.		1023	GW		2	N	1	1	N	-							
	Slag 2B		1	1059	GW		2	N	1	1	N	1		2					
																			1

Comments:

WORK ORDER #2

		1/1			- 1	
Samples Reline	quished By:	11/2/2	-	Samples Received By:	U. Tallder	
Date: /80	refle	Time: 1440	Temp:0.0	Date: 18 Oct 16	Time: 1440	Temp: O. C
Samples Relin	quished into:	€ridge Log in	Cart Oth	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	tce	Other:	Seals Intact?	Yes No	

Both cert Revive

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	
	WELL11	A	127.22	4	1104.00	Other Pump	Yes	36,000		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	No	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	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		Yes	1,3
	S6	В	62.05	2	1090.71	Baller	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	No	1,3
	H2INT	C	62.30	2	1103.91	Bailer	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	No	100	Yes	1,3
8	H4OX	C, CCR	27.20	2	1108.22	Bladder	Yes	2000	No	1,3
	H4INT	C	60.01	2	1108.61	Keck/Tsunami	No	100	No	1,3
	H5	C	43.30	2	1122.80	Whale	No	2000	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		100	Yes	1,3
	H8	C, CCR	22.05	2	1081.23	Bladder	No	1000	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	100	TBD	
	BC101	В	39.30	2	1118.70	Bailer	Yes	N/A	No	1,3
	BC2R	В	32.48	2	1115.28	Bailer	Yes	N/A	Yes	1,3
	BC3R	В	35.15	2	1114,42	Baller	Yes	N/A	No	1,3
	BC4R	В	34.60	2	1113.86	Bailer		N/A	Yes	1,3
	BC5R	В	37.32	2	1123.02	Bailer	Yes	N/A	Yes	1,3
	BC6R	В	33.95	2	1121.58		Yes	N/A	No	1,3
	SLAG1	CCR	34.90	2	TBD	Bailer	Yes	N/A	No	1,3
		12/450	- 1.55	-	IDD	LOW FLOW	No	100	TBD	1.3

307

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	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

1000 No-e

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

Groun	dwater.	Assessmer	nt			Site:	Otte	er Tail P	ower Co./ Big	Sto
Sampling	g Personn	rsonnel					Facility ID:			
-	Charles on the	n Gleisner				Date:	6000	- V	17 Oct 16	_
	7.11.5		-9			Unique Sta	ation ID:		1,50.10	
			-			Sample ID		S	lag 1	Ξ
Well Co	ondition	0								=
Well Loc	ked?	Ves No				Protective	Posts? (Yes	1	No	
Well Lab	eled?	(Yes No	7.0			State ID T			(No)	
Casing S	Straight?	(Yes) No	-			Grout Sea	Intact? Yes		No)	
	Necessary	1:								
Well Inf	formatio	n								_
Well Dep	oth:	35.13				Well Casin	g Elevation:		NA	
Construc	ted Depth					Static Wat	er Elevation:			
Casing D	Diameter:	2"				Previous S	tatic:			
Water Le	evel Before	Purge:	8.10			Water Lev	el After Sampl	e:	37.10	
Well Volu		2.77	Gallons			Measurem	ent Method:	Elec.	WLD Stee	Ta
						1		_		
Samplir	ng Inforn	nation								-
Weather	Condition	s Temp:	60	Wind:	Lou	,	Sky:	cl	ouder	
Sampling	Method:	Grundfos	Bladder SS/D	Disp. Ball	ler	Whale	Grab Other			= 1
Dedicate	d Equipme	erYes Na				Pumping R	ate: o	.25	gpm	
	ged Dry?					Time Pum		1403		M
	ged Dry?					Time of Sa	mpling:	1420	am /	pro
	Sample?		ID: -	_		Sample El-		128.6		
		General.	Cloudy	Color:	Tan	Pha			Odor: No	-
			-						, , ,	ar.
. @		Specific	Temp	D. O.		Turbidity	Gallons	SEQ		7
Time	PΗ	Cond.	°C	mg/L		NTU	Removed	#	Comments:	
1415	7.32	1984	12.75	NA		NA	3.0	1	- 27	1
		1					1 - 2	2		1
1413		4		1				3		1
1413		+		1						
1413				1-1			A			1
	7.30	7217	12 21.					4	Rank	
1420 Stabilize	7.38 Yes	Z217	13.24	Amount	Wate	r Removed	3.0		Ree hen	

Exceptions to Protocol:

Very Slow Recharge

Groundw	ater Assess	sment			Site: Otter Tail Power Co./ Big Stone					
Sampling Pe	ersonnel:			Facility ID:						
And A Control	Alan bleis									
				Unique S	Station ID	-37				
			_		Sample I	D:		Slag 4		
Well Cond	ition	0			5/1/6		5			
Well Locked		(es) N				e Posts? Ye		No		
Well Labeled		Yes N			State ID		71	(NO)		
Casing Straig		Yes N	0		Grout Se	al Intact? Ye	S	No)		
Repairs Nec	essary:									
Well Inforn	nation					49 LC				
Well Depth:		39.23				ing Elevation		NA		
Constructed		39.00,				ater Elevatio	n:			
Casing Diameter: 2"					Previous			1		
Water Level	Before Purge:		19.04		Water Level After Sam 25.11					
Well Volume		3.29	Gallon	S	Measurement Method: Elec. WL) Steel Tape					
					1					
Sampling I	nformation									
Weather Con	nditions:	Temp:	Leo	Wind	LVU	Sky	1:	Claudy		
Sampling Me	ethod:	Grundfos	Bladder	Sisp. E	8a Whale	Grab Oth	er:			
Dedicated Ed		Yes N	0		Pumping	Rate: o	. 75	gpm		
Well Purged		Yes M	5)		Time Pur	np Begar	1446	am / @D		
Time Purged	Dry?	-			Time of S	Sampling	157	28 am / pm		
Duplicate Sar	mple?	Yes 🕦	DID:	-	Sample E		194	. Z		
Sample Appe	earance:	General:	Sicend	Color	Tan Pha	se: Ne	ne	Odor. None		
)						
14		Specific	lemp		Turbidity	Gallons	SE	La constant de la con		
Time "	pH	Cond.	°C	mg/L	NTU	Removed	Q#	Comments:		
1500	10.860	2976	10.22	·NA	NA	3.50	1			
1514	6.82	2927	10.21			7.0	2			
1528	6.83	2916	10.14			10.50	3			
	11.			14		107,700	4			
			4	+	1	V	5			
Stabilized? Yes No Amou										
Stabilized?	(les)	No		Amou	nt Water F	10.50)	Gallons		

Owner than Daniel	Site:	Otter	Tail Power Co./ Big	Stor			
Sampling Personn	Facility ID:						
Bes wolf	Date: 18 0	Ct 14					
	Unique Station	n ID:					
	Sample ID:		Slag 5				
Well Condition		F 1/6		=			
Well Locked? (es No	Protective Pos	its? Yes	No				
Well Labeled? Yes No	State ID Tag?	Yes	(NO				
Casing Straight? (Yes) No	Grout Seal Into	act? Yes	(No)				
Repairs Necessar							
Well Information	1.00.00		arateo dum	-			
Well Depth: 20.00	Well Casing E	levation:	1107.30				
Constructed Depth 38.80	Static Water E	levation: /	583.38				
Casing Diameter: 2"	Previous Statio	: 1083.5	3				
Water Level Before Purge 2 3.4	Water Level A	fter Sample:	28.22				
Well Volume: 2,4/0 Ga	ons Measurement	Method:	Elec. WLP Stee	Tap			
	N.						
Sampling Information				=			
Sampling Information Weather Condition Temp: 62	Wind: LLU	Sky:	clear				
Weather Condition Temp: (Q ->		Sky: C	car	-			
Weather Condition Temp: (02 Sampling Method: Grundfos Bla	er SS/T Disp. Bailer (Whale)	Grab Other:					
Weather Conditior Temp: (2 A Sampling Method: Grundfos Blad Dedicated Equipm Yes (0)	er SS/T Disp. Bailer Whale G Pumping Rate:	Grab Other:	gpm	- - - -			
Weather Conditior Temp: (A Sampling Method: Grundfos Bla Dedicated Equipm Yes (No Well Purged Dry? (No)	er SS/T Disp. Bailer Whale G Pumping Rate: Time Pump Be	Grab Other: 25 egan: 1049	gpm	pm/pm			
Weather Conditior Temp: (A Sampling Method: Grundfos Bla Dedicated Equipm Yes No Well Purged Dry? (S No Time Purged Dry? (S)	er SS/T Disp. Bailer (Whale) G Pumping Rate: Time Pump Be Time of Sampli	Grab Other: 25 egan: 1049	gpm	_			
Weather Conditior Temp: Sampling Method: Grundfos Dedicated Equipm Yes Well Purged Dry? Time Purged Dry? Duplicate Sample Yes No ID:	er SS/T Disp. Bailer Whale G Pumping Rate: Time Pump Be	Grab Other: 25 egan: 1049 ing: 1059	gpm	pm			
Weather Conditior Temp: Sampling Method: Grundfos Dedicated Equipm Yes Well Purged Dry? Wes No Time Purged Dry? Duplicate Sample Yes Sample Appearan General:	er SS/T Disp. Bailer Whale/ G Pumping Rate: Time Pump Be Time of Sample Sample EH: Color: None Phase:	Grab Other: 25 ggan: 1049 ing: 1059 71-2 1/076	gpm (m) (am) Odor: µ 🌣 "	pm			
Weather Conditior Temp: Sampling Method: Grundfos Dedicated Equipm Yes Well Purged Dry? Wes No Time Purged Dry? Duplicate Sample Yes Sample Appearan General: Specific	er SS/T Disp. Bailer Whale/ G Pumping Rate: Time Pump Be Time of Sample Sample EH: Color: None Phase:	Grab Other: 25 ggan: 1049 ing: 1059 71-2 1/076	gpm / (am)	pm			
Weather Conditior Temp: Sampling Method: Grundfos Dedicated Equipm Yes Well Purged Dry? Time Purged Dry? Duplicate Sample Yes No ID: Sample Appearan General: Cond. Cond. Cond.	Pumping Rate: Time Pump Be Time of Sample Sample EH: Color: None Phase: D. O. Turbidity mg/L NTU R	Grab Other: 25 gan: 1049 ing: 1059 71-2 4/076 Gallons	gpm (m) (am) Odor: µ 🌣 "	pm			
Weather Conditior Temp: Sampling Method: Grundfos Dedicated Equipm Yes Well Purged Dry? Well Purged Dry? Duplicate Sample Yes No ID: Sample Appearan General: O	Pumping Rate: Time Pump Be Time of Sample Sample EH: Color: None Phase:	Grab Other: 25 gan: 1049 ing: 1059 71-2 A/0 10 Gallons Removed	gpm Odor: Odor: Comments:	Tpm Fil			
Weather Conditior Temp: Sampling Method: Grundfos Dedicated Equipm Yes Well Purged Dry? Well Purged Dry? Duplicate Sample Yes No ID: Sample Appearan General: Dedicated Equipm Yes No ID: Sample Appearan General: Dedicated Equipm Yes No ID: Specific Ie Cond. OC Io 48	Pumping Rate: Time Pump Be Time of Sample Sample EH: Color: None Phase: D. O. Turbidity mg/L NTU R	Grab Other: 25 gan: 1049 ing: 1059 71-2 A/0 10 Gallons Removed 2.50	gpm Odor: No SEQ Comments: Recharas	Tpm Fil			
Weather Conditior Temp: Sampling Method: Grundfos Dedicated Equipm Yes Well Purged Dry? Well Purged Dry? Duplicate Sample Yes No ID: Sample Appearan General: Description D	Pumping Rate: Time Pump Be Time of Sample Sample EH: Color: None Phase: D. O. Turbidity mg/L NTU R	Grab Other: 25 egan: 1049 ing: 1059 71-2 A/0 TC Gallons Removed 2.50	gpm Odor: Note SEQ Comments: Recharge Recharge	Tpm Fil			
Weather Conditior Temp: Sampling Method: Grundfos Dedicated Equipm Yes Well Purged Dry? Well Purged Dry? Duplicate Sample Yes No ID: Sample Appearan General: O	Pumping Rate: Time Pump Be Time of Sample Sample EH: Color: None Phase: D. O. Turbidity mg/L NTU R	Grab Other: 25 egan: 1049 ing: 1059 71-2 A/0 TC Gallons Removed 2.50	gpm Odor: Comments: Recharge A	Tpm Fil			
Weather Conditior Temp: Sampling Method: Grundfos Dedicated Equipm Yes Well Purged Dry? Well Purged Dry? Duplicate Sample Yes No ID: Sample Appearan General: Description Description Description	Pumping Rate: Time Pump Be Time of Sample Sample EH: Color: None Phase: D. O. Turbidity mg/L NTU R	Grab Other: 25 egan: 1049 ing: 1059 71-2 A/0 TC Gallons Removed 2.50	gpm Odor: Note SEQ Comments: Recharge Recharge	Tpm Fil			

Groundwater A	ssessment			Site:	e: Otter Tail Power Co./ Bi				
Sampling Personnel				Facility ID	Facility ID:				
	leisner			Date:		1	100+16		
	.,,,,,,,			Unique S	tation ID:				
				Sample II	D;		Slag 6		
Well Condition	177300								
Well Locked?	Yes No			Protective	Posts?	eş	No		
Well Labeled?	Yes No			State ID		es	NO.		
Casing Straight?	Pes No			Grout Sea		es	ND		
Repairs Necessary:									
Well Information				Tura Ju					
Well Depth:	37,50	5		Well Casi	ng Elevation		1111.51		
Constructed Depth:	37.30	3			ter Elevation		1086,32		
Casing Diameter:	2"	3		Previous	Static:		1084.45		
Water Level Before	Purge: 2	25.19		Water Level After Samp 3					
Well Volume:	2.00	Gallons		Measurement Method: Elec. WILL Steel Ta					
				1					
Sampling Informa	tion								
Weather Conditions:	Temp:	60	Wind: L	* U	S	ky:	Pt Cloudy		
Sampling Method:	Grundfos	Bladder SS/	T Disp. Bailer	Whale	Grab Of	her:	8		
Dedicated Equipmen	t: Yes No			Pumping	Rate:	0.25	gpm		
Well Purged Dry?	Yes No			Time Pur	p Began:	154	9 am / @		
Time Purged Dry?	1557			Time of S	ampling:	140	z am / gm)		
Duplicate Sample?	Yes (No.)	ID: -		Sample E	H:	20	4.6		
Sample Appearance:	General:	Cloudy	Color: B	Pha Pha	se: Non		Odor: None		
6	Specific	Temp	ID. O.	Turbidity	Gallons	SEQ			
Time pH	Cond.	°C	mg/L	NTU	Removed	#	Comments:		
1557 7.29	1426	11.95	NA	NA	2.0	1	Common.		
154/	1,720		1	1	1	2			
			1			3			
						4			
1402 7.31	1569	11.83	11	1	2.0	5	Bechange		
Stabilized Yes	(6)	1 77103	Amount V	Vater Remov		-	Gallons		
Comments:			2						

Groundwater Assessment					Site: Otter Tail Power Co./ Big Stone						
Sampling Personnel:					Facility ID):					
					Date:			170ct16			
		20.20			Unique St	tation ID:					
			Ξ.		Sample II	D:		Slag 7			
Well Co	ondition					10.5					
Well Loc	ked?	Yes No			Protective	Posts? Yes	0	No			
Well Lab	eled?		State ID T	ag? Yes	5	(NO)					
Casing S	Straight?	(e) No			Grout Sea	al Intact? Yes	3	NO			
Repairs	Necessary										
Well In	formation				- 107-10-10						
Well Dep	oth:	49.05	F		Well Casi	ng Elevation:		1114.39			
Construc	ted Depth:	48.70			Static Wa	ter Elevation:		1098.98			
	Diameter:	2"			Previous \$			1098.81			
	evel Before	Purge:	15.41		Water Level After Sampl						
Well Volu	ume:	5.48	Gallons	4	Water Level After Sampl 47. Measurement Method: Elec. W Steel Tape						
					1						
Samplin	ng Inform	ation									
Weather	Conditions	: Temp:	600	Wind:	NWE15	Sky		Cloudy			
Sampling	Method:	Grundfos	Bladder SS/T	Disp. Bailer		Grab Othe	r:	0			
Dedicate	d Equipme	nt Yes No			Pumping Rate: 0.25 gpm Time Pump Began 1018 am / pm						
	ged Dry?	Yes No									
	ged Dry?	1640_			Time of Sampling: 1645 am 1 om						
	Sample?	Yes No	ID:	-	Sample EH: 121.3						
Sample A	Appearance	e: General:	Claudy	Color:	Tan Pha	se: Nony		Odor: None			
_	_	_	1		1		Te				
22					1		SE				
		Specific	Temp	D. O.	Turbidity	Gallons	Q				
Time	рН	Cond.	°C	mg/L	NTU	Removed	#	Comments:			
1440	7.21	2069	10.07	NA	NA	5.5	1	Commond.			
14.10	1.61	2001	74.57	1	100	7.0	2				
	77-72-		7.				3				
	la company					-	4				
1445	7.22	_ 2351	10.43	11	1	5,5	5	Bechange			
Stabilized		(Ng)		Amount V	Vater Remove		-	Gallons			
Commer	nts:	-									

Groundwater Assess	ment		Site: Otter Tail Power Co./ Big					
Sampling Personnel:			Facility ID	:				
Alan lelaisner			Date:	-	170	e 116		
7.535 (7)11 2112			Unique St	ation IC				
			Sample II			Slag 8		
Well Condition				7.7.6				
Well Locked? Yes	No		Protective	Posts Yes	1	No		
Well Labeled?	No		State ID T	ag? Yes		No		
Casing Straight? (Yes)	No		Grout Sea	Intact Yes		No		
Repairs Necessary:			V	-				
Well Information								
Well Depth: 52	.25		Well Casi	ng Elevation		1127.26		
Constructed Depth: 52.	09		Static Wa	ter Elevation		1110.51		
Casing Diameter: 2'	t .		Previous S	Static:		1110.28		
Water Level Before Purge:	14.75		Water Level After Samp 29. 41					
Well Volume: 5.79	Gallons		Measuren	ent Method	Elec			
V			1		_			
Sampling Information Weather Conditions: Temp:	600	Wind:		Sky:		21.10		
Sampling Method: Grundfor			Whale	Grab Other:		P+ Clarely		
	ND CHARLES GOT	Diap. Daner	Pumping F		25	gpm		
	VO .		Time Pum		170			
Time Purged Dry?			Time of Sa		1813			
	Vid ID:		Sample El		214.			
Sample Appearance: Genera		Color:	Vone Pha			01		
· · · · · · · · · · · · · · · · · · ·	· Coller	7	Vent	7001		Udor: None		
Specific	elemp	D. O.	Turbidity	Gallons	SEC			
Time pH Specific	°C	mg/L	NTU	Removed	#	Comments:		
1727 7.22 1377	10.77	NA	NA	6.0	1			
1751 7.41 1370				12.0	2			
1815 7.45 134				16.0	3			
				OF THE STREET	4			
		+			5			
Stabilized?(Yes) No		Amount V	/ater Remove	d: /8,	0	Gallons		
Comments:				-				

Ground	dwater As	sessmer	nt		Site:	Otto	er Ta	ail Power Co./ Big Stone	
Sampling Personnel:					Facility ID				
							Octiv		
	man Dit	ison v	-		Unique St	tation ID:	10	227.10	
			=		Sample II			Slag 9	
Well Co	ndition						_		
Well Loc	ked?	Yes No			Protective	Posts? (Yes)	No	
Well Lab	eled?	(Yes) No			State ID T	ag? Yes		NO	
Casing S	traight?	(es) No				al Intact? Yes		(A)	
	Vecessary:								
Well Inf	ormation								
Well Dep	th:	51.2	5		Well Casi	ng Elevation:		1122.35	
Construc	ted Depth:	49.80			Static Wa	ter Elevation:		1104.84	
Casing D		2"			Previous S	Static:		1105.04	
Water Le	vel Before F	urge:	17.51		Water Lev	el After Sam	ple	43.02	
Well Volu	me:	5.50	Gallons		Measuren	nent Method:	Ę	lec. W.Steel Tape	
					V				
Samplin	g Informa	tion							
Weather	Conditions:	Temp:	490	Wind:	NEOZ	Sky		Sunny	
Sampling	Method:	Grundfos	Bladder SSA	Disp. Bailer	Whale	Grab Othe	r:		
Dedicated	Equipment	Yes No	2		Pumping F	Rate: o.	25	gpm	
Well Purg	ed Dry?	Yes No			Time Pum		81		
Time Pur	ged Dry?				Time of Sa		94		
Duplicate	Sample?	Yes (No	ID: -		Sample El	H:	89	. 2	
Sample A	ppearance:	General:	SI Cloudy	Color: 7	an Pha			Odor: wone	
			,						
(A)					1		S		
22			La constitution		Marian Control		E		
		Specific	Temp	D. O.	Turbidity	Gallons	Q		
Time	pH	Cond.	°C	mg/L	NTU	Removed	#	Comments:	
835	6.98	2316	10.05	NA	NA	5.56	1		
857	4.95	2219	9.88		1	11.0	2		
919	6.98	2153	9.86			16.5	3		
941	6.96	2117	9.89		10177	22.0	4		
				1	1		5		
Stabilized	(Yes)	No		Amount W	later Remove	d: 22.0)	Gallons	
Commen	ts:	- 82							

Grour	dwater	Assessm	er		Site:		er Tail	Power Co./ Big Stone	
Samplin	ng Person	ne			Facility ID:				
	Alan 6	eisner			Date:	18	oct	110	
			5.0		Unique St	ation ID:			
					Sample ID):		Slag 9 Deep	
Well C	ondition				2 600	20.03			
Well Lo		Yes No	/		Protective			No.	
Well Lal		(Yes) No			State ID T			10	
	Straight?	Yes No)		Grout Sea	Intact? Yes		NO	
Repairs	Necessar	У							
Well In	formatio	n							
Well De		71.49	_			ng Elevation:		1121.92	
	cted Depti					er Elevation:		1085.00	
	Diameter:	2"			Previous S			1086.11	
	evel Befor		34.92		Water Level After Sample 70.42				
Well Vol	lume:	5.63	Gallons	_	Measurem	ent Method:	Ele	c. WLI Steel Tape	
					1				
	ng Infor		50	Wind: A	160 2	Sky:	5	unny	
	g Method:		Bladder SSI		Whale	Grab Other		7	
		EYes No	Diameter Con		Pumping F	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7		gpm	
		(Yes) No	_		Time Pum		955	@ / pm	
Time Pu	rged Dry?	1618	-		Time of Sa		1023		
	e Sample		ID: _		Sample El		78		
		c General:	Cloudy	Color: Br.	Pha Pha				
Dampio.	· ippoundi	- contorent	roung	W.	wa	07 SEA	INVI	TOOK B	
23		Specific	Temp	D. O.	Turbidity	Gallons	SE		
Time	pH	Cond.	°C	mg/L	NTU	Removed	Q#	Comments:	
1018	10.87	2626	11.54	NA	NA	5.75	1		
				1			2		
							3		
-							4		
1023	8.97	2566	11.74	1	1	5.75	5	Rechange	
				Amount Wa	des Demons		_	Gallons	
Stabilize	cres	NO		AMIOUNI VV	ater Kemove	d: 5.7	5	Callons	

Exceptions to Protocol:

- Very slow Recharge

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

Groun	dwater	Assessm	er		Site:	Otte	er Ta	ail Power Co./ Big Stone
Samplin	g Person	ne			Facility ID			
	Alan	bleisner			Date:			1800+16
					Unique St	ation ID:		
			_		Sample II):		Slag 2B
Well C	ondition						_	
Well Lo	cked?	Yes (Vo			Protective	Posts? Yes		No
Well Lal	beled?	Yes No			State ID T	ag? Yes		M2
Casing :	Straight?	(es) No			Grout Sea	Intact? Yes		MB
Repairs	Necessa	ry						
Well In	formatio	on				41,47.7		
Well De		40.93	200			ng Elevation:		عا2 ١١١١
	cted Dept					ter Elevation:		1087.63
	Diameter:				Previous 8	1777		1083.13
	evel Befor	re Purge	23.63			el After Samp		40.31
Well Vol	ume:	2.82	Gallons	-	Measuren	ent Method:	E	ec. WLISteel Tape
The second second	ng Infor		50°	Wind:	NEØZ	Sky:		
	g Method:		Bladder SS/I	Disp. Bailer	Whale	Grab Other	_	unney
		eYes (No)			Pumping F	Rate: o.	25	gpm
	ged Dry?		_		Time Pum		104	
	rged Dry?				Time of Sa		105	
		? Yes No	ID: -		Sample El		153	
Sample .	Appearan	c General:	Cloudy	Color:	Brewn Pha	se: L+ Sed.	nes	Odor: Mona
_	1	T		_	_	_	IS	
(13)					110		S	
		Specific	Temp	D. O.	Turbidity	Gallons	Q	
Time	pH	Cond.	°C	mg/L	NTU	Removed	#	Comments:
1054	7.54	1911	10.44	NA	NA	3.0	1	
		V 10	D. O. W. O.				2	
				20 1 KE			3	
							4	
1059	7.38	1921	11.07	1	-	3.0	5	Becharge
Stabilized	Yes	(ND		Amount W	later Remove	d: 3.0		Gallons
comme				7				

Exceptions to Protocol:

Slow Recharge



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FINAL REPORT COMPLETION DATE: 12 Jan 17 08

Date Reported: 11 Jan 2017

MEGAN LISBURG OTTER TAIL POWER CO PO 30X 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 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: SLAG 1

Report Date: 11 Jan 2017 Lab Number: 16-A63077 Work Order #: 31-0620 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 21 Nov 2016 11:28 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 11:06	ABL
Radium 228	See Attac	ched		EPA M9320	10 Jan 17 11:06	ABL
pH, Field	7.07	units	1.00	I-1586-85	21 Nov 16 11:28	DGF
DH	* 7.1	units	1.0	SM 4500 H+B-96	22 Nov 16 14:00	DK
Sulfate	423 ~	mg/L	4.0	ASTM D516-02	1 Dec 16 8:09	AKE
Chloride	15.3	mg/L	3.0	SM 4500 Cl 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				
Solids, Total Dissolved	1350	mg/L	10	SM 2540 C-97	23 Nov 16 10:30	RC
Calcium	168.0	mg/L	0.500	SW6010C	29 Nov 16 13:52	RMV
Lithium	0.077	mg/L	0.005	SW6010C	29 Nov 16 13:52	RMV
Barium	0.058	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	1.890	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
100	@See Narr				1	2000
admium	0.70 @	ug/L	0.10	SW6020A	9 Dec 16 10:01	RMV
hromium	< 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	5.10 @	ug/L	0.50	SW6020A	9 Dec 16 10:01	RMV
elenium	14.2	ug/L	0.50	SW6020A	16 Dec 16 13:12	RMB
	@See Narr				20 000 00 000	
hallium	< 0.5 @	ug/L	0.1	SW6020A	7 Dec 16 15:02	RMB
luoride	0.390	mg/L	0.020	EPA 300.0	25 Nov 16 10:40	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.

= Due to concentration of other analytes
+ = Due to internal standard response
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: SLAG 4

Report Date: 11 Jan 2017 Lab Number: 16-A63078 Work Order #: 31-0620 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 21 Nov 2016 12:36 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 11:06	ABL
Radium 228	See Attac	ched		EPA M9320	10 Jan 17 11:06	ABL
oH, Field	6.79	units	1.00	I-1586-85	21 Nov 16 12:36	DGF
Ho	• 6.9	units	1.0	SM 4500 H+B-96	22 Nov 16 14:00	DK
Sulfate	1540 ~	mg/L	4.0	ASTM D516-02	1 Dec 16 8:09	AKE
Chloride	51.3	mg/L	3.0	SM 4500 Cl 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	e Narrative				
Solids, Total Dissolved	2480	mg/L	10	SM 2540 C-97	23 Nov 16 10:30	RC
Calcium	290.0	mg/L	0.500	SW6010C	29 Nov 16 13:52	RMV
Lithium	0.189	mg/L	0.005	SW6010C	29 Nov 16 13:52	RMV
Barium	0.016	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	0.873	mg/L	0.100	SW6010C	29 Nov 16 13:52	RMV
intimony	< 2.5 @	ug/L	0.5	SW6020A	7 Dec 16 15:02	RMB
rsenic	< 2.5 @	ug/L	0.5	SW6020A	7 Dec 16 15:02	RMB
seryllium	< 0.25	ug/L	0.05	SW6020A	7 Dec 16 15:02	RMB
	@See Narr					
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	9 Dec 16 10:01	RMV
hromium	< 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
olybdenum	< 2.5 @	ug/L	0.5	SW6020A	9 Dec 16 10:01	RMV
elenium	< 5	ug/L	0.5	SW6020A	9 Dec 16 10:01	RMV
	@^See Nar		200	E.W. J. L. W.		
hallium	< 0.5 @	ug/L	0.1	SW6020A	7 Dec 16 15:02	PMB
luoride	0.190	mg/L	0.020	EPA 300.0	25 Nov 16 10:40	RMB

RL - Reporting 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:

8 - Due to sample matrix

9 - Due to concentration of other analytes

9 - Due to sample quantity

1 - 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: SLAG 4

Report Date: 11 Jan 2017
Lab Number: 16-A63078
Work Order #: 31-0620
Account #: 006106
Sample Matrix: GROUNDWATER
Date Sampled: 21 Nov 2016 12:36
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.



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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: SLAG 5

Report Date: 11 Jan 2017 Lab Number: 16-A63079 Work Order #: 31-0620 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 21 Nov 2016 14:53 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 Attac	ched			10 Jan 17 11:06	ABL
Radium 228	See Attac	ched		EPA M9320	10 Jan 17 11:07	ABL
pH, Field	6,82	units	1.00	1-1586-85	21 Nov 16 14:53	BMW
Hq	* 7.2	units	1.0	SM 4500 H+B-96	22 Nov 16 14:00	DK
Sulfate	132 @	mg/L	4.0	ASTM D516-02	I Dec 16 8:09	AKF
Chloride	9.4	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 11:12	TWB
Solids, Total Dissolved	518	mq/L	10	SM 2540 C-97	23 Nov 16 10:30	RC
Calcium	132.0	mg/L	0.500	SW6010C	29 Nov 16 13:52	RMV
Lithium	0.026	mg/L	0.005	SW6010C	29 Nov 16 13:52	RMV
Barium	0.105	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	0.112	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	3.07 €	ug/L	0.50	SW6020A	7 Dec 16 15:02	RMB
Beryllium	< 0.25	ug/L	0.05	SW6020A	7 Dec 16 15:02	RMB
	@See Narr				Contract of the second	3.500
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
folybdenum	9.93	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		2.7		(C. C.C.) (C. C. C	3-3-5
rhallium	< 0.5 @	ug/L	0.1	SW6020A	7 Dec 16 15:02	RMB
Fluoride	0,270	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

^ 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

9 = Due to concentration of other snalytes

1 = Due to cample quantity

4 = Due to internal standard response

CERTIFICATION: NN LAB # 027-015-125 WI LAB # 999447680 ND MICHO # 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: SLAG 6

Report Date: 11 Jan 2017 Lab Number: 16-A63080 Work Order #: 31-0620 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 21 Nov 2016 13:19
Sampled By: MVTL FIELD PERSONNEL
Date Received: 22 Nov 2016 14:00

PO #: 48680

Temp at Receipt: 0.60

	As Receiv	red	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					23 Nov 16	JMS
Water Digestions					23 Nov 16	TWB
Radium 226	See Attac	ched			10 Jan 17 11:07	ABL
Radium 228	See Attac	hed		EPA M9320	10 Jan 17 11:07	ABL
pH, Field	7.15	units	1.00	I-1586-85	21 Nov 16 13:19	DGF
pH	* 7.2	units	1.0	SM 4500 H+B-96	22 Nov 16 17:37	DK
Sulfate	470 ~	mg/L	4.0	ASTM D516-02	1 Dec 16 8:09	AKF
Chloride	5.8	mg/L	3.0	SM 4500 C1 E	1 Dec 16, 9:25	KCJ
Mercury	0.021	ug/L	0.005	EPA 245.7	5 Dec 16 11:12	TWB
Solids, Total Dissolved	592	mg/L	10	SM 2540 C-97	23 Nov 16 10:30	RC
Calcium	251.0	mg/L	0.500	SW6010C	2 Dec 16 10:00	RMV
Lithium	0.127 ^	mg/L	0.005	SW6010C	2 Dec 16 10:00	RMV
Barium	0.143	mg/L	0.005	SW6010C	2 Dec 16 10:00	RMV
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	2 Dec 16 10:00	RMV
Boron	2.170	mg/L	0.100	SW6010C	2 Dec 16 10:00	RMV
Antimony	< 2.5 @	ug/L	0.5	SW6020A	7 Dec 16 15:02	RMB
Arsenic	4.77 @	ug/L	0.50	SW6020A	7 Dec 16 15:02	RMB
Beryllium	0.38 @	ug/L	0.05	SW6020A	9 Dec 16 10:01	RMV
Cadmium	0.54 @	ug/L	0.10	SW6020A	9 Dec 16 10:01	RMV
Chromium	16.3 @	ug/L	0.50	SW6020A	9 Dec 16 10:01	RMV
Lead	5.93 @	ug/L	0.50	SW6020A	7 Dec 16 15:02	RMB
Molybdenum	7.23 @	ug/L	0.50	SW6020A	9 Dec 16 10:01	RMV
Selenium	< 5	ug/L	0.5	SW6020A	9 Dec 16 10:01	RMV
The state of the s	@^See Nar.		100		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
Thallium	< 0.5 @	ug/L	0.1	SW6020A	7 Dec 16 15:02	RMB
Fluoride	0.600	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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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: SLAG 7

Report Date: 11 Jan 2017 Lab Number: 16-A63081 Work Order #: 31-0620 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 21 Nov 2016 14:05 Sampled By: MVTL FIELD PERSONNEL Date Received: 22 Nov 2016 14:00

PO #: 48680

Temp at Receipt: 0.6C

	As Receiv	red	Method RL	Method Reference		te alyz	ed	Analyst
MS Water Digestions					23	Nov	16	JMS
Water Digestions					23	Nov	16	TWB
Radium 226.	See Attac	hed			10	Jan	17 11:07	ABL
Radium 228	See Attac	hed		EPA M9320	10	Jan	17 11:07	ABL
pH, Field	7.14	units	1.00	1-1586-85	21	Nov	16 14:05	DGF
pH	* 7.1	units	1.0	SM 4500 H+B-96	22	Nov	16 17:37	DK
Sulfate	809 ~	mg/L	4.0	ASTM D516-02	1	Dec	16 B:09	AKF
Chloride	5.0	mg/L	3.0	SM 4500 C1 E	1	Dec		KCJ
Mercury	0.010	ug/L	0.005	EPA 245.7	5		16 11:12	TWB
Solids, Total Dissolved	1590	mg/L	10	SM 2540 C-97	23	Nov	16 10:30	RC
Calcium	328.0	mg/L	0.500	SW6010C	2	Dec	16 10:00	RMV
Lithium	0.082 ^	mg/L	0.005	SW6010C	2	Dec	16 10:00	RMV
Barium	0.058	mg/L	0.005	SW6010C	2	Dec	16 10:00	RMV
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	2	Dec	16 10:00	RMV
Boron	1.230	mg/L	0.100	SW6010C	2	Dec	16 10:00	RMV
Antimony	< 2.5 @	ug/L	0.5	SW6020A	7		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			4000 3000 A				
Cadmium	0.81 @	ug/L	0.10	SW6020A	9	Dec	16 10:01	RMV
Chromium	7.86 €	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
Molybdenum	4.99 @	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.						20.32040	
Thallium	< 0.5 @	ug/L	0.1	SW6020A	7	Dec	16 15:02	RMB
Fluoride	0.400	mg/L	0.020	EPA 300.0			16 17:59	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.

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:

(c) = Due to sample matrix
(d) = Due to sample quantity
(d) + = Due to internal standard response

(e) = Due to sample quantity
(f) + = Due to internal standard response

(e) = Due to sample quantity
(f) + = Due to internal standard response

(f) = Due to sample quantity
(f) + = Due to internal standard response

(f) = Due to sample quantity
(f) + = Due to internal standard response

(f) = Due to sample quantity
(f) + = 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: SLAG 8

Report Date: 11 Jan 2017 Lab Number: 16-A63082 Work Order #: 31-0620 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 21 Nov 2016 15:33 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
MS Water Digestions Water Digestions Radium 226 Radium 228 pH, Field pH Sulfate Chloride Mercury Solids, Total Dissolved Calcium Lithium Barium Cobalt Boron Antimony Arsenic Beryllium Cadmium Chromium Lead Molybdenum Selenium Thallium	See Attached See Attached 7.15 units 7.2 units 292 @ mg/L 38.5 mg/L <0.005 ug/L 861 mg/L 120.0 mg/L 0.057 mg/L 0.044 mg/L <0.01 mg/L <0.01 mg/L 0.25 @ ug/L <2.5 @ ug/L <3.5 @ ug/L	1.00 1.0 4.0 3.0 0.005 10 0.500 0.005 0.005 0.100 0.5 0.5 0.10 0.5 0.5 0.10	EPA M9320 1-1586-85 SM. 4500 H+B-96 ASTM D516-02 SM 4500 C1 E EPA 245.7 SM 2540 C-97 SW6010C SW6010C SW6010C SW6010C SW6010C SW6010C SW6020A	23 Nov 16 23 Nov 16 10 Jan 17 11:07 10 Jan 17 11:08 21 Nov 16 15:33 22 Nov 16 17:37 1 Dec 16 8:09 1 Dec 16 9:25 5 Dec 16 10:00 2 Dec 16 10:57 9 Dec 16 10:57 9 Dec 16 10:57 16 Dec 16 10:57 16 Dec 16 10:57 16 Dec 16 10:57 16 Dec 16 10:57 17 Dec 16 10:57 18 Dec 16 10:57 19 Dec 16 10:57	RMV RMV RMV RMV RMB RMV RMV RMB RMB RMB 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 CCR

Sample Description: SLAG 9

Report Date: 11 Jan 2017 Lab Number: 16-A63083 Work Order #: 31-0620 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 21 Nov 2016 16:47 Sampled By: MVTL FIELD PERSONNEL Date Received: 22 Nov 2016 14:00

PO #: 48680

Temp at Receipt: 0.6C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions		_			23 Nov 16	TWB
Water Digestions					23 Nov 16	TWB
Radium 226	See Attac	hed			10 Jan 17 11:08	ABL
Radium 228	See Attac	hed		EPA M9320	10 Jan 17 11:08	ABL
pH, Field	6.96	units	1.00	1-1586-85	21 Nov 15 16:47	BMW
PR	* 7.0	units	1.0	SM 4500 H+B-96	22 Nov 16 17:37	DK
Sulfate	908 ~	mg/L	4.0	ASTM D516-02	1 Dec 16 8:27	AKF
Chloride	6.3	mg/L	3.0	SM 4500 CL E	1 Dec 16 9:43	KCJ
Mercury	< 0.005	ug/L	0.005	EPA 245.7	5 Dec 16 11:12	TWB
Solids, Total Dissolved	1900	mg/L	10	SM 2540 C-97	23 Nov 16 10:30	RC
Calcium	396.0 ~	mg/L	0.500	SW6010C	2 Dec 16 10:00	RMV
Lithium	0.118 ^	mg/L	0.005	SW6010C	2 Dec 16 10:00	RMV
Barium	0.044	mg/L	0.005	SW6010C	2 Dec 16 10:00	RMV
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	2 Dec 16 10:00	RMV
Boron	0.263	mg/L	0.100	SW6010C	2 Dec 16 10:00	RMV
Antimony	2.64 @	ug/L	0.50	SW6020A	12 Dec 16 16:03	RMB
Arsenic	< 2.5 @	ug/L	0.5	SW6020A	9 Dec 16 10:57	RMV
Beryllium	< 0.25 €	ug/L	0.05	SW6020A	9 Dec 16 10:57	RMV
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	9 Dec 16 10:57	RMV
Chromium	4.43 @	ug/L	0.50	SW6020A	12 Dec 16 16:03	RMB
Lead	< 2.5 €	ug/L	0.5	SW6020A	14 Dec 16 9:34	RMB
Molybdenum	10.3 @	ug/L	0.50	SW6020A	9 Dec 16 10:57	RMV
Selenium	< 5 @^	ug/L	0.5	SW6020A	14 Dec 16 9:34	RMB
Thallium	< 0.5 @	ug/L	0.1	SW6020A	12 Dec 16 16:03	RMB
Fluoride	0.240	mg/L	0.020	EPA 300.0	25 Nov 16 17:59	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:

9 = Due to sample matrix # = Due to cou

1 = Due to sample quantity - = Due to include to include the property of the p # = Due to concentration of other analytes # = Due to internal standard response 1013-M ND WW/DW # R-040

CERTIFICATION: MN LAB # 027-015-125



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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: SLAG 2B

Report Date: 11 Jan 2017 Lab Number: 16-A63084 Work Order #: 31-0620 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 21 Nov 2016 17:14 Sampled By: MVTL FIELD PERSONNEL Date Received: 22 Nov 2016 14:00

PO #: 48680

Temp at Receipt: 0.60

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					23 Nov 16	TWB
Water Digestions					23 Nov 16	TWB
Radium 226	See Attac	hed			10 Jan 17 11:08	ABL
Radium 228	See Attac	hed		EPA M9320	10 Jan 17 11:08	ABL
pH, Field	7.50	units	1.00	I-1586-85	21 Nov 16 17:14	BMW
PH	* 7.2	units	1.0	SM 4500 H+B-96	22 Nov 16 17:37	DK
Sulfate	745	mg/L	4.0	ASTM D516-02	1 Dec 16 8:27	AKE
Chloride	38.0	mg/L	3.0	SM 4500 C1 E	1 Dec 16 9:43	KCJ
Mercury	0.008	ug/L	0.005	EPA 245.7	5 Dec 16 11:12	TWB
Solids, Total Dissolved	1380	mg/L	10	SM 2540 C-97	23 Nov 16 10:30	RC
Calcium	254.0	mg/L	0.500	SW6010C	2 Dec 16 10:00	RMV
Lithium	0.033 ^	mg/L	0.005	SW6010C	2 Dec 16 10:00	RMV
Barium	0.074	mg/L	0.005	SW6010C	2 Dec 16 10:00	RMV
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	2 Dec 16 10:00	RMV
Boron	3.310	mg/L	0.100	SW6010C	2 Dec 16 10:00	RMV
Antimony	< 2.5 @	ug/L	0.5	SW6020A	12 Dec 16 16:03	RMB
Arsenic	< 2.5 €	ug/L	0.5	SW6020A	9 Dec 16 10:57	RMV
Beryllium	< 0.25 €	ug/L	0.05	SW6020A	9 Dec 16 10:57	RMV
admi um	0.79 @	ug/L	0.10	SW6020A	9 Dec 16 10:57	RMV
Chromium	21.9 @	ug/L	0.50	SW6020A	12 Dec 16 16:03	RMB
ead	2.56 @	ug/L	0.50	SW6020A	14 Dec 16 9:34	RMB
olybdenum	7.07 €	ug/L	0.50	SW6020A	9 Dec 16 10:57	RMV
Selenium	< 5 0^	ug/L	0.5	SW6020A	14 Dec 16 9:34	RMB
Challium	< 0.5 @	ug/L	0.1	SW6020A	12 Dec 16 16:03	RMB
Pluoride	0.090	mg/L	0.020	EPA 300.0	25 Nov 16 17:59	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.

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

CERTIFICATION: MN LAB # 027-015-125



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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

CASE NARRATIVE

Project:

Big Stone Plant CCR

Report ID: S1611451001

Lab Order:

S1611451

ASTM approved and recognized standards

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

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

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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:

S1611451-007 Slag 1-A63077

COC:

WEB

Date Reported 1/10/2017

Report ID

S1611451001

WorkOrder:

S1611451

CollectionDate: 11/21/2016 11:23:00 AM

DateReceived: FieldSampler:

11/29/2016 12:30:00 PM

Matrix:

Water

MO# 31-0820

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
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
Radium 228	ND	pCI/L		2	Ga-Tech	12/30/2016 2114	MB
Radium 228 Precision (±)	NA	pCI/L			Ga-Tech	12/30/2016 2114	MB

These results apply only to the samples tested.

Analyle 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

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

Qualifiers:

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:

S1611451-008 Slag 4-A63078

COC:

WEB

Date Reported 1/10/2017

Report ID

S1611451001

WorkOrder:

S1611451

CollectionDate: 11/21/2016 12:36:00 PM

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

FieldSampler: TP

Matrix:

Water

MO# 31 0830

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/init	
Radionuclides - Total					7.7778.0		
Radium 226	ND	pCI/L		1	SM 7500 Ra-B	12/13/2016 1303	MB
Radlum 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	12/13/2016 1303	MB
Radium 228	ND	pCI/L		2	Ga-Tech	12/31/2016 016	MB
Radium 228 Precision (±)	NA	pCI/L			Ga-Tech	12/31/2016 016	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

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:

S1611451-009 Slag 5-A63079

COC:

WEB

Date Reported

1/10/2017

Report ID

\$1611451001

WorkOrder:

S1611451

CollectionDate: 11/21/2016 2:53:00 PM

DateReceived: FieldSampler:

11/29/2016 12:30:00 PM

Matrix:

TP Water

MON 24 0000

Analyses	Result	Units	Qual	RL	Wethod	Date Analyzed/Init	
Radionuclides - Total					1000		
Radlum 226	ND	pCi/L		1	SM 7500 Ra-B	12/14/2016 900	MB
Radium 226 Precision (±)	NA	pCI/L			SM 7500 Ra-B	12/14/2016 900	MB
Radium 228	ND	pCi/L		2	Ga-Tech	12/31/2016 318	MB
Redium 228 Precision (±)	NA	pCi/L			Ga-Tech	12/31/2016 318	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:

Wade Nieuwsma, Assistant Laboratory Manager

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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:

S1611451-010 Slag 6-A63080

COC:

WEB

Date Reported 1/10/2017

Report ID

S1611451001

WorkOrder:

S1611451

CollectionDate: 11/21/2016 1:19:00 PM

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

FieldSampler: TP Matrix:

Water

WO# 31-0620

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/	Init
Radionuclides - Total							
Radium 226	ND	pCI/L		1	SM 7500 Ra-B	12/14/2016 900	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	12/14/2016 900	MB
Radium 228	ND	pCi/L		2	Ga-Tech	12/31/2016 620	MB
Radium 228 Precision (±)	NA	pCI/L			Ga-Tech	12/31/2016 620	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range E

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions 0

Metrix 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 10 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:

S1611451-011 Slag 7-A63081

COC:

WEB

Date Reported 1/10/2017

Report ID

S1611451001

WorkOrder:

S1611451

CollectionDate: 11/21/2016 2:05:00 PM

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

Matrix:

TP

FieldSampler: Water

WO# 31-0620

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/	Init
Radionuciides - Total							
Radlum 226	ND	pCI/L		1	SM 7500 Ra-B	12/14/2016 900	MB
Radium 226 Precision (±)	NA	pCI/L			SM 7500 Ra-B	12/14/2016 900	MB
Radium 228	ND	pCI/L		2	Ga-Tech	12/31/2016 921	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	12/31/2016 921	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 M

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: all

Wade Nieuwsma, Assistant Laboratory Manager

Page 11 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:

S1611451-012 Slag 8-A63082

COC:

WEB

Date Reported 1/10/2017

Report ID

S1611451001

WorkOrder:

S1611451

CollectionDate: 11/21/2016 3:33:00 PM DateReceived: 11/29/2016 12:30:00 PM

FieldSampler: TP

Matrix:

Water

WO# 31-0620

Comments WO# 31-0620							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/i	nit
Radionuclides - Total	47.00				10000		
Radium 226	ND	pCI/L		1	SM 7500 Ra-B	12/14/2016 900	MB
Radium 226 Precision (±)	NA	pCI/L			SM 7500 Ra-B	12/14/2016 900	MB
Radium 228	ND	pCi/L		2	Ga-Tech	12/31/2016 1223	MB
Radium 228 Precision (±)	NA	pCI/L			Ga-Tech	12/31/2016 1223	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

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

Reviewed by: Wade Nieuwsma, Assistant Laboratory Manager

Page 12 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:

Big Stone Plant CCR

Lab ID: ClientSample ID:

51611451-013 Slag 9-A63083

COC:

WEB

Date Reported

1/10/2017

Report ID

S1611451001

WorkOrder:

S1611451

CollectionDate: 11/21/2016 4:47:00 PM

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

FieldSampler:

Matrix:

Water

WO# 21 0820

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit.
Radionuclides - Total		7-77					
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	12/14/2016 900	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	12/14/2016 900	MB
Radium 228	ND	pCI/L		2	Ga-Tech	12/31/2016 1525	MB
Radium 228 Precision (±)	NA	pCI/L			Ga-Tech	12/31/2016 1525	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

C 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: All

Wade Nieuwsma, Assistant Laboratory Manager

Page 13 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: S1611451-014 Slag 2B-A63084

COC:

WEB

Date Reported

1/10/2017

Report ID

S1611451001

WorkOrder:

S1611451

CollectionDate: 11/21/2016 5:14:00 PM

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

FieldSampler: Matrix:

TP Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/	init
Radionuclides - Total					7.7.4.1	7 7 7 7 7	
Radium 226	ND	pCI/L		1	SM 7500 Ra-B	12/14/2016 900	MB
Radium 226 Precision (±)	NA	pCI/L			SM 7500 Ra-B	12/14/2016 900	ME
Radium 228	ND	pCi/L		2	Ga-Tech	01/04/2017 246	MB
Radium 228 Precision (±)	NA	pCVL			Ga-Tech	01/04/2017 246	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 times for preparation or analysis exceeded

Analyzed by another laboratory

Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

Reviewed by: all

Wade Nieuwsma, Assistant Laboratory Manager

Page 14 of 14



ANALYTICAL QC SUMMARY REPORT

CLIENT:

MVTL Inc

Date: 1/10/2017

Work Order:

S1611451

Date, Intoizon

Project:

Big Stone Plant CCR

Report ID: S1611451001

Radium 228 by Ga/Tech	Sample Type MBLK		Unit	s: pCi/L			
TAP-407 (12/27/16 12:03)	RunNo: 1422	0 Pr	repDate: 12/	05/16 12:00	Bat	chID: 12690	
Analyte	Result	RI	Spike	Ref Samp	%REC	% Rec Limits	Qua
Total Radium 228	2	1					
MB-408 (01/03/17 17:40)	RunNo: 14231	2 Pr	epDate: 12/	12/16 14:00	Bat	chID: 12727	
Analyte	Result	RL	Splke	Ref Samp	%REC	% Rec Limits	Qua
Total Radium 228	ND	1					
adium 228 by Ga/Tech	Sample Type LCS		Units	: pCi/L			
LCS-407 (12/27/16 15:05)	RunNo: 14221	O Pri	epDate: 12/0	5/16 12:00	Bat	chID: 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: 14231	2 Pre	epDate: 12/1	2/16 14:00	Bate	hID: 12727	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	39	1	39.1		99.5	65.9 - 132	
dlum 228 by Ga/Tech	Sample Type MS		Units	: pCi/L			
MS-407 (12/27/16 21:08)	RunNo: 14221	Pre	pDate: 12/0	5/16 12:00	Bato	hID: 12690	
Analyte	Result	RL	Splke	Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	39	1	39.1	2	94.8	50 - 139	
MS-408 (01/03/17 20:42)	RunNo: 14231;	2 Pre	pDate: 12/1	2/16 14:00	Bato	hID: 12727	
Analyte	Result	RL	Splke	Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	48	1	39.1	2	119	50 - 139	
dlum 228 by Ga/Tech	Sample Type MSD		Units	pCi/L			
MSD-407 (12/28/16 00:10)	RunNo: 142210	Pre	pDate: 12/0	5/16 12:00	Batc	hID: 12690	
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Total Radium 228	34	1	39	13.6	82.1	20	

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
 S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- X Matrix Effect



ANALYTICAL QC SUMMARY REPORT

CLIENT:

MVTL Inc

Date: 1/10/2017

Work Order:

S1611451

Report ID: S1611451001

Project:

Big Stone Plant CCR

Radium 226 in Water -	Sample Type MBLK		Units	: pCi/L			
MB-1700 (12/13/16 13:02)	RunNo: 141804	Prep	Date: 12/0	7/16 0:00	Bat	chID: 12653	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	ND	0.2					
Radium 226 in Water -	Sample Type LCS		Units	: pCI/L			
LCS-1700 (12/13/16 13:02)	RunNo: 141804	Prep	Date: 12/0	7/16 0:00	Bate	chID: 12653	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	6.0	0.2	5.89		101	67.1 - 122	
Radium 226 in Water -	Sample Type LCSD		Units	pCi/L			
LCSD-1700 (12/13/16 13:02)	RunNo; 141804	Prepi	Date: 12/0	7/16 0:00	Bato	:hID: 12653	7
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Radium 226	6.2	0.2	6.0	4.62	106	20	
Radium 226 in Water -	Sample Type MS		Units:	pCi/L			
S1611451-001AMS (12/13/16 13:03)	RunNo: 141804	Prepl	Date: 12/0	7/16 0:00	Bato	hID: 12653	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	13	1	11.8	ND	112	65 - 131	

Qualifiers:

- Analyte detected in the associated Method Blank
- Holding times for preparation or analysis exceeded
- Analyzed by another laboratory
- O Outside the Range of Dilutions S 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

MVTL

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Page: 1 of 3

Quality Control Report

84 Project: BIG STONE PLANT CCR

Work Order: 201631-0620

ab IDs: 16-A63071 to 16-A6	3084	Pro	ject: BIC	STONE	E PLANT CCF		Work (Order: 20	01631-06	20							
inalyte	LCS Spike Amt	LCS Rec %		Matrix Spike Amt	Matrix Spike 1.	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	RPD *	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	1.190 1.050	1.140 1.050	104 99	4.3 0.0	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 2.50 2.50 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	3.40 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 < 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	1.220 1.040	1.180 1.070	107 107	3.3 2.8	10 10	101 100	90-110 90-110	< 0.1
Cadmium ug/L	5.00 5.00	107 98	85-115 85-115	(2.2-2-2-2)	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 < 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	100	185.0 146.0	106 98	0.5	10 10	102 102	90-110 90-110	< 0.5
Chloride mg/L			:	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 88-117	101 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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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: 16-A63071 to 16-A63084

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

halyte	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
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 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	32.1 29.4 28.0	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		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 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	
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	< 0.5
pH units	1	į.		:		:			3	7.2 7.2	7.2 7.2	Ė	0.0	2.5 2.5	101 101	90-110 90-110	



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Page: 3 of 3

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 25.0 25.0	113 98 102	85-115 85-115 85-115	25.0 25.0 25.0	16A63072q 16A63072q a63081qc	<2.5 <5 <5	31.4 31.3 31.4	126 125 126	75-125 75-125 75-125	31.4 31.3 31.4	31.9 34.0 31.5	128 136 126	1.6 8.3 0.3	10 10 10	100 109 96	90-110 90-110 90-110	< 0.5 < 0.5 < 0.5
	25.0 25.0 25.0 25.0	102 109 108 108	85-115 85-115 85-115	25.0 25.0 25.0 25.0 25.0	A63365qc A63081qc A63081qc A65485qc	<2.5 <10 <2.5 <0.5	28.7 32.7 32.8 30.9	115 131 131 124	75-125 75-125 75-125 75-125 75-125	28.7 33.9	30.0 31.4 49.8 49.4	120 127 121 116	4.4 7.7 3.2 3.4	10 10 10 10	97 104	90-110 90-110 90-110	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5
Solids, Total Dissolved mg/L	-			•	3-1	•				918 1380	914 1370		0,4 0.7	10 10	109	85-115	< 10
Sulfate mg/L				60.0 600 600 60.0 60.0	16-A62947 16-A63082 16-A63084 16-A62306 16-A62134	64.0 292 745 68.9 42.3	132 974 1400 139 111	113 114 109 117 114	78-126 78-126 78-126 78-126 78-126	974 1400 139	130 977 1420 142 110	110 114 112 122 113	1.5 0.3 1.4 2.1 0.9	5 5 5 5	103 95 99	90-110 90-110 90-110	<4
Thallium ug/L	5.00 5.00 5.00	106 108 102	85-115 85-115 85-115	5.00	16A63072q 16A63081q A63082qc 16A63082q	<0.5 <0.5 <0.5 <0.5	6.55 5.68 5.52 5.74	131 114 110 115	75-125 75-125 75-125 75-125	5.68 5.52	6.37 5.70 6.10 5.52	127 114 122 110	2.8 0.4 10.0 3.9	10 10 10 10	104 104 100 100	90-110 90-110 90-110 90-110	< 0.1 < 0.1

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 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 22 Nov16

Pages 1-23

Project Otter Tail Power Company	Project Type:	Big Stone Plant CCR	Name of Samplers: Dusty	Facesyn, Ben Wolf
Report Otter Tail Power Company	Carbon Copy:		7 3777	140-041), 2007 2041
Attn: Paul Vukonich	Attn:		Quote Number:	
Address P.O. Box 496	Address:		Work Order Number: 31-0	630
Fergus Falls, MN 56538-0496			Lab Numbers:	
Phone: 218-739-8349				
Sample Informatio	n		Bottle Type	Analysis

	_		Sample In	formation								E	3ott	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	Filler? Y or X.	- 1	Filler? Y or M	1000 Amber	1000 Amber	HOEN DOS	Other: 150 Hag	Other 150 No.	Analysis Required
AG	3001	H2OX		21 12016	1118	GW		2	N	1	1	N	1						7.5	See Attached
, 1	72	НЗОХ		1	11154	GW		2	N	1	1	N					13		10	
1	73	H4OX			1229	GW		2	N	1	1	N						1 000		
- 1	74	H-6			1246	GW		2	N	1	1	N	T			100				Ja
- 1	75	H-8		- N	1322	GW	-	2	N	1	1	N								1
- 1	76	H-9	Will the second	- N	1404	GW		2	N	1	1	N						1	10	1
	77	Slag 1			1123	GW	100	2	N	1	1	N					1		1.7	
- 1	78	Slag 4			1236	GW	7	2	N	1	1	N				-				
-61	79			100	1453	GW		2	N	1	1	N					100			
	80	Slag 6		1	1319	GW		2	N	1	1	N					1			

Comments:

WORK ORDER #2

		0			1 1 1	
Samples Re	linguished By:	Lit Kyn		Samples Received By	: 19- Niodn	
Date: 2	2 Nov16	Time: 1400	Temp: O. 6	Date: 22 Nov 16	Time: 1400	Temp: 0 16 C
Samples Re	linguished into:	Fridge Log	in Cart Other:			
Samples Re	linquished By:			Samples Received By	1.	
Date:		Time:	Temp:	Date:	Time:	Temp:
Delivery:	Samplers	Other:		Seal Number(s) - If Us	sed	
Transport:	Ambient ,	1ce	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:	D.d.	FAREYO.	Ben Weff
Report Otter Tail Power Company	Carbon Copy:			Lucry	الكوسا	ten mel
Attn: Paul Vukonich	Attn:		Quote Number:			
Address P.O. Box 496	Address:		Work Order Number:			
Fergus Falls, MN 56538-0496	- C - C - C - C - C - C - C - C - C - C		Lab Numbers:			
Phone: 218-739-8349						

		Sample In	formation									Bott	le T	ype					Analysis
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	1000 HNO3	Filtered Yor M	1000 none	500 HIVO3	Filler? Y or M	12	Filler? Y or M.		1000 Amber	500 NaOH	Other: 150 Hag	Other 150 AL	Analysis Required
81	Slag 7		21 Novic	1405	GW		2	N	1	1	N								See Attached
82	Slag 8			1533	GW		2	N	1	1	N								
83	Slag 9			1647	GW		2	N	1	1	N	ŔΤΠ	(i - fil)	1					
	Slag 9 De	ep			GW	-	2	N	1	1	N	10	700						
24	Slag 2B		1	1714	GW		2	N	1	1	N	ý == 1,							
										3					-				
		2		-		-													
	1.7								-										

Comments:

WORK ORDER #2

Samples Reline	quished By:	2t Fin		Samples Received	By: (Muder)	
Date: 22/	New Co	Time: 1400	Temp: Ø . 6	Date: 22 NOULL	Time: 1400	Temp: 0.6C
Samples Reline	quished into:	Fridge Eog	in 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	(Ca)	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	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	
S4	В	27.70	2	1090.57	Bailer	Yes	NA	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		1,3
H1OX	C,-CCR	32.91	2	1115.89	Bailer	Yes	100	No Yes	1,3
HIINT	С	60.11	2	1115.81	Keck/Tsunami	No	1500		1,3
H2OX	C, CCR	32.20	2	1103.91	Bladder	Yes	100	No Yes	1,3
H2INT	C	62.30	2	1103.91	Bailer	Yes	N/A	Yes	1,3
НЗОХ	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		1,3
H6	C, CCR	15.00	2	1097.76	Bladder	Yes	100	No	1,3
H7	С	33.20	2	1106.06	Whale	No		Yes	1,3
Н8	C, CCR	22.05	2	1081.23	Bladder		1000	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	100	TBD	4.1
BC101	В	39.30	2	1118.70	Bailer	Yes	N/A	No	1,3
BC2R	В	32.48	2	1115.28		Yes	N/A	Yes	1,3
BC3R	В	35.15	2	1114.42	Baller	Yes	N/A	No	1,3
BC4R	В	34.60	2	1113.86	Bailer	Yes	N/A	Yes	1,3
BC5R	В	37.32			Bailer	Yes	N/A	Yes	1,3
BC6R	В	33.95	2	1123.02	Baller	Yes	N/A	No	1,3
SLAG1	CCR	34.90	2	1121.58	Bailer	Yes	N/A	No	1,3
JLAG!	COR	34.90	2	TBD	LOW FLOW	No	100	TBD	1,3

CCR	TBD	2	1111.06	LOW FLOW	TBD	100	TBD	1,3
CCR	TBD	2	TBD	LOW-FLOW	TBD	100	TBD	1,3
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 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 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 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	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 N/A A N/A N/A N/A N/A N/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 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 CCR 40.80 2 1121.92 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 Barium

Beryllium Cadmium

Chromium, Total

Cobalt Fluoride Lead Lithium

Mercury Molybdenum Selenium

Thallium

Radium 226 + 228

500 No-e 500 HNCZ 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
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

Market.

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-C 1000 NO-C 500 HZ SOY 500 HXOZ

100 ovore 100 ovore 500 Hagoy 500 Havon Filter

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

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

Ø,

Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 5607:

507 354 8517

•	nawater	Assessme	nt		Site:	Otto	er Tail P	ower Co./ Big S
Sampl	ing Personr	nel			Facility ID:			1-10-0
	Dust	19R45yn			Date:	21 Novice		
	1				Unique Sta	ation ID:		- 5
					Sample ID	:	S	lag 1
Well (Condition						_	
Well Lo	ocked?	(Yes) No			Protective	Posts? (Yes)	No
Well La	abeled?	Yes No			State ID Ta			(No)
Casing	Straight?	Yes No	7		Grout Seal	Intact? Yes		NO
	s Necessar	y:						
Nell I	nformatio							160
Well De	epth:	35.14			Well Casin	g Elevation:		NA
Constr	ucted Depth	1: 34.90				er Elevation:		1
Casing	Diameter:	2"			Previous S	tatic:	- 0	L
Vater I	Level Before	e Purge: 2	169		Water Leve	el After Sampl	e: 3	3.95
Vell V	olume:	2.68	Gallons		Measurem	ent Method:	Elec.	WW Steel 7
	ling Inform				ī			VIET OICCI
Sampl Veathe	ling Informer Condition	nation is Temp:	Rigidaer SS#		F @ 13	Sky:	PHI	
Sampl Veathe	er Conditioning Method:	mation is Temp: 6	(βl∉dder SSA'	Wind: 3	E@13 Whale	Sky:	PHY	1. Cloudy
Sampl Veathe Samplir Dedicat	er Condition ng Method: ted Equipm	mation is Temp: Grundfos ei Yes (No)			E@13 Whale Pumping R	Sky: Grab Other ate: Ci	PH,	i. Cloudy
Sampl Veathe Samplin Dedicat Vell Pu	er Conditioning Method: ted Equipment arged Dry?	mation as Temp: Grundfos el Yes No			Whale Pumping R Time Pump	Sky: Grab Other ate: Ch	PH,	gpm
Sampl Veather Sampling Sedicativell Putime Puting	er Conditioning Method: ted Equipmourged Dry? urged Dry?	nation Is Temp: Grundfos ei Yes No	Bledder SSR		Whale Pumping R Time Pump	Sky: Grab Other ate: Ci Began: //// mpling: ///	PHI,	gpm @# 1
Sampl Veather Samplin Sedicat Vell Pu Ime Po Suplica	er Conditioning Method: ted Equipment of Dry? urged Dry? te Sample?	mation Is Temp: Grundfos el Yes (No) 1123 Yes (No)	Bledder SSA		Whale Pumping R Time Pump Time of Sa Sample EH	Sky: Grab Other ate: Ch Began: //// mpling: // 2	PHI 25 2 2 7	gpm Griv 1
Sampli Veathe Samplir Dedicat Vell Pu Time Po Duplica	er Conditioning Method: ted Equipmourged Dry? urged Dry?	mation Is Temp: Grundfos el Yes (No) 1123 Yes (No)	Bledder SSR	Disp. Baller	Whale Pumping R Time Pump	Sky: Grab Other ate: Ci Began: //// mpling: // X	PHI 25 2 2 7	gpm @# 1
Sampli Veathe Samplir Dedicat Vell Pu Time Po Duplica Sample	er Conditioning Method: ted Equipment of Dry? urged Dry? te Sample?	mation Is Temp: Grundfos el Yes (No) 1123 Yes (No)	ID:	Disp. Baller	Whale Pumping R Time Pump Time of Sa Sample EH	Sky: Grab Other ate: Ch Began: //// mpling: // 2	PHI 25 2 2 7	gpm Griv 1
Veather amplified in Publica ample	er Conditioning Method: ted Equipment of Dry? urged Dry? te Sample?	mation as Temp: Grundfos el Yes No 1123 Yes No ce General:	ID:	Disp. Baller Color: Tan	Whale Pumping R Time Pump Time of Sa Sample EH	Sky: Grab Other ate: (2) Began: //// mpling: // 2 : Alance se: More	PHI,	gpm Griv 1
Veather amplified in the Pupilica ample	er Conditioning Method: ted Equipment Dry? urged Dry? te Sample? Appearance	mation as Temp: Grundfos et Yes No 1123 Yes No ce General:	ID:	Color: Tan	Whale Pumping R Time Pump Time of Sa Sample EH Phase	Sky: Grab Other ate: Ch Began: /// mpling: // X : Alance se: No re	PHI 25 2 2 2 2 2 2 2 2 2 2 2 2 2 2 4 1	gpm @m/1 @m/1 on/1 Odor: None
Sampli Veather Samplin Dedicat Vell Pu Time Po Ouplicat Sample Time	er Conditioning Method: ted Equipmorged Dry? te Sample? Appearance	mation Is Temp: Grundfos el Yes No 1123 Yes No EGeneral: Specific Cond.	ID:	Color: Tan	Whale Pumping R Time Pump Time of Sa Sample EH Phase	Sky: Grab Other ate: Ch Began: //// mpling: // X : Alance se: No re	SEQ #	gpm @m/1 @m/1 on/1 Odor: None
Sampli Veathe Samplir Dedicat Vell Pu Time Po Duplica Sample Time	er Conditioning Method: ted Equipmorged Dry? te Sample? Appearance	mation Is Temp: Grundfos el Yes No 1123 Yes No EGeneral: Specific Cond.	ID:	Color: Tan	Whale Pumping R Time Pump Time of Sa Sample EH Phase	Sky: Grab Other ate: Ch Began: //// mpling: // X : Alance se: No re	PHI 25 2 2 2 2 2 2 2 2 2 2 2 2 2 2 4 1	gpm @m/1 @m/1 on/1 Odor: None
Sampli Veather Sampling Dedicate Vell Purime Propuplicate Sample Sample I 23	er Conditioning Method: ted Equipminged Dry? te Sample? Appearance	mation as Temp: Grundfos et Yes (No) 1123 Yes (No) ce General: Specific Cond. 2147	ID: Clauly Iemp C 7.73	Color: Tan	Whale Pumping R Time Pump Time of Sa Sample EH Phase Turbidity NTU NA	Sky: Grab Other ate: (2) Began: /// mpling: // 2 : Alance se: Alance Gallons Removed 2.75	SEQ # 1 2 3 4	gpm @m / @m / Odor: New Comments:
Sampli Veathe Samplir Dedicat Vell Pu Time Po Duplicat Sample Time	er Conditioning Method: ted Equipminged Dry? te Sample? Appearance	mation Is Temp: Grundfos el Yes No 1123 Yes No EGeneral: Specific Cond.	ID:	Disp. Baller Color: Tan D. O. mg/L NA	Whale Pumping R Time Pump Time of Sa Sample EH Phase Turbidity NTU NA	Sky: Grab Other ate: (2) Began: /// mpling: // 2 Alance se: Alance Gallons Removed 2.75	PHI 25 27 27 27 200 4 1 2 3	gpm @m/1 @m/1 on/1 Odor: None

Exceptions to Protocol:

-very slow recharge

Groundwater	Froundwater Assessment					Ott	ter Tai	Power Co./ Big Stone	
Sampling Personn	nel:			Facility ID:					
Dusty	Falasyn				Date:	2100	016		
- 1					Unique S	Station ID			
			=		Sample	ID;		Slag 4	
Well Condition	7	7 45				7	_		
Well Locked?	(Yes					re Posts?		No	
Well Labeled?	Yes				State ID			400	
Casing Straight?	Yes	3 No	2		Grout Se	eal Intact7Yes	S	(NO)	
Repairs Necessar	y:								
Well Informatio	n				110				
Well Depth:	39.24				Well Cas	sing Elevation	1:	N-A	
Constructed Depth		39.00				ater Elevation		1	
Casing Diameter:		2"	57.1		Previous	Static:		1	
Water Level Before	e Purge: 19	37			Water Le	evel After Sar	mj	73.18	
Well Volume:	3.24		Gallon	ıs	Measure	ment Method	: Flec	. WLDSteel Tape	
					1				
Sampling Inform	nation		-						
Weather Condition	s: Ten	np: A	3	Wind	SEE	213 Sky	r: P	fly. Clarky	
Sampling Method:	Grun	idfos	Bladder	EDISP. E	8 Whale	Grab Othe			
Dedicated Equipme	ent: Yes	No			Pumping	Rate: O.2	25	gpm	
Well Purged Dry?	Yes	No	C.		Time Pur	mp Begai	1157		
Time Purged Dry?	-	-			Time of S	Sampling	1236		
Duplicate Sample?	Yes	No	ID:	_	Sample B				
Sample Appearance	e: Ger	eral:	leas -	Color	None Pha	ise: None	-	Odor: Non	
(3)	Spe	cific	Temp	D. O.	Turbidity	Gallons	SE		
Time pH	Con	d.	°C	mg/L	NTU	Removed	Q#	Comments:	
1210 6		74	8.05	NA	NA	3.25	1		
1223 6	,79 3	199	7.92	1	1	6.50	2		
		73	7.55	11		9.75	3		
100							4		
				L	1		5	A series	
Stabilized? Yes	No	_	-	Amou	nt Water F	9.75	_	Gallons	
Stabilized! / Tes	IND			AIIIOU	IIL VValer	16/2		Gallons	

Groundwater Assessmer		Site: Otter Tail Power Co./ Big Sto						
Sampling Personn		Facility ID	Facility ID:					
Ber Wolf		Date: 2/	NOV 16					
		Unique St	ation ID:					
		Sample ID		S	Slag 5	-		
Well Condition			-			=		
Well Locked? (Yes) No		Protective	Posts? Yes)	No			
Well Labeled? Yes No		State ID T	ag? Yes		(NO)			
Casing Straight? (Yes) No		Grout Sea	Intact? Yes		100			
Repairs Necessan								
Well Information				July				
Well Depth: 39.00		Well Casir	ng Elevation:	118	7,30			
Constructed Depth 38.80			er Elevation:	TOX3	34	-		
Casing Diameter: 2"		Previous S	Static: 10 83 .			-		
Water Level Before Purge 73.96			el After Sample		14	3		
Well Volume: 1,45 Gallons			ent Method:		WLD Steel	Tape		
		1						
Sampling Information		570.2.30				=		
Weather Conditior Temp: 27	Wind:	5 @10	Sky:	cle	car			
Sampling Method: Grundfos Bladder St			Grab Other			-		
Dedicated Equipm Yes No		Pumping F	Rate: 3.25	T.E	gpm	100		
Well Purged Dry? (Yes) No		Time Pum		38		pm		
Time Purged Dry? 1448		Time of Sa				pm		
Duplicate Sample Yes (No) ID:	-	Sample El-		121		1		
Sample Appearan General: elear	Color: A	VOTU Pha	se: Flake	Ś	Odor: NO 70	-		
				30.79				
10 Specific Temp	D. O.	Turbidity	Gallons	SEQ		1		
Time pH Cond. °C	mg/L	NTU	Removed	#	Comments:			
1448 6.81 1000 9.81	NA	NA	2:5	1		1		
1453 10.82 1004 9.44			-	2	Recharge	1		
	1111	1		3		1		
Warrant I was a street of the second				4		1		
12				5				
Stabilize Yes No	Amount \	Nater Remove	d: 2.5		Gallons			
Comments:	-					-		

Groun	ndwater Ass	essment			Site:	C	tter Ta	ail Power Co./ Big Stone
Samplin	ng Personnel:				Facility ID):		
		914541			Date:	21/00/6		
	0.50	7			Unique S	tation ID:		
					Sample II			Slag 6
Well C	ondition					707		
Well Lo	cked?	(es) No			Protective	Posts? (Y	es)	No
Well La	beled?	Yes No			State ID 7	ag? Y	es	00
Casing	Straight?	Ves No	-		Grout Sea	al Intact? Y	es	(09)
Repairs	Necessary:							
Well In	formation							
Well De	pth:	37.50			Well Casi	ng Elevation:	11	11.51
Constru	cted Depth:	37.30			Static Wa	ter Elevation	10	85.79
Casing	Diameter:	2"			Previous :	Static: /c	08C.3	32
Nater L	evel Before Pu	rge: 25:7	2 .		Water Lev	el After Sam	ic :	31.46
Nell Vo	lume:	,92	Gallons		Measuren	nent Method:	E(ec.	WLI) Steel Tape
					1		-	of a contract of
Sampli	ing Informati	on						
	r Conditions:		30	Wind: 5	E@15	SI	ky: {	7,10
Samplin	g Method:	Grundfos	Bladder SS/	T Disp. Bailer	Whale		her:	
	ed Equipment:	Yes No			Pumping I	Rate: 0.2	35	gpm
	rged Dry?	Yes No	-			p Began: /	30G	am / 6m
	rged Dry?	1314	-		Time of Sa		19	am / 📾
	e Sample?	Yes (No)	ID: -	_	Sample El			
	Appearance:	General: (Color: Tan		se: None		Odor: None
(3)	1	Specific	Temp	D. O.	Turbidity	Gallons	SEQ	
Time	pH	Cond.	°C	mg/L	NTU	Removed	#	Comments:
1314	7.07	1628	8.58	NA	NA	2,0	1	
		1					2	
	Hamilton and						3	
	I Town	5					4	
1319	7.15	1585	8,55	1.1	1	2.0	5	Recharge
tabilize	d Yes	(No		Amount Wa	ater Remov	e 2,0		Gallons
omme	nts:							

Exceptions to Protocol:

- Good reclarge

Groun	dwater A	ssessmer	ıt		Site:	Ott	er T	ail Power Co./ Big Stone
Samplin	g Personne	4:_			Facility ID	1		
2.0	Dusty	Fatogysi			Date:	SINOVIC		
		7	_		Unique St			
_			=		Sample II			Slag 7
Well C	ondition	N. A. L. S						
Well Lo	cked?	Yes No				Posts? Tes	7	No
Well Lal	beled?	YES No	E		State ID T			No
Casing S	Straight?	Yes No	3		Grout Sea	al Intact? Yes		(No)
Repairs	Necessary:							
Well In	formation							
Well De	oth:	49.05			Well Casi	ng Elevation:		1114.39
	cted Depth:	48.70				ter Elevation:		1098,91
	Diameter:	2"			Previous S	Static: O		.92
Water L	evel Before	Purge: 15.	48		Water Lev	rel After Sam		45.90
Well Vol	ume:	5.48	Gallons		Measurem	nent Method:	Ę	lec. WLSteel Tape
					1			
	ng Inform		31	Wind: 5	E els	Sky	: 5	વિ
	g Method:	Grundfos	Bladder SS/T		Whale	Grab Othe	-	
	d Equipmen				Pumping F	Rate: 0,2	5	gpm
	ged Dry?	Yes No			Time Pum	p Began 13	33	
	rged Dry?	1400	5)		Time of Sa		05	
	Sample?	Yes (No	ID:		Sample El	1: 187	5	Training to the second
	Appearance	: General:	Cloudy	Color: 7	Pha Pha	se: Vary		Odor: Nanc
				_	T	1	S	
(53)		Specific	Temp	D. O.	Turbidity	Gallons	EQ	
Time	рН	Cond.	°C	mg/L	NTU	Removed	#	Comments:
1400	7.0%	2044	7.84	NA	NA	515	1	Committents.
1700	1.00	20-14	1 210	1	1	1010	2	
							3	
							4	
1405	714	3076	7.40	1.1	1	56	5	Rechalge
Stabilized	YVes	(No)	1	Amount W	ater Remove		-	Gallons

Comments:

Groundwater Assessment		Site:	Otte	Tail P	ower Co./ Big Ston
Sampling Personnel:		Facility ID			
DUSH FOCIEND		Date:	21 Novig		
2019 18041		Unique St			
		Sample ID			Slag 8
Well Condition					
Well Locked? (es No		Protective	Posts Yes		No
Well Labeled? Yes No		State ID T			(No)
Casing Straight? (68 No			I Intact (Yes)	(No
Repairs Necessary:		12,144,244			
Well Information		Autor Salvis	GALVO.		/
Well Depth: 57,26			g Elevation:		1127.26
Constructed Depth: 52.09		Static Wat	er Elevation:	1110	1,24
Casing Diameter: 2"		Previous S		110.5	
Nater Level Before Purge: 17.02		Water Lev	el After Sam	F 3	3.00
Well Volume: 5,75 Gallons		Measurem	ent Method:	Elec.	WLY Steel Tape
		1		_	
Sampling Information			A.V.	0	
Weather Conditions: Temp: 32		@15	Sky:	Fa!	
Sampling Method: Grundfos Sladder S	/T Disp. Bailer	Whale	Grab Other:	-	
Dedicated Equipmen Yes (No		Pumping F	~		gpm
Well Purged Dry? Yes (No)		Time Pum		24	am / 📆
Time Purged Dry?		Time of Sa		33	am / pm
Ouplicate Sample? Yes (No) ID:		Sample El			
Sample Appearance: General: C	Color: Non	2 Pha	se: Nane	_	Odor: Neve
(3) Specific lemp	D. O.	Turbidity	Gallons	SEQ	
10000000 100000000000000000000000000000	mg/L	NTU	1,147,244,241,141	#	Comments:
ime pH Cond. C	IIIIQ/L	11410			
The second second				1	
1497 7.20 1462 9.08	NA I	NA	5.75		
1447 7.20 1462 9.08			5.75	2	
1497 7.20 1462 9.08			5.75	2	
1447 7.20 1462 9.08			5.75	2 3 4	
1447 7.20 1462 9.08		NA L	5.75 11.5 17.25	2	Gallons

Ground	water As	sessmen	t		Site:	Otte	er Ta	ail Power Co./ Big Stone		
Sampling	Personnel				Facility ID	Facility ID:				
	Ben					NOV 16				
	Ducty	Farasy-	<u> </u>		Unique St					
	2134	1			Sample ID: Slag 9					
Well Cor	ndition					6				
Well Lock	ed?	Yes No			Protective	Posts? (Yes	7	No		
Well Labe	led?	Kes) No			State ID T	ag? Yes		NO		
Casing Str	raight?	Yes No				Intact? Yes		No		
Repairs N										
Well Info	rmation									
Well Depti	10.00	51.25			Well Casir	ng Elevation:		1/22.35		
Constructe		49.80	_			er Elevation:	7	105.00		
Casing Dia		2"	-		Previous 8					
Water Lev		Purge: 17.	35			el After Samp		36.10		
Well Volum		1. 53	Gallons			ent Method:	_	lec. W Steel Tape		
				_	1		,			
Sampling	Informa	tion			LUNC S					
Weather C			25	Wind:	5@10	Shr	1	ar		
Sampling I		Grundfos _	Bladder SS/			Grab Other		04.7		
Dedicated			Qiaddel 337	Disp. Dalie	Pumping F			gpm /		
Well Purge		Yes (No)	_		Time Pum		538			
Time Purg		103 (10)	-		Time of Sa		4			
Duplicate S		Yes (No.)	ID: ~	_		1: 178.8		din 7 phy		
		General: S		Ly Color: N		se: None		Odor: NOTE		
Campic / C	pearance.	Oblicial. 3	19.1.10	7 00101. 10	VIC III	SG. 110 7 0		GdG1. 700 1C		
23				100			S			
70			1		Marie San	Accesses	E			
		Specific	Temp	D. O.	Turbidity	Gallons	Q			
Time	pH	Cond.	°C	mg/L	NTU	Removed	#	Comments:		
1601	7,02	2438	8.95	WA	NA	5.75	1			
1624	7.01	1453	3.53		9	115	2	A TOTAL TOTAL		
16 47	6.96	2371	8,46	1	4	17.25	3			
	5- 11 All 11						4			
	0	4		14-7-2	4111-		5			
Stabilized (Yes /	No		Amount V	Vater Remove	d: 17,25		Gallons		
Comment	S:									

Groundwater Ass	sessm		Site: Otter Tail Power Co./ Big Stone					
Sampling Personne				Facility ID				
Beni				Date: 7		0		
Diesty F	-arus	17		Unique St	ation ID:	4		
		_		Sample ID);		Slag 2B	
Well Condition		i i					6	
Well Locked? Ye	s No			Protective	Posts? Yes		(No.)	
	S No			State ID T	ag? Yes		(No)	
Casing Straight? Ye	s No			Grout Sea	Intact? Yes		(NO)	
Repairs Necessary		_						
Well Information		9						
Well Depth:	10.90	1		Well Casir	ng Elevation:		1111.26	
Constructed Depth:	40.80	_			er Elevation:	- 1	091.63	
Casing Diameter:	2 ⁿ				Static: 1087			
Nater Level Before Pu	irae 10	1.63			el After Samp		40.80	
Well Volume: 3.		Gallons			ent Method:		ec. WL)Steel Tape	
	-			1		-	<u> </u>	
Sampling Informati Weather Conditions Te	mp:	2.5		5-10		_	air	
Sampling Method: Gru		Bladder SS/T) Disp. Bailer		Grab Other	_	200.000	
Dedicated Equipme Ye		_		Pumping F			gpm	
Vell Purged Dry?	S/ NO	_		Time Pum		65		
	799	-10		Time of Sa		716	am / mm	
Ouplicate Sample? Yes Sample Appearanc Ge	s (No)	ID: -	Data B	Sample El	1. 19.1	-	Dodor: NO 10	
ample Appearanc Ge	neral	cloudy	Color: D	OUT Pha	se: agur	76	bedor. No 10	
14						S		
2.6	ecific	Temp	D. O.	Turbidity	Gallons	Q		
ime pH Con		°C	mg/L	NTU	Removed	#	Comments:	
	993	8.56	/\\/*	NA	3.5	1	Comments.	
	090	5,5e	1/4	100	12.0	2	Becharge	
//W //////////////////////////////////		- In the		1	1	3	1.0010 90	
7/7 / / /			-			10		
7.00		+				11		
7.00						4		
Stabilizer Yes No.	_		Amount 18	Vater Remove	d: 3.5	5	Gallons	

*Slow Recharge



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 Apr 17 08

Date Reported: 4 Apr 2017

PAUL VUKONICH OTTER TAIL POWER CO PO BOX 496 FERGUS FALLS MN 56538-0496 Work Order #: 31-0070 Account #: 006106

PO #: 48680

Project Name: BIG STONE PLANT CCR

Field Service Manager/Date Reviewed

OY April 17

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 CCR

Sample Description: SLAG 1

Report Date: 4 Apr 2017 Lab Number: 17-A6384 Work Order #: 31-0070 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 27 Feb 2017 10:48 Sampled By: MVTL FIELD PERSONNEL Date Received: 27 Feb 2017 19:06

PO #: 48680

Temp at Receipt: 0.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
MS Water Digestions					28 Feb 17	JNS
Water Digestions					28 Feb 17	JMS
Radium 226	SEE ATTAC	HED			3 Apr 17 8:40	ABL
Radium 228	SEE ATTAC	HED		EPA M9320	3 Apr 17 8:40	ABL
pH, Field	6.97	units	1.00	I-1586-85	27 Feb 17 10:48	DGF
pH	* 7.3	units	1.0	SM 4500 K+B-96	28 Feb 17 9:20	CEH
	See Narra					
Sulfate	448 -	mq/L	4.0	ASTM D516-02	9 Mar 17 12:41	KCJ
Chloride	14.2	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	1400	mg/L	10	SM 2540 C-97	28 Feb 17 13:24	RC
Calcium	192.0	mg/L	0.500	SW6010C	2 Mar 17 12:23	RMB
Lithium	0.077	mg/L	0.005	SW6010C	2 Mar 17 12:23	RMB
Barium	0.071	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	1.980 ^	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	PMV
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	4.83 €	ug/L	0.50	SW6020A	3 Mar 17 15:38	RMV
Selenium	10.3 @	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	0.380	mg/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 RI = Reporting limit
Analyses performed under our Minnesota Department of Health Accreditation conform to the current TNI standards.
The reporting limit was selevated for any analyte requiring a dilution as coded below:

= Due to sample matrix
= Due to concentration of other analytes
= Due to cample quantity
= Due to internal standard response
CERTIFICATION: NN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND MM/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: SLAG 4

Report Date: 4 Apr 2017 Lab Number: 17-A6385 Work Order #: 31-0070 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 27 Feb 2017 11:52 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 8:40	ABL
Radium 228	SEE ATTAC	HED		EPA M9320	3 Apr 17 8:40	ABL
pH, Field	6.64	units	1.00	I-1586-85	28 Feb 17 11:52	DGF
PH	* 6.9	units	1.0	SM 4500 H+B-96	28 Feb 17 9:20	CEH
	See Narra	tive				
Sulfate	1450 ~	mg/L	4.0	ASTM D516-02	9 Mar 17 12:41	KCJ
Chloride	46.2	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	2520	mg/L	10	SM 2540 C-97	28 Feb 17 13:24	RC
Calcium	505.0 ~	mg/L	0.500	SW6010C	3 Mar 17 11:15	RMB
Lithium	0.215	mg/L	0.005	SW6010C	2 Mar 17 12:23	RNB
Barium	0.028	mg/L	0.005	SW6010C	2 Mar 17 12:23	RMB
Cobalt	< 0.01 ^	mq/L	0.005	SW6010C	2 Mar 17 12:23	RMB
Boron	0.828 ^	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	2.51 @	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	< 2.5 @	ug/L	0.5	SW6020A	3 Mar 17 15:38	RMV
Selenium	< 2.5 @	ug/L	0.5	SW6020A	3 Mar 17 15:38	RMV
Challium	< 0.5 @	ug/L	0.1	SW6020A	3 Mar 17 15:38	RMV
Fluoride	0.170	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



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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: SLAG 5

Report Date: 4 Apr 2017 Lab Number: 17-A6386 Work Order #: 31-0070 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 27 Feb 2017 14:15 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 8:4	1 ABL
Radium 228	SEE ATTAC	HED		EPA M9320	3 Apr 17 8:4	1 ABI
pH, Field	7.07	units	1.00	I-1586-85	27 Feb 17 14:1	5 BMW
pH	* 7.2	units	1.0	SM 4500 H+B-96	28 Feb 17 9:2	O CEH
	See Narra	tive				
Sulfate	61.3 8	mg/L	4.0	ASTM D516-02	9 Mar 17 12:4	1 KCJ
Chloride	8.9	mg/L	3.0	SM 4500 C1 E	2 Mar 17 9:4	7 KCJ
Mercury	< 0.005	ug/L	0.005	EPA 245.7	1 Mar 17 9:3	O TWB
Solids, Total Dissolved	494	mg/L	10	SM 2540 C-97	28 Feb 17 13:2	4 RC
Calcium	124.0	mg/L	0.500	SW6010C	2 Mar 17 12:2	3 RMB
Lithium	0.025	mg/L	0.005	SW6010C	2 Mar 17 12:2	3 RMB
Barium	0.140	mg/L	0,005	SW6010C	2 Mar 17 12:2	RMB
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	2 Mar 17 12:2	RMB
Boron	0.337	mg/L	0.100	SW6010C	3 Mar 17 11:1	RMB
Antimony	< 2.5 €	ug/L	0.5	SW6020A	3 Mar 17 15:3	
Arsenic	< 2.5 0	ug/L	0.5	SW6020A	3 Mar 17 15:3	RMV
Beryllium	< 0.25 €	ug/L	0.05	SW6020A	3 Mar 17 15:3	RMV
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	3 Mar 17 15:3	RMV
Chromium	< 2.5 €	ug/L	0.5	SW6020A	3 Mar 17 15:3	RMV
Lead	< 2.5 @	ug/L	0.5	SW6020A	3 Mar 17 15:3	
Molybdenum	11.8 @	ug/L	0.50	SW6020A	3 Mar 17 15:3	RMV
Selenium	< 2.5 @	ug/L	0.5	SW6020A	3 Mar 17 15:3	
Thallium	< 0.5 @	ug/L	0.1	SW6020A	3 Mar 17 15:31	
Fluoride	0.310	mg/L	0.020	EPA 300.0	1 Mar 17 12:3	

* 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.

RI = Reporting Limit
Analyses performed under our Minnesota Department of Health Ancreditation conform to the current TNI standards.
The reporting limit was clevated 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 # 999447650 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: SLAG 6

Report Date: 4 Apr 2017 Lab Number: 17-A6387 Work Order #: 31-0070 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 27 Feb 2017 12:26
Sampled By: MVTL FIELD PERSONNEL
Date Received: 27 Feb 2017 19:06

PO #: 48680

Temp at Receipt: 0.0C

	As Receiv Result	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 8:41	ABL
Radium 228	SEE ATTAC	HED		EPA M9320	3 Apr 17 8:41	ABL
pH, Field	7.07	units	1.00	I-1586-85	27 Feb 17 12:25	DGF
рн	* 7.2	units	1.0	SM 4500 H+B-96	28 Feb 17 9:20	CEH
	See Narra	tive			27 - 270 - 27 190	
Sulfate	240 ~	mq/L	4.0	ASTM D516-02	9 Mar 17 12:41	KCJ
Chloride	6.5	mg/L	3.0	SM 4500 C1 E	2 Mar 17 9:47	KCJ
Mercury	0.010	ug/L	0.005	EPA 245.7	1 Mar 17 9:30	TWB
Solids, Total Dissolved	910	mg/L	10	SM 2540 C-97	28 Feb 17 13:24	RC
Calcium	162.0	mq/L	0.500	SW6010C	2 Mar 17 12:23	RMB
Lithium	0.113	mg/L	0.005	SW6010C	2 Mar 17 12:23	RMB
Barium	0.107	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	2.630 ^	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	2.70 €	ug/L	0.50	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	9.77 @	ug/L	0.50	SW6020A	3 Mar 17 15:38	RMV
Lead	2.96 @	ug/L	0.50	SW6020A	3 Mar 17 15:38	RMV
Molybdenum	7.35 @	ug/L	0.50	SW6020A	3 Mar 17 15:38	RMV
Selenium	3.28 @	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	0.740	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.



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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: SLAG 7

Report Date: 4 Apr 2017 Lab Number: 17-A6388 Work Order #: 31-0070 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 27 Feb 2017 13:09
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 8:41	ABL
Radium 228	SEE ATTAC			EPA M9320	3 Apr 17 8:41	ABL
pH, Field	7.15	units	1.00	I-1586-85	27 Feb 17 13:09	DGF
pH	* 7.4	units	1.0	SM 4500 H+B-96	28 Feb 17 10:30	CEH
Sulfate	608 ~	mg/L	4.0	ASTM D516-02	9 Mar 17 12:41	KCJ
Chloride	4.6	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 10:06	TWB
Solids, Total Dissolved	1200	mg/L	10	SM 2540 C-97	28 Feb 17 13:24	RC
Calcium	206.0	mg/L	0.500	SW6010C	2 Mar 17 12:45	RMB
Lithium	0.176	mg/L	0.005	SW6010C	2 Mar 17 12:45	RMB
Barium	0.040	mq/L	0.005	SW6010C	2 Mar 17 12:45	RMB
Cobalt	< 0.01 ^	mq/L	0.005	SW6010C	3 Mar 17 11:39	RMB
Boron	1.290	mg/L	0.100	SW6010C	3 Mar 17 11:39	RMB
	See Narra		4.5	2007 2007	0.303.51.05138	
Antimony	< 2.5 €	ug/L	0.5	SW6020A	3 Mar 17 16:42	RMV
Arsenic	< 2.5 @	ug/L	0.5	SW6020A	3 Mar 17 16:42	RMV
Beryllium	< 0.25 @	ug/L	0.05	SW6020A	3 Mar 17 16:42	RMV
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	3 Mar 17 16:42	RMV
Chromium	9.04 @	ug/L	0.50	SW6020A	6 Mar 17 14:51	RMV
Lead	< 2.5 @	ug/L	0.5	SW6020A	3 Mar 17 16:42	RMV
Molybdenum	4.64 @	ug/L	0.50	SW6020A	3 Mar 17 16:42	RMV
Selenium	< 2.5 @	ug/L	0.5	SW6020A	3 Mar 17 16:42	RMV
Thallium	< 0.5 @	ug/L	0.1	SW6020A	3 Mar 17 16:42	RMV
Fluoride	0.440	mg/L	0.020	EPA 300.0	6 Mar 17 10:13	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: NN LAB # 027-015-125 WY LAB # 999447580 ND KICRO # 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: SLAG 8

Report Date: 4 Apr 2017
Lab Number: 17-A6389
Work Order #: 31-0070
Account #: 006106
Sample Matrix: GROUNDWATER
Date Sampled: 27 Feb 2017 14:25
Sampled By: MVTL FIELD PERSONNEL
Date Received: 27 Feb 2017 19:06

Temp at Receipt: 0.0C

PO #: 48680

	As Receiv Result	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 8:41	ABL
Radium 228	SEE ATTAC	HED		EPA M9320	3 Apr 17 8:41	ABL
pH, Field	7.05	units	1.00	1-1586-85	27 Feb 17 14:25	DGF
DH	* 7.2	units	1.0	SM 4500 H+B-96	28 Feb 17 10:30	CEH
Sulfate	250 ~	mq/L	4.0	ASTM D516-02	9 Mar 17 12:41	KCJ
Chloride	35.6	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 10:06	TWB
Solids, Total Dissolved	881	mg/L	10	SM 2540 C-97	28 Feb 17 13:24	RC
Calcium	129.0	mg/L	0.500	SW6010C	2 Mar 17 12:45	RMB
ithium	0.061	mg/L	0.005	SW6010C	2 Mar 17 12:45	RMB
Barium	0.046	mg/L	0.005	SW6010C	2 Mar 17 12:45	RMB
Cobalt	< 0.01 *	mg/L	0.005	SW6010C	3 Mar 17 11:39	RMB
Boron	0.574	mg/L	0.100	SW6010C	3 Mar 17 11:39	RMB
10.00	See Narra		21666		0. 000 (0) 55,000	3 345
intimony	< 2.5 @	ug/L	0.5	SW6020A	3 Mar 17 16:42	PMV
rsenic	< 2.5 @	ug/L	0.5	SW6020A	3 Mar 17 16:42	RMV
Beryllium	< 0.25 @	ug/L	0.05	SW6020A	3 Mar 17 16:42	RMV
admium	< 0.5 €	ug/L	0.1	SW6020A	3 Mar 17 16:42	RMV
thromium	< 2.5 @	ug/L	0.5	SW6020A	6 Mar 17 14:51	RMV
ead	< 2.5 @	uq/L	0.5	SW6020A	3 Mar 17 16:42	RMV
olybdenum	9.11 @	ug/L	0.50	SW6020A	3 Mar 17 16:42	RMV
Selenium	18.8 @	ug/L	0.50	SW6020A	3 Mar 17 16:42	RMV
'hallium	< 0.5 €	ug/L	0.1	SW6020A	3 Mar 17 16:42	RMV
Fluoride	0.580	mg/L	0.020	EPA 300.0	6 Mar 17 10:13	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

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

Project Name: BIG STONE PLANT CCR

Sample Description: SLAG 9

Report Date: 4 Apr 2017 Lab Number: 17-A6390 Work Order #: 31-0070 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 27 Feb 2017 15:59 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	:42 ABL
Radium 228	SEE ATTAC	HED		EPA M9320	3 Apr 17 8	:42 ABL
pH, Field	6.80	units	1.00	I-1586-85	27 Feb 17 15	:59 DGF
Ha	* 7.0	units	1.0	SM 4500 H+B-96	28 Feb 17 10	:30 CEH
Sulfate	1050 ~	mg/L	4.0	ASTM D516-02	9 Mar 17 12	:41 KCJ
Chloride	6.3	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 10	:06 TWB
Solids, Total Dissolved	1830	mg/L	10	SM 2540 C-97	28 Feb 17 13	
Calcium	412.0	mg/L	0.500	SW6010C	3 Mar 17 11	:39 RMB
	~ See Nar					
Lithium	0.135	mg/L	0.005	SW6010C	2 Mar 17 12	:45 RMB
Barium	0.026	mg/L	0.005	SW6010C	2 Mar 17 12	:45 RMB
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	3 Mar 17 11	:39 RMB
Boron	0,270	mg/L	0.100	SW6010C	3 Mar 17 11	
	See Narra					
Antimony	< 2.5 €	ug/L	0.5	SW6020A	3 Mar 17 16	:42 RMV
Arsenic	< 2.5 @	ug/L	0.5	SW6020A	3 Mar 17 16	: 42 RMV
Beryllium	< 0.25 @	ug/L	0.05	SW6020A	3 Mar 17 16	
Cadmium	< 0.5 €	ug/L	0.1	SW6020A	3 Mar 17 16	
Chromium	< 2.5 €	ug/L	0.5	SW6020A	6 Mar 17 14	:51 RMV
Lead	< 2.5 @	ug/L	0.5	SW6020A	3 Mar 17 16	42 RMV
Molybdenum	10.2 @	ug/L	0.50	SW6020A	3 Mar 17 16	
Selenium	< 2.5 @	ug/L	0.5	SW6020A	3 Mar 17 16	
Thallium	< 0.5 @	ug/L	0.1	SW6020A	3 Mar 17 16	
Fluoride	0.220	mg/L	0.020	EPA 300.0	6 Mar 17 10	

* 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 Heelth Accreditation conform to the current TNL 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 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: SLAG 2B

Report Date: 4 Apr 2017 Lab Number: 17-A6391 Work Order #: 31-0070 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 27 Feb 2017 14:50
Sampled By: MVTL FIELD PERSONNEL
Date Received: 27 Feb 2017 19:06

PO #: 48680

Temp at Receipt: 0.00

	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 8:42	ABL
Radium 228	SEE ATTAC			EPA M9320	3 Apr 17 5:42	ABL
pH, Field	7.10	units	1.00	1-1586-85	27 Feb 17 14:50	BMW
pH	* 8.4	units	1.0	SM 4500 H+B-96	28 Feb 17 10:30	CEH
Sulfate	743 ~	mg/L	4.0	ASTM D516-02	9 Mar 17 12:58	KCJ
Chloride	30.9	mg/L	3.0	SM 4500 C1 E	2 Mar 17 10:05	KCJ
Mercury	< 0.005	ug/L	0.005	EPA 245.7	1 Mar 17 10:06	TWB
Solids, Total Dissolved	1300	mg/L	10	SM 2540 C-97	28 Feb 17 13:24	RC
Calcium	288.0	mg/L	0.500	SW6010C	2 Mar 17 12:45	RMB
Lithium	0.044	mg/L	0.005	SW6010C	2 Mar 17 12:45	RMB
Barium	0.046	mg/L	0.005	SW6010C	2 Mar 17 12:45	RMB
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	3 Mar 17 11:39	RMB
Boron	4.190	mg/L	0.100	SW6010C	3 Mar 17 11:39	RMB
BOLOH	See Narra		0.100	SWOOTOC	3 Mar 17 11:39	Lind
********	< 2.5 @	A STATE OF THE STA	0.5	SW6020A	3 Mar 17 16:42	DIME
Antimony		ug/L				RMV
Arsenic	< 2.5 @	ug/L	0.5	SW6020A	3 Mar 17 16:42	RMV
Beryllium	< 0.25 @	ug/L	0.05	SW6020A	3 Mar 17 16:42	RMV
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	3 Mar 17 16:42	RMV
Chromium	< 2.5 0	ug/L	0.5	SW6020A	6 Mar 17 14:51	RMV
Lead	< 2.5 @	ug/L	0.5	SW6020A	3 Mar 17 16:42	RMV
Molybdenum	5.08 €	ug/L	0.50	SW6020A	3 Mar 17 16:42	RMV
Selenium	< 2.5 @	ug/L	0.5	SW6020A	3 Mar 17 16:42	RMV
Thallium	< 0.5 @	ug/L	0.1	SW6020A	3 Mar 17 16:42	RMV
Fluoride	0.220	mg/L	0.020	EPA 300.0	6 Mar 17 10:13	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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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.

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

ab LDs: 17-A6378 to 1	7-A0391	PI	oject: BIC	2 21 ON	PLANT CC	_	Work		31/31-00			Title Comment		a gone /			
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 va 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	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	1.210 1.140	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		17A6386q 17A6391q	< 0.25 < 0.25	2.50 2.38	100 95	75-125 75-125	2.50 2.38	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	100	17A6387q A6387qc A6390qc	2.630 2.570 < 0.5	3.700 3.500 1.280	107 93 128	75-125 75-125 75-125	3.700 3.500 1.280	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	4.1.4	17A6386q 17A6391q	< 0.5 < 0.5	5.35 5.52	107 110	75-125 75-125	100000	5.45 5.37	109 107	1.9 2.8	10 10	98 100	90-110 90-110	<0.1 <0.1
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	436.0 214.0	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	
Chloride mg/L				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	85-121 85-121 85-121 85-120	61.6 85.1	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	85-115 85-115	The second second second	17A6386q 17-A6390	<2.5 <2.5	22.4 23.1	90 92	75-125 75-125		21.6° 23.5°	86 94	3.6 1.7	10 10	91 102	90-110 90-110	

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Quality Control Report

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

ab IDs: 17-A6378 to 17-A6	391	Pr	oject: BIC	STON	E PLANT CC	R	Work	Order: 2	01731-00	70							
unalyte	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
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	< 0.005
Mercury ug/L	1		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	<0.005 <0.005 <0.005 <0.005
Molybdenum ug/L	25.0 25.0	98 104	85-115 85-115	25.0 25.0	17A6386q 17A6391q	11.8 5.08	37.7 30.2	104 100	75-125 75-125	100	38.1 30.2	105 100	1.1	10 10	96 96	90-110 90-110	< 0.5 < 0.5
pH units	2	1	1	:	:	1	:	2.	:	7.2 7.7	7.2 7.7	1	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	10 10	93 92	90-110 90-110	< 0.5 < 0.5
Solids, Total Dissolved mg/L			(:			:	1		903 1830	912 1900	1:	1.0 3.8	8	89	85-115	<10
Sulfate mg/L	1			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	3 1170 3 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



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: 3 of 3

Quality Control Report

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

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	1 SECONDIE U	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Spike Rec	Matrix Spike % Rec Limits	Dup Orig	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	10000000	Rec	Known % Rec Limits	Mary Company of the C
Thallium ug/L	5.00 5.00	103 107	85-115 85-115	0.77333	17A6386q 17A6391q	< 0.5 < 0.5	5.30 5.18	106 104	75-125 75-125		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.



Inter-Mountain Labs

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

Date: 3/31/2017

CLIENT:

MVTL Inc

Project:

Ottertail Power Big Stone

Lab Order:

S1703017

CASE NARRATIVE

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

MVTL Inc Company:

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Big Stone

Lab ID: ClientSample ID:

S1703017-007 Slag-1-A6384

COC:

WEB

Date Reported

3/31/2017

Report ID

\$1703017001

WorkOrder:

S1703017

CollectionDate: 2/27/2017 10:48:00 AM

3/2/2017 10:11:00 AM

DateReceived: FieldSampler:

Matrix:

DF Water

WO# 31-0070

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/i	nit
Radionuclides - Total					4.5.7.41		
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	2.1	pCI/L		2	Ga-Tech	03/20/2017 1442	MB
Radium 228 Precision (±)	3.0	pCI/L			Ga-Tech	03/20/2017 1442	MB

These results apply only to the samples tested.

Qualiflers:

- Analyte detected in the associated Method Blank B
- 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 fess than LCL
- Outside the Range of Dilutions
- Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

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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: ClientSample ID:

S1703017-008 Slag-4-A6385

COC:

WEB

Date Reported

3/31/2017

Report ID

\$1703017001

WorkOrder:

S1703017

CollectionDate: 2/27/2017 11:52:00 AM

DateReceived: 3/2/2017 10:11:00 AM FieldSampler:

DF

Matrix:

Water

WO# 31-0070

			RL	Method	Date Analyzed/I	
	3 (3)					
ND	pCi/L		1	SM 7500 Ra-B	03/21/2017 1524	MB
NA	pCi/L			SM 7500 Ra-B	03/21/2017 1524	MB
ND	pCi/L		2	Ga-Tech	03/20/2017 1746	MB
NA	pCI/L			Ga-Tech	03/20/2017 1746	MB
	NA ND	NA pCi/L ND pCi/L	NA pCVL ND pCVL	NA pCi/L ND pCi/L 2	NA pCl/L SM 7500 Ra-B ND pCl/L 2 Ga-Tech	NA pCl/L SM 7500 Ra-B 03/21/2017 1524 ND pCl/L 2 Ga-Tech 03/20/2017 1746

These results apply only to the samples tested.

Qualiflers:

Analyte detected in the associated Method Blank

Value above quantitation range

Holding Ilmes 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:

Wade Nieuwsma, Assistant Laboratory Manager

Page 8 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:

Otterlail Power Big Stone

Lab ID:

S1703017-009 Slag-5-A6386

ClientSample ID: COC:

WEB

Date Reported

3/31/2017

Report ID

S1703017001

WorkOrder:

\$1703017

DateReceived: 3/2/2017 10:11:00 AM

CollectionDate: 2/27/2017 2:15:00 PM

FieldSampler: DF

Matrix:

Water

WO# 31-0070

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nlt
Radionuclides - Total		7.1.					
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 2051	MB
Radium 228 Precision (±)	NA	pCI/L			Ga-Tech	03/20/2017 2051	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 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

Oulside the Range of Dilutions

Malrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 9 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:

S1703017-010 Slag-6-A6387

COC:

WEB

Date Reported

3/31/2017

Report ID

\$1703017001

WorkOrder:

S1703017

CollectionDate: 2/27/2017 12:26:00 PM

DateReceived: 3/2/2017 10:11:00 AM

FieldSampler: Matrix:

DF Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/In	
Radionuciides - Total					To Contract		
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 2357	MB
Radium 228 Precision (±)	NA	pCI/L			Ga-Tech	03/20/2017 2357	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 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: all

Wade Nieuwsma, Assistant Laboratory Manager

Page 10 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:

Ottertail Power Big Stone

Lab ID:

S1703017-011 Slag-7-A6388

ClientSample ID: COC:

WEB

Date Reported Report ID

3/31/2017

S1703017001

WorkOrder:

S1703017

CollectionDate: 2/27/2017 1:09:00 PM

FieldSampler:

DateReceived: 3/2/2017 10:11:00 AM

Matrix:

Water

DF

WO# 21 0070

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/i	nit
Radionuclides - Total					T-10-10-10-10-10-10-10-10-10-10-10-10-10-		
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	03/27/2017 1119	MB
Radium 226 Precision (±)	NA	pGi/L			SM 7500 Ra-B	03/27/2017 1119	MB
Radium 228	ND	pCi/L		2	Ga-Tech	03/21/2017 302	MB
Radium 228 Precision (±)	NA	pCI/L			Ga-Tech	03/21/2017 302	MB

These results apply only to the samples tested.

Qualiflers:

Analyte 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 ND

Splke 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 la less than LCL Outside the Range of Dilutions

0

Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

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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:

\$1703017-012 Slag-8-A6389

COC:

WEB

Date Reported

3/31/2017

Report ID

S1703017001

WorkOrder:

S1703017

CollectionDate: 2/27/2017 2:25:00 PM

DateReceived: 3/2/2017 10:11:00 AM FieldSampler:

Matrix:

DF Water

WO# 31-0070

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total					5-5-1-7		
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	03/27/2017 1119	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	03/27/2017 1119	MB
Radium 228	ND	pCI/L		2	Ga-Tech	03/21/2017 607	MB
Radium 228 Precision (±)	NA	pCVL			Ga-Tech	03/21/2017 607	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 C

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 12 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:

S1703017-013 Slag-9-A6390

COC:

WEB

Date Reported

3/31/2017

Report ID

S1703017001

WorkOrder:

\$1703017

DateReceived: 3/2/2017 10:11:00 AM

CollectionDate: 2/27/2017 3:59:00 PM

FieldSampler:

DF

Matrix:

Water

WO# 31-0070

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	03/27/2017 1119	MB
Radium 226 Precision (±)	NA	pCI/L			SM 7500 Ra-B	03/27/2017 1119	MB
Radium 228	ND	pCI/L		2	Ga-Tech	03/21/2017 912	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	03/21/2017 912	MB

These results apply only to the samples tested.

Qualiflers:

Analyle 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

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: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 13 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:

S1703017-014 Slag 2B A6391

COC:

WEB

Date Reported

3/31/2017

Report ID

S1703017001

WorkOrder:

\$1703017

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

3/2/2017 10:11:00 AM

FieldSampler:

DF Matrix:

Water

Commente

WO# 31-0070

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	2.2	pCI/L		1	SM 7500 Ra-B	03/27/2017 1119	ME
Radium 226 Precision (±)	0.3	pCI/L			SM 7500 Ra-B	03/27/2017 1119	ME
Radium 228	2.4	pCI/L		2	Ga-Tech	03/21/2017 1535	MB
Radium 228 Precision (±)	2.8	pCi/L			Ga-Tech	03/21/2017 1535	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

0 Outside the Range of Dilutions

Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 14 of 14



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

ANALYTICAL QC SUMMARY REPORT

CLIENT: Work Order: MVTL Inc

S1703017

Date: 3/31/2017

Report ID: \$1703017001

Project:

Ottertail Power Big Stone

Radium 228 by	y Ga/Tech	Sample Type	MBLK		Unit	s: pCi/L			
MB-423	(03/18/17 10:24)		RunNo: 144032	Prep	Date: 03/	13/17 12:00	Bat	chID 12937	
	Analyte		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
200	Total Radium 228		ND	1					
Radium 228 by	/ Ga/Tech	Sample Type	LCS		Units	: pCI/L			
LCS-42	3 (03/18/17 13:28)		RunNo: 144032	Prepl	Date: 03/1	3/17 12:00	Bale	chID 12937	
	Analyte		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
- 1	Total Radium 228	7.13	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: 03/1	3/17 12:00	Bato	hID 12937	
	Analyte		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
	Total Radium 228		40	1	40.1	ND	99.6	65.9 - 132	
Radium 228 by	Ga/Tech	Sample Type	MSD		Units	pCi/L			
MSD-423	3 (03/18/17 22:42)		RunNo: 144032	PrepD	ate: 03/1:	3/17 12:00	Bato	hID 12937	
113.5	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

Analyzed at IML Gillette laboratory G

Analyte detected below quantitation limits

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery ilmits

Matrix Effect

Value above quantitation range

Holding times for preparation or analysis exceeded H

L Analyzed by another laboratory

0 Outside the Range of Dilutions

Spike Recovery outside accepted recovery limits



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

ANALYTICAL QC SUMMARY REPORT

CLIENT:

MVTL Inc

Work Order:

S1703017

Project:

Ottertail Power Big Stone

Date: 3/31/2017

Report ID: \$1703017001

Radium 226 in Water -	Sample Type	MBLK		Uni	ts: pCi/L			
MB-1727 (03/21/17 11:51)	R	unNo: 144019	Prep	Date: 03	/15/17 0:00	Bat	chID 12952	77
Analyte		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
Radium 226		ND	0.2					
MB-1728 (03/27/17 11:19)	R	unNo: 144273	Prepi	Date: 03/	20/17 0:00	Bat	chID 12974	
Analyte		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
Radium 226		ND	0.2		2 1/0			
Radium 226 in Water -	Sample Type	LCS		Unit	s: pCi/L			
LCS-1727 (03/21/17 11:51)	Ri	InNo: 144019	Prepl	Date: 03/	15/17 0:00	Bate	chID 12952	
Analyte		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
Radium 226		5.8	0.2	5.89		98.8	67.1 - 122	
LCS-1728 (03/27/17 11:19)	Ru	nNo: 144273	PrepD	Date: 03/2	20/17 0:00	Bato	hlD 12974	
Analyte		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
Radium 226		5.8	0.2	5,89		99.0	67.1 - 122	
Radium 226 in Water -	Sample Type 1	LCSD		Units	: pCi/L			
LGSD-1727 (03/21/17 11:51)	Ru	nNo: 144019	PrepD	ate: 03/1	5/17 0:00	Bato	hID 12952	
Analyte		Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Radium 226		5.6	0.2	5.8	12.4	112	20	
LCSD-1728 (03/27/17 11:19)	Ru	nNo: 144273	PrepD	ate: 03/2	0/17 0:00	Bato	hID 12974	
Analyte		Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Radium 226		5.4	0.2	5.8	8.50	90.9	20	
Radium 226 In Water -	Sample Type N	//S		Units	: pCi/L		200	
S1702327-005AMS (03/21/17 11:51)	Rur	No: 144019	PrepD	ate: 03/1	5/17 0:00	Batch	nID 12952	
Analyle		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226		11	1	11.8	ND	91.7	65 - 131	
S1703036-003AMS (03/27/17 11:19)	Rur	No: 144273	PrepDa	ete: 03/20	0/17 0:00	Batch	ID 12974	
Analyte		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226		6.1	0.2	5.89	0.2	99.9	65 - 131	
Radium 226 in Water -	Sample Type M	ISD		Units:	pCi/L			
S1703036-003AMSD (03/27/17 14:28)	Run	No: 144273	PrepDa	te: 03/20	0/17 0:00	Batch	ID 12974	
Analyte		Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Radium 226		5.3	0.2	6.1	13.7	86.5	20	

Qualifiers:

- Analyte detected in the associated Method Blank
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- ND Not Delected 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



Inter-Mountain Labs

Sheridan, WY and Gillette, WY

- CHAIN OF CUSTODY RECORD -	Page	of	
All shaded fields must be completed.	#WEE	2	
This is a legal document; any misrepresentation may be construed as fraud.	**AACC	•	

	-MOUNTAIN LABS				This is a legal documen	nt; any misrepre										HITCH	
	Name		MACON TO STATE OF THE STATE OF	Project Idea		The control of the co	Sampler (Si	gnatu	e/Atte	station	of Auth	enticit		000/5/1627		Telephone #	
epoi	Address	AND THE ISL	機能。然為	Ottertail F			1/	100	ANIA	7	-0 / F	MASK!				55/50.70	-8087
12 Vew	North Front St 31 Ulm, Mp 56073			Tim:Por	tner tportner@mvtl.com			228	ANA	LYS	=5 / I	AR	MET	ERS	(P)		
wold	e Address G			Phone	507-276-8089 Purchase Order#	Quote#		n 228 +		STORY OF THE PARTY						REMA	DK8
TEM	LAB ID (Lab Use Only)	DATE SAM	TIME		SAMPLE IDENTIFICATION	Matrix	# of Containers	Radlum					4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	*		NEIRA	INIO
1	91703017-041	27Feb17	1103.	H2OX	- A6378	WT	2	x	Ų.						=		
2	300		1129	нзох	- A6379	WT	2	x					III-I				
3	003		1155	H4OX	- A 6380	WT	2	x	1								
4	co.u		1211	H-6	- A6381	WT	2	x									
5	005	1.54//	1750	H-8	- A6382	WT	2	x									
6	906		1340	H-9 *	- A 6383	WT	2	x			V						
7	cof		1048	Slag-1	A6384	WT	2	x				1					
3	800		1152	Slag-4	A 6385	WT	2	x									
9	009		1415	Slag-5	A 6386	WT	2	x									
10	010		1226	Slag-6	A6387	WT	2	x									
11	011		1309	Slag-7	A6388	WT	2	×									
12	SIO		1475	Slag-8	A6389	WT	2	x									
13	CONTRACTOR		1						T				1				
14																	
	LAB COMMENTS		Reli	nquished By	(Signature/Printed)	DATE	TIME					Signat	ure/Prin	ited)		DATE	TIME
32	2110	1/2	- 6	1/00	ly Harasin	2 Feb	7 1900		60	dh	1 6	507	0			3.2.17	10:11
	12.7	MG 3.6		*			150	9									
	13.1			110				0				_	_				
1808	SHIPPING INFO	MATRI	X CODES		TURN AROUND TIMES		OMPLIAN							1	ADDITI	ONAL REMARK	S
0000	UPS FedEx USPS Hand Carried	Wate Solid Solid Filte	il SL d SD	□ SI	iesired service:	Progra	iance Mon m (SDWA D / Permit	, NPC	ES,)	YIN	8					
ā	Other -	Othe	W 122.22		& Urgent Surcharges will be applie		e Disposa	: La	b A			9					



Inter-Mountain Labs

Sheridan, WY and Gillette, WY

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

KS
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TIME
10:11
. 0 , , ,
8

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 28 Rub 17

pages (-23

Project Otter Tail Power Company	Project Type:	Big Stone Plant CCR	Name of Samplers:	Dusty	F9.95/M.	Gen	LAD
Report Otter Tail Power Company	Carbon Copy:			PICE	12/2/11	Pett	coch
Attn: Paul Vukonich Address P.O. Box 496 Fergus Falls, MN 56538-0496 Phone: 218-739-8349	Attn: Address:		Quote Number: Work Order Number: Lab Numbers:	31-0	070		

		Sample In	formation								E	3ott	le Ty	pe					Analysi
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	1000 HNO3	Filtered Yor N	1000 none	500 HNO3	Filler? Y or M	- 1	Filter? Y or M		1000 Amber	500 NaOH	Offier: 150 Has	Other 150 No.	Analysis Required
A6378	H2OX		27Feb17	1103	GW		2	N	1	1	N								See Attached
	НЗОХ		1	1129	GW		2	N	1	1	N	1		4					
80	H4OX	1		1155	GW	1	2	N	1	1	N						1.5		
	H-6	N. S. S. S. S.		1211	GW		2	N	1	1	N	-				1		-	
82	H-8	1	100	1250	GW		2	N	1	1	N	1							
73	H-9			1340	GW		2	N	1	1	N				L. U				
	Slag 1			1048	GW		2	N	1	1	N	7							
	Slag 4			1152	GW		2	N	1	1	N								
	Slag 5	7 7		1915	GW		2	N	1	1	N		1			1	1		
	Slag 6		1	1226	GW		2	N	1	1	N								

Comments:

WORK ORDER #2

		1 1			01. 1.	
Samples Relin	quished By:	LIV	71	Samples Received By:	the neder	FRV -
Date: 27	きりフ	Time: 190	Tempo.o	Date: 28 Rb A	Time: 800	Temp: 3,80
Samples Relin	quished into:	Fridge L	og in 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 «	dce	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

1126 North Front Street

Field Service Chain of Custody Record

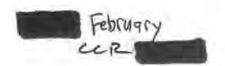
		ower Comp		Project Ty		Big Ston	e Pla	int C	CR	Nam	e of	Sam	plers	: (Dusty	F	(agyn)	Ben wif
Attn: Address	Paul Vukor P.O. Box 4	96 ls, MN 565		Carbon Co Attn: Address:	DA:						k Orc		umbe		-/		, ,	
		Sample In	formation								1	Bott	le Ту	ре				Analys
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	1000 HNO3	Filtered Yor N	1000 none	500 HINO3	Filter? Y or N		Filler? Y or N		1000 Amber	HORN ON	Other 150 M	Analysis Required
88	Slag 7		27-317	1309	GW		2	N	1	1	N.	1						See Attached
	Slag 8			1425	GW		2	N	1	1	N							
90	Slag 9		1	1559	GW		2	N	1	1	N							
	Slag 9 De	ер	- 1/1	-	GW		2	N	1	1	N		1					
91	Slag 2B		1	1450	GW		2	N	1	1	N		1-1					
		-	1		-												_	

Comments:

WORK ORDER #2

			_			Λ .	. 1	
Samples Reling	uished By:	11-1	Kn	a last been	Samples Received	By: Alli	a Tuol	W
Date: 27	eb17	Time:	1906	Temp:0,0	Date: 28 Jub 17	- 17	Time: \$ 00	Temp: 3,80
Samples Relind	quished into:	Eridge	Log in Car	t Other:		-		
Samples Relind	quished By:				Samples Received	By:		
Date:	-	Time:		Temp:	Date:		Time:	Temp:
Delivery:	Samplers	Other:			Seal Number(s) - If	Used		
Transport:	Ambient «	ace .		Other:	Seals Intact?	Yes	No	

CCR 2017
[make sees]
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	2.22	7.7	
WELL11	Α	127.22	4	1104.00	Other Pump	Yes	3,000	No	1,3
WELL12	Α	112.40	4	1071.89	Other Pump	Yes	36,000	No	1,3
S1	В	32.50	2	1102.17	Bailer	Yes	20,000	No	1,3
S2	В	43.12	2	1102.39	Bailer		N/A	Yes	1,3
S3	B	62.50	2	1102.65	Bailer	Yes	N/A	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		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	Bailer	Yes	100	Yes	1,3
H2OX	C, CCR	32.20	2	1103.91	Keck/Tsunami	No	1500	No	1,3
H2INT	C	62.30	2	1103.91	Bladder	Yes	100	Yes	1,3
НЗОХ	C, CCR	22.55	2	1095,19	Bailer	Yes	N/A	Yes	1,3
H3INT	C	54.31	2	1095.19	Bladder	Yes	100	Yes	1,3
H4OX	C, CCR	27.20	2		Whale	No	2000	No	1,3
H4INT	C	80.01	2	1108.22 1108.61	Bladder	Yes	100	No	1,3
H5	C	43.30	2	1122.80	Keck/Tsunami	No	2000	Yes	1,3
-H6	C, CCR	15.00	2		Whale	No	1000	No	1,3
H7	C	33.20	2	1097.76	Bladder	Yes	100	Yes	1,3
H8	C, CCR	22.05	2	1106.06 1081.23	Whale	No	1000	Yes	1,3
H9	CCR	30.20	2		Bladder	Yes	100	TBD	1,3
BC1	В	16.26	2	1086.21	Bladder	Yes	100	TBD	
BC101	В	39.30	2	1118.46	Bailer	Yes	N/A	No	1,3
BC2R	В	32.48		1118.70	Bailer	Yes	N/A	Yes	1,3
BC3R	В	35.15	2	1115.28	Bailer	Yes	N/A	No	1,3
BC4R	В			1114.42	Baller	Yes	N/A	Yes	1,3
BC5R	В	34.60 37.32	2	1113.86	Bailer	Yes	N/A	Yes	1,3
BC6R	В	33.95	2	1123.02	Bailer	Yes	N/A	No	1,3
SLAG1	CCR	34.90	2	1121.58	Bailer	Yes	N/A	No	1,3
44.00	OOK	34.90	2	TBD	LOW FLOW	No	100	TBD	1,3

SLAG2	CCR	TBD	2	1111.06	LOW FLOW	TED	100	TED	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	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	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 No-e 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

Chromlum - 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-E 500 Hz 504 500 HNOZ

100 ovor 500 Hrsoy 500 Hvoz Filter

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

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

Minnesota Valley Testing Laboratories, Inc.

	lm, MN 560	07:	*	507 354 8	3517	9.			
Grou	ndwater	Assessm	eni		Site:	Otte	er Tail P	Power Co./ Big St	
200,000,000	ing Personi		4.4		Facility ID:		ZI TEAN I	ower con big or	
Janipi	Dusty	6/-				27Feb17	_		
_	24714	1969540			Unique Station ID: —				
			_		Sample ID		- 0	Slag 1	
			_		Odnipie ib			nag i	
Well C	Condition								
Well Lo	ocked?	TES No			Protective	Posts? MES	>	No	
	abeled?	YES No			State ID T			SW	
	Straight?	cres No			Grout Sea			CNO	
	s Necessar		_						
Well Donstro Constro Casing Water I	ucted Depti Diameter: Level Befor	35.14 h: 34.90 2" e Purge: 10			Static Wat Previous S Water Lev	el After Sampl		0,35	
Well Vo		3.00	Gallons	-	Measurem \	ent Method:	Elec.	Steel Ta	
	ling Inform or Condition		30	Wind:	LAV	Sky:	Most	Au Claudy	
	ng Method:		Brander Sart	Disp. Bailer	Whate	Grab Other		7	
		erYes (No	,		Pumping R			gpm	
	rged Dry?				Time Pum		31	affe / pr	
	urged Dry?				Time of Sa		18	€Bn / pr	
	te Sample?		ID: -	_	Sample El-			-/	
	Appearance		Clear	Color: N	bye Pha		ed.	Odor: None	
Citipio	, productive	e, Jones an	LACIE			, pr. 7			
0		Specific	Temp	D. O.	Turbidity	Gallons	SEQ		
ime	pH	Cond.	°C	mg/L	NTU	Removed	#	Comments:	
643	7.03	1990	9.47	NA	AVA.	3,00	1	153111111111111111111111111111111111111	
	1	1111	1.17	1	1		2		
	-	-	-	1	-		-		

Stabilize Yes Comments:

Exceptions to Protocol:

710

Slow

Amount Water Removed:

Pechange

3,00

3.00

4

Lecholze

Gallons

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

Groundy	vater Assess	sment			Site:	Ot	ter Tai	Power Co./ Big Stone
Sampling F	ersonnel:				Facility I	ID: —		
	145/4 Faragy	0			Date:	275261	7	
			3		Unique	Station ID	_	
			_		Sample	ID:		Slag 4
Well Cond	dition							
Well Locke	d?	YES No			Protectiv	ve Posts?	5	No
Well Labele	ed?	YES No			State ID	Tag? Ye	S	AND SAP
Casing Stra	ight?	des No	1		Grout Se	eal Intact?Ye	s	2PD
Repairs Ne	cessary:				2-14-			
Well Infor	mation				10.00			
Well Depth:	39.2	4			Well Cas	sing Elevation	n:	MA
Constructed		39.00	_			ater Elevatio		
Casing Diar		2"			Previous	Static:		1
	Before Purge:	18.97	7		Water Level After Sam 2113 Measurement Method: Feet. With Steel Tape			
Well Volume	e: 3.3		Gallon	IS				
					1			
Sampling	Information							
Weather Co		Temp: 30	7	Wind	: HU	Sky	1: N	with Clarky
Sampling M	7	Grundfos	Bledder	Solsp. E	3:Whale	Grab Oth		1
Dedicated E		Yes 🐠			Pumping			gpm
Well Purgeo		Yes 🚱				mp Begai	1110	@pr/pm
Time Purge		-	70				1152	
Duplicate Sa		Yes Mo	ID:	_	Sample I	E 142	2	
Sample App		General: 5	6 Clarols	Color	Akse Pha			Odor: None
			1					
00	No.	Specific	Temp	D. O.	Turbidity	Gallons	SE	1 mg 1 mg
Time Time	pH	Cond.	°C	mg/L	NTU	Removed	Q#	Comments:
1124	6.62	2794	243	NA	M	3.5	1	
1139	6,65	2836	8.13	1	1	7	2	
1152	6.64	RUA	7.93			10.5	3	
	18.7					1000	4	
	1000	7		L	1		5	
Stabilized?	//es	No		Amou	nt Water F	10,5		Gallons
						-		

Minnesota Valley Testing Laboratories, Inc. New Ulm, MN 560 507 354 8517

0	ndwate	r Assessm	er		Site:	Otte	r Tail P	ower Co./ Big	Ston	
Sampl	ing Person	nn			Facility ID:					
10000	Ben				Date: 27 76617					
		***************************************	_		Unique Station ID:					
					Sample ID		S	lag 5		
Well (Condition	1	-						=	
Well Lo	ocked?	(Yes No			Protective	Posts? (Yes)	D.	No		
Well La	abeled?	Yes No	E.A.		State ID To	ag? Yes		NO		
Casing	Straight?	(es) No			Grout Sea	Intact? Yes		NO		
	s Necessa									
Well I	nformati	on								
Well D	epth:	39.00			Well Casin	g Elevation:	110	7.30		
	ucted Dep		-			er Elevation:	1083.	89	-	
	Diameter		_		Previous S				_	
	Level Befo		341			el After Sample		74	-	
Well Vo		2.54	Gallons		Measurement Method: Elec. WU Steel Tap					
33,200		1		_	I	2112012112				
Sampl	ling Info		10	Wind: _S	0,570	Slave	Clou	,dv		
Weathe			10	vallia.		Oky.	0.0	4007		
Samplin	ng Method	Grundfos	Bladder SS/T	Disp. Bailer	Whale	Grab Other		40.7		
Samplin Dedicat	ng Method ted Equipr	: Grundfos			Pumping R	Grab Other		gpm	-	
Samplii Dedicat Well Pu	ng Method ted Equipr urged Dry?	ryes (No)			Whale	Grab Other		,	(m)	
Samplii Dedicat Well Pu Time P	ng Method ted Equipr urged Dry? urged Dry	ryes (No)			Pumping R Time Pump Time of Sa	Grab Other late: 25 Began: 13 mpling: 141	59	gpm am /	(m) pm	
Samplin Dedicat Well Pu Time Pi Duplica	ng Method ted Equipr urged Dry? urged Dry' te Sample	Grundfos m Yes (No) P (res) No P 1416 EYes (No)	Bladder SS/T	Disp. Bailer	Pumping R Time Pump Time of Sa Sample EH	Grab Other late: 25 Began: 13 mpling: 141	59	gpm am /		
Samplin Dedicat Well Pu Time Pi Duplica	ng Method ted Equipr urged Dry? urged Dry' te Sample	ryes (No)	Bladder SS/T	Disp. Bailer	Pumping R Time Pump Time of Sa Sample EH	Grab Other late: 25 Began: 13 mpling: 141	59	gpm am /	pm	
Samplii Dedicat Well Pu Time Pi Duplica Sample	ng Method ted Equipr urged Dry? urged Dry' te Sample	Grundfos n Yes (No) (Yes) No 7 1416 Yes (No) n General: C	Bladder SS/T	Disp. Bailer Color: M	Pumping R Time Pump Time of Sa Sample El-	Grab Other late: 2.5 Began: 1.3 mpling: 141 ls 116.4 se: NOTA	59 5	gpm am / am /	pm	
Samplii Dedicat Well Pu Time Pi Duplica Sample	ng Method ted Equipr urged Dry? urged Dry te Sample Appearar	Grundfos n Yes (No) P (res) No 7 1416 GYes (No) n General: C	Bladder SS/T	Disp. Bailer Color: D. O.	Pumping R Time Pump Time of Sa Sample EH	Grab Other late: , 2_5 Began: 13 mpling: 141 ls: 116.6 se: NOTE	59 5	gpm am / am /	pm	
Sampling Dedicate Well Pural Time Pupilicate Sample Time	ng Method ted Equipr urged Dry? urged Dry te Sample Appearar	Grundfos n Yes (No) P (res) No 7 1416 Yes (No) n General: C	Bladder SS/T	Color: M	Pumping R Time Pump Time of Sa Sample EF Pha Turbidity NTU	Grab Other late: , 2 5 5 Began: 13 mpling: 141 li 116.6 se: NOTE	59 5 SEQ #	gpm am / am /	pm	
Sampling Dedicated Well Purime Propulical Sample Time	ng Method ted Equipr urged Dry? urged Dry te Sample Appearar	Grundfos n Yes (No) (Yes) No 7 1416 Yes (No) n General: C	ID:	Disp. Bailer Color: D. O.	Pumping R Time Pump Time of Sa Sample EH	Grab Other late: , 2_5 Began: 13 mpling: 141 ls: 116.6 se: NOTE	59 5 SEQ #	gpm am / am / Odor: No	pm	
Sampling Dedicate Well Pural Time Pupilicate Sample Time	ng Method fed Equiprourged Dry? urged Dry? urged Dry? te Sample Appearar	Grundfos n Yes (No) P (res) No 7 1416 Yes (No) n General: C	Bladder SS/T	Color: M	Pumping R Time Pump Time of Sa Sample EF Pha Turbidity NTU	Grab Other late: , 2 5 5 Began: 13 mpling: 141 li 116.6 se: NOTE	59 5 SEQ #	gpm am / am /	pm	
Sampling Dedicated Well Purime Propulical Sample Time	ng Method ted Equipr urged Dry? urged Dry te Sample Appearar	Grundfos n Yes (No) (Yes) No 7 1416 Yes (No) n General: C	ID:	Color: M	Pumping R Time Pump Time of Sa Sample EF Pha Turbidity NTU	Grab Other late: , 2 5 5 Began: 13 mpling: 141 li 116.6 se: NOTE	59 5 SEQ # 1 2	gpm am / am / Odor: No	pm	
Sampling Dedicated Well Purime Propulical Sample Time	ng Method ted Equipr urged Dry? urged Dry te Sample Appearar	Grundfos n Yes (No) (Yes) No 7 1416 Yes (No) n General: C	ID:	Color: M	Pumping R Time Pump Time of Sa Sample EF Pha Turbidity NTU	Grab Other late: , 2 5 5 Began: 13 mpling: 141 li 116.6 se: NOTE	59 5 SEQ # 1 2 3	gpm am / am / Odor: No	pm	
Sampling Dedicated Well Purime Propulical Sample Time	ng Method ted Equipr urged Dry? urged Dry te Sample Appearan	Grundfos n Yes (No) (Yes) No 7 1416 Yes (No) n General: C	ID:	Color: Management of the color	Pumping R Time Pump Time of Sa Sample EF Pha Turbidity NTU	Grab Other late: 2.5 Began: 1.3 mpling: 141 ls 116.4 se: NOTE	59 5 SEQ # 1 2	gpm am / am / Odor: No	pm	

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

New	Ulm.	MN	56073

	Groundwater Assessment				Site: Otter Tail Power Co./ Big Sto				
Samplin	ng Personnel;				Facility ID: —				
	Dusty Jas	1941			Date: 27Feb17				
	1	1			Unique S	tation ID: -	_		
					Sample ID: Slag 6				
Well C	ondition	1000							
Well Lo	cked?	(es No			Protective	Posts?	es	No	
Well La	beled?	Ves No			State ID T		es	No	
Casing	Straight?	3		Grout Sea	al Intact? Y	es	(ND)		
Repairs	Necessary:								
Well In	formation	0.75			100			110	
Well De		750	-			ng Elevation:		NA.	
Constru	cted Depth:	37.30	20		Static Wa	ter Elevation		11	
	Diameter:	2"			Previous !			1	
Nater L	evel Before Pu	irge: 236	-	7	Level After Samp 29.30				
	lume.	24	Gallons		Measuren	Will Steel Tape			
well Vo.	luffic.	0	Janons		Measuren	Henri Metrica.	4100.	VYET OLECT TAPE	
Well Vol	iume.		Gallons		\	nent Metroa.	4160.	VVEI OLEEF Tape	
	ng Informati		Gallons		T	ient wethou.	tiec.		
Sampli		on	30	Wind:	LHV		cy:	Mostly Cloudy	
Sampli Neather	ng Informati	on		Wind: Disp. Bailer	L+V Whale	SI Grab Ot			
Sampli Weather	ng Informati	on Temp:	30	} ·	LHV	SI Grab Ot	cy:		
Sampli Weather Sampling Dedicate	ing Informati r Conditions: g Method:	on Temp:	30	} ·	L+V Whale	SI Grab Ot Rate: O.	cy:	Mostly Cloudy	
Sampli Weather Sampling Dedicate Well Pur	ing Informati Conditions: g Method: ed Equipment:	on Temp: Grundfos Yes (No)	30	} ·	Whale Pumping I	Si Grab Ot Rate: O C	(y: her:	Mostly Cloudy	
Sampli Veather Sampling Dedicate Vell Pur Time Pu	ing Informati Conditions: g Method: ed Equipment: rged Dry?	On Temp: Grundfos Yes (No)	Radder Sign	} ·	Whale Pumping I	Sl Grab Ot Rate: O C up Began: ampling: J	(y: her: 1212	Mostly Cloudy gpm am / @pp am / pm	
Sampling Weather Sampling Dedicate Well Pur Fime Pu Duplicate	ing Informati r Conditions: g Method: ed Equipment: rged Dry? rged Dry?	on Temp: Grundfos Yes (No) Yes No	Radder Sign	} ·	Whale Pumping I Time Pum Time of Sa Sample El	Sigrab Ot Rate: O : 1 p Began: ampling: 1	(y: her: 1212	Mostly Cloudy gpm am 1000	
Sampling Weather Sampling Dedicate Well Pur Fime Pu Duplicate	ing Information Conditions: g Method: ed Equipment: rged Dry? rged Dry? e Sample?	on Temp: Grundfos Yes No 122 \ Yes No General:	Bladder Séri	Disp. Bailer	Whale Pumping I Time Pum Time of Sa Sample El	SI Grab Ot Rate: O S ip Began: ampling: J	(y: her: 1212	Mostly Cloudy gpm am / @pp am / pm	
Sampling Weather Sampling Dedicate Vell Pur Fime Pu Duplicate Sample	ing Information Conditions: g Method: ed Equipment: rged Dry? rged Dry? e Sample?	on Temp: Grundfos Yes (No) Yes (No) 22 Yes (No)	ID: — Cloudy Temp	Disp. Bailer Color: Jaw	Whale Pumping I Time Pum Time of Sa Sample El	SI Grab Ot Rate: O : 2 pp Began: ampling: J H: 17/, O se: Nave	ky: her: 1212 225	Mostly Cloudy gpm am / @pp am / pm	
Sampling Meather Sampling Dedicate Vell Pur Time Pur Duplicate Sample	ing Information Conditions: g Method: ed Equipment: rged Dry? rged Dry? e Sample? Appearance:	on Temp: Grundfos Yes No 1221 Yes No General:	ID: — Cloudy Temp	Disp. Bailer Color: Jan D. O.	Whale Pumping I Time Pum Time of Sa Sample El Pha	Grab Ot Rate: O : In Began: ampling: In Sec. Vare	(y: her: 1212 225	Mostly Cloudy gpm am / gpp am / gpp	
Sampling Weather Sampling Dedicate Well Pur Time Pu Duplicate Sample	ing Information Conditions: g Method: ed Equipment: rged Dry? rged Dry? e Sample? Appearance:	on Temp: Grundfos Yes No Yes No Yes No General: Specific Cond.	Bladder Séri	Disp. Bailer Color: Jew D. O. mg/L	Whale Pumping I Time Pum Time of Sa Sample El Pha Turbidity NTU	Sl Grab Ot Rate: O : In p Began: ampling: J H: 17/ On se: Nave	(y: her: 1212 229 SEQ #	Mostly Cloudy gpm am / @@ am / @@ Odor: Nave	
Sampling Weather Sampling Dedicate Well Pur Time Pu Duplicate Sample	ing Information Conditions: g Method: ed Equipment: rged Dry? rged Dry? e Sample? Appearance:	on Temp: Grundfos Yes No Yes No Yes No General: Specific Cond.	ID: — Cloudy Temp	Disp. Bailer Color: Jew D. O. mg/L	Whale Pumping I Time Pum Time of Sa Sample El Pha Turbidity NTU	Sl Grab Ot Rate: O : In p Began: ampling: J H: 17/ On se: Nave	(y: her: 1212 224 SEQ #	Mostly Cloudy gpm am / @@ am / @@ Odor: Nave	
Sampling Weather Sampling Dedicate Well Pur Time Pu Duplicate Sample	ing Information Conditions: g Method: ed Equipment: rged Dry? rged Dry? e Sample? Appearance:	Temp: Grundfos Yes (No) Yes (No) General: Specific Cond.	ID: — Cloudy Temp	Disp. Bailer Color: Jew D. O. mg/L	Whale Pumping I Time Pum Time of Sa Sample El Pha Turbidity NTU	Sl Grab Ot Rate: O : In p Began: ampling: J H: 17/ On se: Nave	(y: her: 1212 225 SEQ #	Mostly Cloudy gpm am / @@ am / @@ Odor: Nave	
Sampling Weather Sampling Dedicate Well Pur Fime Pu Duplicate	ing Information Conditions: g Method: ed Equipment: rged Dry? rged Dry? e Sample? Appearance:	on Temp: Grundfos Yes No Yes No Yes No General: Specific Cond.	ID: — Cloudy Temp	Disp. Bailer Color: Jew D. O. mg/L	Whale Pumping I Time Pum Time of Sa Sample El Pha Turbidity NTU	Sl Grab Ot Rate: O : In p Began: ampling: J H: 17/ On se: Nave	(y: her:)3 1212 225 SEQ # 1 2 3	Mostly Cloudy gpm am / gpp am / gpp	

Exceptions to Protocol:

of good recharge

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

New	1 lim	MAM	560	7:
New	Omn,	IVIIN	SOU	12

	dwater A	Assessme	nt	Site: Otter Tail Power Co./ Big Stone				
Sampling	Personne	el:			Facility ID:			
	Dusty	10095-1N			Date: 27Feb17			
	1	1			Unique St			
			=		Sample II):	Slag 7	
Well Co	ndition	100			1-1(1	L. J. Charle		
Nell Loc		Yes No				Posts?		
Vell Lab		YES No			State ID T			
Casing S		Yes No		Grout Sea	Intact? Yes	(C)		
	Vecessary							
Vell Inf	ormation	1 + 1 - 1					20.7	
Nell Dep	th:	49.05			Well Casin	ng Elevation:	NA	
Construc	ted Depth:	48.70			Static Wat	ter Elevation:		
Casing D	iameter:	2"			Previous S	Static:	L	
Vater Le	vel Before	Purge: 13	88		Water Level After Sampl 42.08 Measurement Method: DEC MESteel Tape			
Vell Volu	ime:	5674	Gallons					
					1			
Samplin	g Inform	ation					7.0	
	Conditions		30	Wind:	Low	Sky	Mostly Cloudy	
			Bledder SSVT	Disp. Bailer	- Var-7			
ampling	weinou.	Grunatos			Whale	Grab Other	0	
		Grundfos nt Yes	Deducer 55/1	Disp. Dalle)	Whale Pumping F	Grab Othe		
edicated	d Equipme	ntYes 🕼	- Diadel Syll	Disp. Baller	Pumping F	Rate: 0.79	gpm	
edicated Vell Purg	d Equipme jed Dry?		- Status Syst	Disp. Dalle)	Pumping F Time Pum	Rate: 0.79 p Began 12	gpm 如 am / 麻噌	
edicated Vell Purg ime Purg	d Equipme ged Dry? ged Dry?	ntYes 66 YES No	ID:	Disp. Daller	Pumping F Time Pum Time of Sa	Rate: 0.79 p Began 129 ampling: 13	f gpm 例 am / p団 log am / 例	
edicated Vell Purg ime Purg uplicate	d Equipme ged Dry? ged Dry? Sample?	nt Yes 00 Yes No Yes 00	_ _ _ 	_	Pumping F Time Pum Time of Sa Sample El	Rate: 0.79 p Began 129 ampling: 13 H: 171,0	が gpm 例 am / pm で am / pm	
Dedicated Vell Purg ime Purg Duplicate	d Equipme ged Dry? ged Dry? Sample?	ntYes 66 YES No		_	Pumping F Time Pum Time of Sa Sample El	Rate: 0.79 p Began 129 ampling: 13	f gpm 例 am / p成 log am / 例	
Vell Purg ime Purç Duplicate	d Equipme ged Dry? ged Dry? Sample?	nt Yes 00 Yes No Yes 00	_ _ _ 	_	Pumping F Time Pum Time of Sa Sample El	Rate: 0.79 p Began 129 ampling: 13 H: 171,0	gpm y am / pm eg am / pm Odor: Alexe	
Dedicated Vell Purg ime Purg Duplicate	d Equipme ged Dry? ged Dry? Sample?	nt Yes 00 Yes No Yes 00	ID: -	_	Pumping F Time Pum Time of Sa Sample El	Rate: 0.79 p Began 129 ampling: 13 H: 171,0	gpm y am / pm eg am / pm Odor: Alexe	
Dedicated Vell Purg ime Purg Duplicate	d Equipme ged Dry? ged Dry? Sample?	nt Yes 00 Yes No Yes 00	ID: -	_	Pumping F Time Pum Time of Sa Sample El	Rate: 0.79 p Began 129 ampling: 13 H: 171,0	gpm y) am / pm og am / pm Odor: Alexe S E Q	
vell Purgime Purgiuplicate ample A	d Equipme ged Dry? ged Dry? Sample?	ntYes % No	ID: 51. Claudy Temp	Color: Ja	Pumping F Time Pum Time of Sa Sample El Pha	Rate: 0.79 p Began 129 ampling: 13 d: 171.0 se: Name	gpm y) am / pm og am / pm Odor: / leve	
dedicated Vell Purgime Purguplicate ample A	d Equipme ged Dry? ged Dry? Sample? ppearance	ntYes No No Yes No Yes General:	ID: -	Color: Ja	Pumping F Time Pum Time of Sa Sample El- Pha	Rate: 0.79 p Began 129 ampling: 13 H: 171.0 se: Ware Gallons Removed	gpm If am / pm Odor: Alexe S E Q # Comments:	
Dedicated Vell Purg Time Purg Duplicate Eample A	d Equipme ged Dry? ged Dry? Sample? ppearance	ntYes No 150-1 Yes No 2: General: Specific Cond.	ID: 51. Claudy Temp	Color: Ja	Pumping F Time Pum Time of Sa Sample El- Pha Turbidity NTU	Rate: 0.79 p Began 129 ampling: 13 H: 171.0 se: Nove	gpm am / pm am / pm og am / oh Odor: Alexe S E Q # Comments: 1 2	
Dedicated Vell Purg Time Purg Duplicate Eample A	d Equipme ged Dry? ged Dry? Sample? ppearance	ntYes No 150-1 Yes No 2: General: Specific Cond.	ID: 51. Claudy Temp	Color: Ja	Pumping F Time Pum Time of Sa Sample El- Pha Turbidity NTU	Rate: 0.79 p Began 129 ampling: 13 H: 171.0 se: Ware Gallons Removed	gpm M am / pm G am / pm Odor: Alexe S E Q # Comments:	
Dedicated Vell Purg Time Purg Duplicate Eample A	d Equipme ged Dry? ged Dry? Sample? ppearance	ritYes 66 No 1904 Yes 66 General: Specific Cond.	Temp	Color: Ja	Pumping F Time Pum Time of Sa Sample El- Pha Turbidity NTU	Rate: 0.79 p Began 129 ampling: 13 H: 171.0 se: Ware Gallons Removed	gpm am / pm am / pm Odor: Alexe S E Q # Comments: 1 2 3	
dedicated Vell Purgime Purguplicate ample A	d Equipme ged Dry? ged Dry? Sample? ppearance	ntYes No 150-1 Yes No 2: General: Specific Cond.	ID: 51. Claudy Temp	Color: Ja	Pumping F Time Pum Time of Sa Sample El- Pha Turbidity NTU	Rate: 0.79 p Began 129 ampling: 13 H: 171.0 se: Ware Gallons Removed	gpm am / pm am / pm of am / pm o	

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

Groundwater Assessment		Site:	Otte	r Tail F	Power Co./ Big Stone
Sampling Personnel:		Facility ID	: -		
Dusty Factoria		Date:	27Febl	7	
- 6-a 1-4-a 1-1-		Unique St	ation IE -		
		Sample II			Slag 8
Well Condition					
Well Locked? YES No		Protective	Posts? Yes	6	No
Well Labeled? YES, No		State ID T			AND>
Casing Straight? Les No			Intact res)	No
Repairs Necessary:					
Well Information					
Well Depth: 52.24		Well Casir	ng Elevation:		M
Constructed Depth: 52.09			er Elevation		1
Casing Diameter: 2"		Previous S	Static:		1
Water Level Before Purge: 17.55			el After Sam	IK S	29.95
Well Volume: 5.66 Gallons			ent Method:		
		1		-	
Sampling Information					
Weather Conditions: Temp: 30	Wind: Ld	W	Sky:	M	city dady
Sampling Method: Grundfos Bladder'S		Whale	Grab Other:		1
Dedicated Equipmen Yes AND		Pumping F	Rate: O	25	gpm
Well Purged Dry? Yes No		Time Pum		314	am / 💬
Time Purged Dry?		Time of Sa		25	am / 🕅
Duplicate Sample? Yes No ID: -	_	Sample El-			
Sample Appearance; General: (leaf	Color: Na		se: Nare		Odor: Nane
Specific Temp	D. O.	Turbidity	Gallons	SEQ	
Time pH Cond. °C	mg/L	NTU	Removed	#	Comments:
1339 7.12 1351 9.46	NA	NA	5.75	1	
		1	11.5	2	
1902 7.07 1352 9.40			17.25	3	
1177 1175			May	4	-
	L		177	5	
Stabilized? (Yes) No	Amount Wa	ater Remove	d: 17,25	-	Gallons
Comments:	THIOGHT TVE	aco, recinove	1/10		Canona

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

New	Ulm	MN	56073
1 4 5 44	OH 11.	10111	00010

Groundwater Ass	sessmer	nt		Site:	Site: Otter Tail Power Co./ Big Stone			
Sampling Personnel:				Facility ID:				
	145yn			Date: 27/2617				
- 247	111	_		Unique S	ation ID: -	_		
		=		Sample ID: Slag 9				
Well Condition						_		
Well Locked?	Yes No			Protective	Posts? (Yes	>	No	
Well Labeled?	res No			State ID 7		_	449	
Casing Straight?			I Intact? Yes		ATO			
Repairs Necessary:								
Well Information								
Well Depth: 3	7.25			Well Casi	ng Elevation:		MA	
Constructed Depth:	49.80	_			ter Elevation:			
Casing Diameter:	2"	=		Previous 8	Static:		1	
Water Level Before Pu	urge: 14	113		Water Level After Sample 23.10				
	89	Gallons			Measurement Method: Elec. W Steel Tape			
				1		-		
Sampling Informat	ion							
Weather Conditions:		30	Wind:	LOV	Şky:	1	Mostly Cloudy	
	Grundfos	Bjadder Saf	T Disp. Baile	r Whale	Grab Other		1	
Dedicated Equipment:	Yes OR			Pumping I	Rate: 0.25	-	gpm	
	Yes Old	3		Time Pump Began 1447 am / OR				
Time Purged Dry?		-		Time of Sa		59	am / OFF	
Duplicate Sample?	Yes of	ID: -	-		Sample EH: NO+4			
Sample Appearance:		61095	Color:	None Pha			Odor: Nove	
20					1	S		
Ry		-	1.5	10000		E		
4.55	Specific	Temp	D. O.	Turbidity	Gallons	Q		
	Cond.	°C	mg/L	NTU	Removed	#	Comments:	
1511 6.79	2318	9.67	NA	NA	6	1		
1535 6.79	2344	9.44		j	12	2		
1559 6280	2220	9.30			13	3		
			2 24 77			4		
			1	1		5		
Stabilized (Yes)	Vo-		Amount V	Nater-Remove	d:18		Gallons	
comments:			-					

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

Groundwater A		Site:	Otte	er Ta	ail Power Co./ Big Stone			
Sampling Personn	€ .			Facility ID:				
Bes	WOH	=		Date: 2	1 Feb 17			
0		_		Unique St				
		_		Sample ID: Slag 2B				
Well Condition								
Well Locked?	Yes No)		Protective	Posts? Yes		No	
Well Labeled?	No No	70		State ID T	ag? Yes		No	
Casing Straight?	Yes/ No			Grout Sea	Intact? Yes		NO.	
Repairs Necessary	2-1-2-1							
Nell Information				The same			75 a 47 Tu	
Well Depth:	40.94	1		Well Casin	ng Elevation:		1111.26	
Constructed Depth:					ter Elevation:	10	292.88	
Casing Diameter:	2"	Serie Vale			Static: 109			
Nater Level Before	Purge /	8.38			el After Samp			
	.68	Gallons		Measurem	ent Method:	E	ec. Will Steel Tape	
			_	1		_		
Sampling Inform Weather Conditions Sampling Method:	Temp: (16 Bladder SS/T		Ø 5-10	Sky:		loudy	
Dedicated Equipme		Diagon Con	Diop. Dunot	Pumping F		_	gpm	
Vell Purged Dry?		_		Time Pum		43		
ime Purged Dry?				Time of Sa		150	am /(pm)	
Ouplicate Sample?		ID: ~	_	Sample El	1: 113.0			
Sample Appearanc			y Color: or	a√ Pha	se: Light S	ed	Odor: NO12	
		1.1.100	1 0	-	0		70.	
15						S		
100.00	Cassifia	Temp	0	Touchtalte:	Callana	E		
	Specific	oC C	D. O.	Turbidity	Gallons	Q	0	
	Cond.	10.28	mg/L	NTU	Removed	#	Comments:	
1445 7.02	2113		NA	NA	3.75	1	Λ	
450 7.10	2124	9,97	1		-	2	Recharge	
		-	1 1	1	1	3		
				-		4		
	-		1			5		
tabilizec Yes [10)		Amount-W	ater Remove	d: 3.75		Gallons	
comments:								

* Slow recharge



PAUL VUKONICH

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.mytl.com



Page:

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FINAL REPORT COMPLETION DATE: 1 May 17 45

Date Reported: 4 May 2017

Work Order #: 31-0123 Account #: 006106

PO #: 48680

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

Project Name: BIG STONE PLANT

Field Service Manager/Date Reviewed 10 May 2017 Manager/Date Reviewed

10 May 2017 Quality Assurance Director/Date (Reviewed

RL = Reporting Limits

NQ = Not Present, Qualitative Only

PQ = Present, Qualitative Only

ND = Not Determined



1126 North Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890
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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: SLAG 4

Report Date: 4 May 2017 Lab Number: 17-A11091 Work Order #: 31-0123 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 29 Mar 2017 13:44
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	6.54	units	1.00	1-1586-85	29 Mar 17 13:44	JLH
PH	* 6.8	units	1.0	SM 4500 H+ B-2000	31 Mar 17 11:52	DS
Sulfate	1400 ~	mg/L	5.0	ASTM D516-07	6 Apr 17 8:56	KCJ
Chloride	50.0	mg/L	3.0	SM 4500 C1 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	2640	mg/L	10	SM 2540 C-97	31 Mar 17 12:50	RC
Calcium	458.0 ~	mg/L	0.500	SW6010C	12 Apr 17 11:27	RMV
Lithium	0.195	mg/L	0.005	SW6010C	12 Apr 17 11:27	RMV
Barium	0.014	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	0.891	mg/L	0.100	SW6010C	12 Apr 17 11:27	RMV
Antimony	< 5 @	ug/L	0.5	SW6020A	5 Apr 17 11:37	RMV
Arsenic	< 5 0	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
4	@See Narr				M. (250) OG (075) A	
Cadmium	< 1 0	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	5.38 @	ug/L	0.50	SW6020A	10 Apr 17 9:52	RMV
Selenium	< 5 @	ug/L	0.5	SW6020A	5 Apr 17 11:37	RMV
Thallium	< 1 @	ug/L	0.1	SW6020A	5 Apr 17 11:37	RMV
Fluoride	0.180	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 (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 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-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

Sample Description: SLAG 5

Report Date: 4 May 2017 Lab Number: 17-A11092 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	6.97	units	1.00	I-1586-85	30 Mar 17 8:24	JLH
PH	* 7.1	units	1.0	SM 4500 H+ B-2000	31 Mar 17 11:52	DS
Sulfate	72.6 @	mg/L	5.0	ASTM D516-07	6 Apr 17 8:56	RCJ
Chloride	9.0	mg/L	3.0	SM 4500 C1 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	522	mg/L	10	SM 2540 C-97	31 Mar 17 12:50	RC
Calcium	116.0	mg/L	0.500	SW6010C	12 Apr 17 11:27	RMV
Lithium	0.026	mg/L	0.005	SW6010C	12 Apr 17 11:27	RMV
Barium	0.143	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	0.453	mg/L	0.100	SW6010C	12 Apr 17 11:27	RMV
Antimony	< 5 @	ug/L	0.5	SW6020A	5 Apr 17 11:37	RMV
Arsenic	< 5 0	ng/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					35.0
Cadmium	< 1 8	ug/L	0.1	SW6020A	5 Apr 17 11:37	RMV
Lead	< 5 @	ug/L	0.5	SW6020A	5 Apr 17 11:37	RMV
folybdenum	12.2 @	ug/L	0.50	SW6020A	10 Apr 17 9:52	RMV
Selenium	< 5 @	ug/L	0.5	SW6020A	5 Apr 17 11:37	RMV
Challium	< 1 0	ug/L	0.1	SW6020A	5 Apr 17 11:37	RMV
Fluoride	0.220	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.



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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: SLAG 6

Report Date: 4 May 2017 Lab Number: 17-A11093 Work Order #: 31-0123 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 29 Mar 2017 14:25
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		Martin and area	2 May 17 16:10	ABL
Radium 228	SEE ATTAC	HED		EPA M9320	2 May 17 16:10	ABL
pH, Field	6.89	units	1.00	I-1586-85	29 Mar 17 14:25	JLH
PH	* 7.1	units	1.0	SM 4500 H+ B-2000	31 Mar 17 11:52	DS
Sulfate	325 ~	mg/L	5.0	ASTM D516-07	6 Apr 17 8:56	KCJ
Chloride	7.2	mg/L	3.0	SM 4500 C1 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	1040	mg/L	10	SM 2540 C-97	31 Mar 17 12:50	RC
Calcium	183.0	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	0.039	mq/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	2.320	mq/L	0.100	SW6010C	12 Apr 17 11:27	RMV
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 Narra		100.114		20.000 20.000	
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
folybdenum	6.59 @	ug/L	0.50	SW6020A	10 Apr 17 9:52	RMV
Selenium	< 5 @	ug/L	0.5	SW6020A	5 Apr 17 11:37	RMV
Thallium	< 1 @	ug/L	0.1	SW6020A	5 Apr 17 11:37	RMV
Fluoride	0.660	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 (LLCQ). 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: SLAG 7

Report Date: 4 May 2017 Lab Number: 17-A11094 Work Order #: 31-0123 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 29 Mar 2017 15:25
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 16:11	ABL
Radium 228	SEE ATTAC	HED		EPA M9320	2 May 17 16:11	ABL
pH, Field	6.98	units	1.00	I-1586-85	29 Mar 17 15:25	JLH
pH	* 7.2	units	1.0	SM 4500 H+ B-2000	31 Mar 17 11:52	DS
Sulfate	522 ~	mg/L	5.0	ASTM D516-07	6 Apr 17 8:56	KCJ
Chloride	5.1	mg/L	3.0	SM 4500 C1 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	1210	mg/L	10	SM 2540 C-97	31 Mar 17 12:50	RC
Calcium	253.0	mg/L	0.500	SW6010C	12 Apr 17 11:27	RMV
Lithium	0.116	mg/L	0.005	SW6010C	12 Apr 17 11:27	RMV
Barium	0.028	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	1.350	mg/L	0.100	SW6010C	12 Apr 17 11:27	RMV
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					
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 6	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 0	ug/L	0.1	SW6020A	5 Apr 17 11:37	RMV
Fluoride	0.470	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 (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: SLAG 8

Report Date: 4 May 2017 Lab Number: 17-A11095 Work Order #: 31-0123 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 29 Mar 2017 16:48
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 16:11	ABL
Radium 228	SEE ATTAC	HED		EPA M9320	2 May 17 16:11	ABL
pH, Field	6.92	units	1,00	I-1586-85	29 Mar 17 16:48	JLH
pH	* 7.2	units	1.0	SM 4500 H+ B-2000	31 Mar 17 11:52	DS
Sulfate	250 0	mg/L	5.0	ASTM D516-07	6 Apr 17 8:56	KCJ
Chloride	37.7	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 12:21	RMB
Solids, Total Dissolved	885	mg/L	10	SM 2540 C-97	31 Mar 17 12:50	RC
Calcium	124.0	mg/L	0.500	SW6010C	12 Apr 17 11:27	RMV
Lithium	0.056	mg/L	0.005	SW6010C	12 Apr 17 11:27	RMV
Barium	0.037	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	0.598	mg/L	0.100	SW6010C	12 Apr 17 11:27	RMV
Antimony	< 5 8	ug/L	0.5	SW6020A	5 Apr 17 10:25	RMV
Arsenic	< 5 @	ug/L	0.5	SW6020A	5 Apr 17 10:25	RMV
Beryllium	< 0.5	ug/L	0.05	SW6020A	5 Apr 17 10:25	RMV
A STATE OF THE STA	@See Narr	ative				
Cadmium	< 1 @	ug/L	0.1	SW6020A	5 Apr 17 10:25	RMV
Lead	< 5 @	ug/L	0.5	SW6020A	5 Apr 17 10:25	RMV
Molybdenum	9.04 @	ug/L	0.50	SW6020A	10 Apr 17 8:40	RMV
Selenium	21.4 @	ug/L	0.50	SW6020A	5 Apr 17 10:25	RMV
Thallium	< 1 @	ug/L	0.1	SW6020A	5 Apr 17 10:25	RMV
Fluoride	0.580	mg/L	0.020	EPA 300.0	7 Apr 17 17:28	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.

RI = 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
1 - Due to sample quantity
CERTIFICATION: HR 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

Sample Description: SLAG 9

Report Date: 4 May 2017 Lab Number: 17-A11096 Work Order #: 31-0123 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 29 Mar 2017 18:19
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 16:11	ABL
Radium 228	SEE ATTAC	HED		EPA M9320	2 May 17 16:11	ABL
pH, Field	6.78	units	1.00	I-1586-85	29 Mar 17 18:19	JLH
pH	* 7.0	units	1.0	SM 4500 H+ B-2000	31 Mar 17 11:52	DS
Sulfate	824 ~	mg/L	5.0	ASTM D516-07	6 Apr 17 8:56	KCJ
Chloride	6.9	mg/L	3.0	SM 4500 C1 E	6 Apr 17 9:33	MRW
Mercury	< 0.005	uq/L	0.005	EPA 245.7	7 Apr 17 12:21	RMB
Solids, Total Dissolved	1670	mg/L	10	SM 2540 C-97	31 Mar 17 12:50	RC
Calcium	325.0	mg/L	0.500	SW6010C	12 Apr 17 11:27	RMV
Lithium	0.113	mg/L	0.005	SW6010C	12 Apr 17 11:27	RMV
Barium	0.026	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	0.251	mq/L	0.100	SW6010C	12 Apr 17 11:27	RMV
Antimony	< 5 @	ug/L	0.5	SW6020A	5 Apr 17 10:25	RMV
Arsenic	< 5 €	ug/L	0.5	SW6020A	5 Apr 17 10:25	RMV
Beryllium	< 0.5	ug/L	0.05	SW6020A	5 Apr 17 10:25	RMV
C0023333	@See Narr	ative				
Cadmium	< 1 @	ug/L	0.1	SW6020A	5 Apr 17 10:25	RMV
Lead	< 5 @	ug/L	0.5	SW6020A	5 Apr 17 10:25	RMV
Molybdenum	8.13 @	ug/L	0.50	SW6020A	10 Apr 17 8:40	RMV
Selenium	< 5 @	ug/L	0.5	SW6020A	5 Apr 17 10:25	RMV
Thallium	< 1 @	ug/L	0.1	SW6020A	5 Apr 17 10:25	RMV
Fluoride	0.250	mg/L	0.020	EPA 300.0	7 Apr 17 17:28	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: SLAG 2B

Report Date: 4 May 2017 Lab Number: 17-A11097 Work Order #: 31-0123 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 30 Mar 2017 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 16:11	ABL
Radium 228	SEE ATTAC			EPA M9320	2 May 17 16:12	ABL
	6.99	units	1.00	I-1586-85	30 Mar 17 8:56	JLH
pH, Field	* 7.2	units	1.0	SM 4500 H+ B-2000	31 Mar 17 11:52	DS
pH	815 ~	mg/L	5.0	ASTM D516-07	6 Apr 17 9:14	KCJ
Sulfate	33.2	mg/L	3.0	SM 4500 Cl E	6 Apr 17 9:56	MRW
Chloride	< 0.005	ug/L	0.005	EPA 245.7	7 Apr 17 12:21	RMB
Mercury	1510	mg/L	10	SM 2540 C-97	31 Mar 17 12:50	RC
Solids, Total Dissolved	249.0	mg/L	0.500	SW6010C	12 Apr 17 11:27	RMV
Calcium	0.040	mg/L	0.005	SW6010C	12 Apr 17 11:27	RMV
Lithium	0.052	mg/L	0.005	SW6010C	12 Apr 17 11:27	RMV
Barium	< 0.01	mg/L	0.01	SW6010C	12 Apr 17 11:27	RMV
Chromium			0.005	SW6010C	12 Apr 17 11:27	RMV
Cobalt	< 0.01 ^	mg/L	0.100	SW6010C	12 Apr 17 11:27	RMV
Boron	3.880	mg/L	0.5	SW6020A	5 Apr 17 10:25	RMV
Antimony	< 5 @	ug/L	0.5	SW6020A	5 Apr 17 10:25	RMV
Arsenic	< 5 @	ug/L	0.05	SW6020A	5 Apr 17 10:25	RMV
Beryllium	< 0.5	ug/L	0.03	SWOOZOA	5 Apr 11 10.20	
-T-10-10-10-10-10-10-10-10-10-10-10-10-10-	@See Narr		0.10	SW6020A	5 Apr 17 10:25	RMV
Cadmium	1.30 @	ug/L	0.10		5 Apr 17 10:25	RMV
Lead	< 5 @	ug/L	0.5	SW6020A		RMV
Molybdenum	5.24 @	ug/L	0.50	SW6020A	10 Apr 17 8:40 5 Apr 17 10:25	RMV
Selenium	< 5 @	ug/L	0.5	SW6020A		RMV
Thallium	< 1 @	ug/L	0.1	SW6020A	5 Apr 17 10:25	RC
Fluoride	< 0.1 @	mg/L	0.02	EPA 300.0	7 Apr 17 17:28	NC.

* 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.

CERTIFICATION: NN LAB # 027-015-125



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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.

MINNESOTA VALLEY TESTING LABORATORIES, INC.

MEMBER ACIL

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Quality Control Report Lab IDs: 17-A11085 to 17-A11097

ab IDs: 17-A11085 to 17-A11097 Project: BIG STONE PLANT CCR Work

Work Order: 201731-0123

Analyte	ICS Spike Amt	LCS Rec %	LCS Reck	TO PERSON THE PARTY OF THE PART	Matrix Spike D	Matrix Spike Origo Result	Matrix Spike Result	Matrix Spike Rec	Spike % Rec	Dup	MSD/, Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/: Dup RPD Limit (<)	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	9.490	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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Page: 2 of 5

Quality Control Report Lab IDs: 17-A11085 to 17-A11097

Project: BIG STONE PLANT CCR

Work Order: 201731-0123

Pan Inst 11-WI 1002 to 11-W	11021	111	Jeer Die	PLOM	STLANT CCI		AAMY	Jiuci. 2	01/21-01	43	300000		0-00 -			-	
naivie	LCS Spike Amt	LCS Rec %	LCS %- Rec Limits	Matrix Spike Amt	Matrix Spike	Matrix : Spike : Orig Result	Matrix Spike Result	Spike	Matrin Spike % Rec Limits	Dup -	MSD/ Dup Result	MSD Rec	MSD Dip RED	MSD/ Dup RED Limit (<)	Known Rec	ALL STREET, ST	Method Blank
Cadmium ug/L	5.00 5.00	100 100	85-115 85-115	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			1.0.5	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		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	< 0.005 < 0.005 < 0.005
Fluoride mg/L	1		:	0.20 0.20	17-A11094 17-A11967	0.470 0.170	0.660 0.400	95 115	75-125 75-125	0.660 0.400	0.670 0.400	100 115	1.5 0.0	10 10	97 99	90-110 90-110	< 0.02

MINNESOTA VALLEY TESTING LABORATORIES, INC.

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Page: 3 of 5

Quality Control Report Lab IDs: 17-A11085 to 17-A11097

o 17-Al 1097 Project: BIG STONE PLANT CCR Work Order: 201731-0123

Analyte	LCS Spike Amt	LCS Rec	EGS Rec Limits	Matrix Spike Amt	Matrix Spike	Matrii Spike - Orig Result	Matrix Spike Result	Matrix Spike Rec	Matrix Spike % Rec Limits	The Links and	MSD/ Dup Result	MSD Rec %	MSD Dup RPD	RPD	Rec	Known %:Rec Limits	Method Blank
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	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	1111			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	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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Page: 4 of 5

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	300	Matrix Spike ID:	Matrix Spike = Orig Result	Matrix Spike Result	Matrix Spike Rec	% Rec	the second secon	MSD/ Dup Résult	MSD Rec	MSD Dup RPD	MSD/ Dups RPD // Limit (<	Rec		Method Blank
pH units		Ç		:	¢	C	2	•		6.9 7.8	6.9 7.9	-	0.0 1.3	2.5 2.5	101 101	90-110 90-110	2
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	2	5	3			-			-	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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Page: 5 of 5

Quality Control Report

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

	DEG 20 PE 10 PE			April 1 Table 11 Tolday	Action for the first the f		the second secon			THE CALL PROPERTY OF THE PARTY							
	LCS	LCS	LCS 4	Matrix	Matrix	Matrix Spike	Matrix	Matrix Spike	Matrix Spike	MSD/- Dup	MSD/	MSD	MSD/	MSD/ Dup	Known	Known	
Analyte of Lamber	Spike Amt	Rec %	% Rec.	Spike Amt :	Spike ID	Orig Result	Spike Result	Rec	% Rec Limits	Orig Result	Dup	Rec-%	Dup RPD	RPD Limit (<)	Rec (%)	% Rec Limits	Method. Blank
Thallium ug/L	5.00 5.00	106 106	85-115 85-115	5.00 5.00 5.00	17A11094q 17A10930q 17A11097q	<1 <0.1 <1	5.44 4.33 5.36	109 87 107	75-125 75-125 75-125	4.33	5.18 4.64 5.05	104 93 101	4.9 6.9 6.0	10 10 10	102 103	90-110 90-110	<0.1 <0.1

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



Inter-Mountain Labs

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

Date: 5/1/2017

CLIENT:

MVTL Inc

CASE NARRATIVE

Project:

Ottertail Power Big Stone

Lab Order:

S1704052

Report ID: S1704052001

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 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.

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



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:

S1704052-007 ClientSample ID: Slag-4-A11091

COC:

WEB 31-0123

Date Reported

5/1/2017

Report ID

\$1704052001

WorkOrder:

S1704052

CollectionDate: 3/29/2017 1:44:00 PM

DateReceived:

4/5/2017 11:28:00 AM

FleldSampler: Matrix:

Water

Commante

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuciides - Total							
Radium 226	ND	pCI/L		1	SM 7500 Re-B	04/24/2017 1203	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	04/24/2017 1203	MB
Radlum 228	ND	pCI/L		2	Ga-Tech	04/23/2017 2254	MB
Radium 228 Precision (±)	NA	pCI/L			Ga-Tech	04/23/2017 2254	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: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 7 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:

S1704052-008 ClientSample ID: Slag-5-A11092

COC:

WEB 31-0123

Date Reported 5/1/2017

S1704052001

WorkOrder:

Report ID

S1704052

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

DateReceived:

4/5/2017 11:28:00 AM

FieldSampler:

Matrix:

Water

Commonto

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nlt
Radionuclides - Total							
Radlum 226	ND	pCI/L		1	SM 7500 Ra-B	04/24/2017 1203	MB
Radium 226 Precision (±)	NA	pCl/L			SM 7500 Ra-B	04/24/2017 1203	MB
Radium 228	5.3	pCI/L		2	Ga-Tech	04/24/2017 158	MB
Radium 228 Precision (±)	2.5	pCVL			Ga-Tech	04/24/2017 158	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 Gliette 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 8 of 13



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: ClientSample ID:

\$1704052-009 Slag-6-A11093

COC:

WEB 31-0123

Date Reported

5/1/2017

Report ID

\$1704052001

WorkOrder:

S1704052

CollectionDate: 3/29/2017 2:25:00 PM

DateReceived:

4/5/2017 11:28:00 AM

FieldSampler:

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuciides - Total						1277.3	
Radium 226	ND	pCI/L		1	SM 7500 Ra-B	04/24/2017 1203	MB
Radium 226 Precision (±)	NA	pCl/L			SM 7500 Ra-B	04/24/2017 1203	MB
Radium 228	ND	pCi/L		2	Ga-Tech	04/24/2017 503	MB
Radium 228 Precision (±)	NA	pCVL			Ga-Tech	04/24/2017 503	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 H

Analyzed by another laboratory Not Detected at the Reporting Limit

ND Splke Recovery cutside accepted recovery limits RL - Reporting Limit

C Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantilation 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 9 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:

\$1704052-010 Slag-7-A11094

COC:

WEB 31-0123

Date Reported

5/1/2017

Report ID

S1704052001

WorkOrder:

\$1704052

CollectionDate: 3/29/2017 3:25:00 PM

FieldSampler:

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

Matrix:

Water

Commania

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total					4-14-1	4	
Radium 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	04/24/2017 806	MB
Radium 228 Precision (±)	NA	pCVL			Ga-Tech	04/24/2017 806	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 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

0 Outside the Range of Dilutions

Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 10 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:

\$1704052-011 ClientSample ID: Slag-8-A11095

COC:

WEB 31-0123

Date Reported 5/1/2017

Report ID

S1704052001

WorkOrder:

\$1704052

CollectionDate: 3/29/2017 4:48:00 PM DateReceived:

4/5/2017 11:28:00 AM

FieldSampler:

Matrix:

Water

Cammania

Analyses	Result	Result Units Qual RL	RL	RL Method	Date Analyzed/Init		
Radionucildes - Total						1000	
Radium 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
Radlum 228	2.2	pCI/L		2	Ga-Tech	04/24/2017 1111	MB
Radium 228 Precision (±)	2.9	pCi/L			Ga-Tech	04/24/2017 1111	MB

These results apply only to the samples tested.

Qualifiers:

- B Analyte detected in the associated Method Blank
- Value above quantitation range
- Holding times for preparation or enalysis 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
 Analyte detected below quantilation limits
 Value exceeds Monthly Ava or MCL or is less than LCL
- Outside the Range of Dilutions
- X Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 11 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:

Otterfall Power Big Stone

Lab ID: ClientSample ID:

\$1704052-012 Slag 9-A11096

COC:

WEB 31-0123

Date Reported

5/1/2017

Report ID

S1704052001

WorkOrder:

S1704052

CollectionDate: 3/29/2017 6:19:00 PM

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

FieldSampler:

Matrix:

Water

Commante

Analyses	Result Units	Qual	Qual RL	Method	Date Analyzed/Init		
Radionucildes - Total							
Radium 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	04/24/2017 1415	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	04/24/2017 1415	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: A

Wade Nieuwsma, Assistant Laboratory Manager

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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:

\$1704052-013 ClientSample ID: Slag 2B A11097

COC:

WEB 31-0123

Date Reported

5/1/2017

Report ID

S1704052001

WorkOrder:

S1704052

CollectionDate: 3/30/2017 8:56:00 AM

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

FleldSampler:

Matrix:

Water

Commante

Analyses	Result	Units	Units Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total					3000		
Radium 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	04/26/2017 2105	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	04/26/2017 2105	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

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

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Inter-Mountain Labs

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

ANALYTICAL QC SUMMARY REPORT

CLIENT: Work Order:

Project:

MVTL Inc

S1704052

Ottertail Power Big Stone

Date: 5/1/2017

Report ID: \$1704052001

adium 228 by Ga/Tech	Sample Type MBLK	Units: pCi/L
MB-429 (04/21/17 15:43)	RunNo: 145273	PrepDate: 04/12/17 12:00 BatchID 13101
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits (
Total Radium 228	ND	4
MB-430 (04/26/17 11:52)	RunNo: 145297	PrepDate: 04/17/17 14:00 BatchID 13102
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits C
Total Radium 228	ND	1
dium 228 by Ga/Tech	Sample Type LCS	Units: pCi/L
LCS-429 (04/21/17 18:45)	RunNo: 145273	PrepDate: 04/12/17 12:00 BatchID 13101
Analyle	Result	RL Spike Ref Semp %REC % Rec Limits C
Total Radium 228	40	1 40.1 99.4 65.9 - 132
LCS-430 (04/26/17 14:57)	RunNo: 145297	PrepDate: 04/17/17 14:00 BatchID 13102
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits C
Total Radium 228	39	1 40.1 98.1 65.9 - 132
dium 228 by Ga/Tech	Sample Type LCSD	Units: pCi/L
LCSD-430 (04/26/17 18:01)	RunNo: 145297	PrepDate: 04/17/17 14:00 BatchID 13102
Analyte	Result	RL Conc %RPD %REC % RPD Limits C
Total Radium 228	41	1 39 3.17 101 20
dium 228 by Ga/Tech	Sample Type MS	Units: pCI/L
MS-429 (04/22/17 00:54)	RunNo: 145273	PrepDate: 04/12/17 12:00 BatchID 13101
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Q
Total Radium 228	41	1 40.1 ND 101 50 - 139
S1704140-003AMS (04/28/17 15:59)	RunNo: 145297	PrepDate: 04/17/17 14:00 BatchID 13102
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Q
Total Radium 228	25	1 40.1 ND 62.8 50 - 139
flum 228 by Ga/Tech	Sample Type MSD	Units: pCI/L
MSD-429 (04/22/17 03:57)	RunNo: 145273	PrepDate: 04/12/17 12:00 BatchID 13101
Analyte	Result	RL Conc %RPD %REC % RPD Limits Q
Total Redium 228	43	1 41 5.19 107 20
S1704140-003AMSD (04/28/17 19:04)	RunNo: 145297	PrepDate: 04/17/17 14:00 BatchID 13102
Analyte	Result	RL Conc %RPD %REC % RPD Limits Q
Total Radium 228	35	1 25 31.3 86.1 20

Qualifiers:

- Analyte detected in the associated Method Blank
- 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

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



ANALYTICAL QC SUMMARY REPORT

CLIENT: Work Order: MVTL Inc.

\$1704052

Ottertail Power Blg Stone

Date: 5/1/2017

Report ID: S1704052001

96.8

ject:	Ottertail Power Blg Stone			Kepoi	L ID.	5170400	72001	
	um 226 in Water -	Sample Type MBLK		Units: pC	VL			
	MB-1738 (04/20/17 14:04)	RunNo: 145012	Prep	Date: 04/12/17	0:00	Bate	chID 13074	
	Analyte	Result	RL	Spike Ref	Samp	%REC	% Rec Limits	Qua
	Radium 226	ND	0.2					
	MB-1739 (04/24/17 12:03)	RunNo: 145172	Prep	Date: 04/17/17	0:00	Bato	chID 13086	
	Analyte	Result	RL	Spike Ref	Samp	%REC	% Rec Limits	Qua
	Radium 226	ND	0.2					
Radiu	m 226 in Water -	Sample Type LCS		Units: pCi	/L			
	LCS-1738 (04/20/17 14:04)	RunNo; 145012	Prep	Date: 04/12/17	0:00	Bato	thID 13074	
	Analyte	Result	RL	Spike Ref	Samp	%REC	% Rec Limits	Qua
	Radium 226	6.5	0.2	5.89		110	67.1 - 122	
	LCS-1739 (04/24/17 12:03)	RunNo: 145172	Prep	Date: 04/17/17	0:00	Bato	hID 13086	
	Analyte	Result	RL	Spike Ref	Samp	%REC	% Rec Limits	Que
- 3	Radium 226	6.1	0.2	5.89		103	67.1 - 122	
Radiu	m 226 in Water -	Sample Type LCSD		Units: pCi	/L			
	LCSD-1738 (04/20/17 14:04)	RunNo: 145012	Prepi	Date: 04/12/17	0:00	Balo	hID 13074	
	Analyte	Result	RL	Conc %F	RPD	%REC	% RPD Limits	Qua
	Radlum 226	6.2	0.2	6.5 4	.82	105	20	
- 14	LCSD-1739 (04/24/17 12:03)	RunNo: 145172	Prepl	Date: 04/17/17	0:00	Bato	hID 13086	
	Analyte	Result	RL	Conc %F	RPD	%REC	% RPD Limits	Qua
	Radium 226	7.0	0.2	6.1 14	4.3	119	20	
Radlu	m 226 In Water -	Sample Type MS		Units: pCi/	L			
	S1704026-003AMS (04/20/17 14:04)	RunNo: 145012	Prept	Date: 04/12/17 0	0:00	Batc	hID 13074	
	Analyte	Result	RL	Spike Ref	Samp	%REC	% Rec Limits	Qua
	Radium 226	11.0	0.4	11.8 N	D	93.3	65 - 131	
	S1704052-005AMS (04/24/17 12:03)	RunNo: 145172	Prep	Date: 04/17/17 0	0:00	Batc	hID 13086	
	Analyte	Result	RL	Spike Ref S	Samp	%REC	% Rec Limits	Qua

Qualifiers:

Analyte detected in the associated Method Blank

G Analyzed at IML Gillette laboratory

J Analyte 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

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

Project Otter Tail Power Company	Project Type:	Big Stone Plant CCR	Name of Samplers: To Harman, Durty Farage
Report Otter Tail Power Company	Carbon Copy:		Bun 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								E	3ott	е Ту	pe					Analys	is
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	1000 HIVO3	Filtered Yor N	1000 none	500 HNO3	Filler? Y or M.	- /	Filler? Y OF M		1000 Amber	HOEN 009	Other: 150 Has	Other 150 Mg	Analysis Required	/
8	H2OX	1 1 - 1	29MAP17	1628	GW		2	N	1	1	N		1.17						See Attached	1
	НЗОХ	1	-	1701	GW		2	N	1	1	N		11.	1		1 1	1			
90	H4OX		BOMBOTT	824	GW	200	2	N	1	1	N				Mari	150		1-5		1
A11085	H-6		E9 MAP 17	1524	GW		2	N	1	1	N									
No	H-8		1	160Ce	GW		2	N	1	1	N		Bell							7
87	H-9		-	1706	GW		2	N	1	1	N		1.1		1			- 3		7
-	Slag 4			-	-CW-	1	2	N	-1	1	N			-						
A1109	Slag 4		SINANE	1344	GW	1	2	N	1	1	N		1=7	1 = 1	1 1		-		7	7
92	Slag 5		30 MANT	8241	GW		2	N	1	1	N		1	1						
	Slag 6		29mas 17	1425	GW		2	N	1	1	N			P I						

Comments:

WORK ORDER #2

				85	1 1	1	
Sample	s Relinquished By:	2014)	Samples Received By	: U- Ared	w	
Date:	30 mar 17	Time: 1327	Temp: 4	584 Date: 30 Mar 17	Time:	1327	Temp: 0.4C
	s Relinquished into:	/Fridge Log i	n Cart Oth	er.			
Sample	s Relinquished By:			Samples Received By	<i>(</i> :		
Date:		Time:	Temp:	Date:	Time:	Y =====	Temp:
Deliver	: Samplers	Other:		Seal Number(s) - If U	sed		
Transpo	ort: Ambient	Ice	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: Its Washing Dusty Faresya
Report Otter Tail Power Company	Carbon Copy:		Ben Vola
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											Analysi				
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	1000 HIVO3	Filtered Yor N	1000 nane	500 HNO3	1 -	18	Filler? Y or M	1000 Amber	500 NaOH	Other: 150 Hog	Other 150 Nor	Analysis Required
	Slag 7		29MARIT	15:25	GW		2	N	1	1	N			1			100	See Attached
95	Slag 8		1	16:48	GW	100	2	N	1	1	N	.=.					158	
96	Slag 9			1819	GW	2	2	N	1	1	N	-				1		
	Slag 9 Dec	ep			GW		2	N	1	1	N	-				1		
	Slag 2B		/	856	GW		2	N	1	1	N				2			

Comments:

WORK ORDER #2

			85	5	2 1	
Samples F	Relinquished By:	all of all		Samples Received By:	11- Meder	
Date: 3	e man 17	Time: 1227	Temp: Y 'S	Date:30 Mar 17	Time: /327	Temp:0.4C
Samples F	Relinquished into:	Fridge Log	in Cart Other			
Samples F	Relinquished By:	,		Samples Received By:	V. = 200 / 100 / 100	
Date:		Time:	Temp:	Date:	Time:	Temp:
Delivery:	Samplers	Other:		Seal Number(s) - If Use	ed	
Transport:	Ambient	Ice	Other:	Seals Intact?	Yes No	



Spri-3 2017

A= 3 500 HNO3 500 H2504 1000 NONE

Big Stone Sampling 2017

Site	Parameter	Well	Diameter	Well	Sample	Dedicated?	Pump Rate	Goes	Sampling
	List	Depth	(Inches)	Elevation	Equipment	Dealeated;	(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	Baller	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
-3S4	B	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
H10X	C	32.91	2	1115.89	Bailer	Yes	100		1,3
HIINT	c	60.11	2	1115.81	Keck/Tsunami	No		Yes	1,3
H2OX West	C, CCR	32.20	2	1103,91	Bladder		1500	No	1,3
H2INT	C	62.30	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	1095.19	Whale	Yes	100	Yes	1,3
H4OX (1960)	C, CCR	27.20	2		Bladder	No	2000	No	1,3
HAINT	C	60.01	2	1108,22	to the second second	Yes	100	No	1,3
- H5~	c			1108.61	Keck/Tsunami	No	2000	Yes	1,3
	C, CCR	43.30	2	1122.80	Whale	No	1000	No	1,3
		15.00	2	1097.76	Bladder	Yes	100	Yes	1,3
-H7:-	C	33.20	2	1106.06	Whale	No	1000	Yes	1,3
1460	C, CCR	22.05	2	1081.23	Bladder	Yes	100	No	1,3
#18#	C, CCR	30.20	2	1086.21	Bladder	Yes	100	No	
-BC1	В	16.26	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	Bailer	Yes	N/A	No	1,3
BC3R	В	35.15	2	1114.42	Bailer	Yes	N/A	Yes	1,3
BCAR	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
EC6R	В	33.95	2	1121.58	Bailer	Yes	N/A	No	1,3
CSDAGA.	-	34.90	2	TBD	LOW FLOW	No	100	Yes	1,3
STAGE -	_	3,117	2	1111.06	22.15.2211	140	100	100	110
SDAGS	_		2				100		
SEREP.	CCR	39.00	2	TBD	LOW FLOW	No	100	No	4.0
SEAGS	CCR	38.80	2	1107.30	LOW FLOW	No	100	Yes	1,3 1,3
SUASE	CCR	37.30	2	1111.51	LOW FLOW	No	100	Yes	
SHARP	CCR	48.70	2	1114.39	LOW FLOW	No	100		1,3
STATE	CCR	52.09	2	1127.26	LOW FLOW	No	100	Yes	4,3
SEASS.	CCR	49.80	2	1122.35	LOW FLOW	No		No	1,3
-SUKGS DEEP	-	88.00	2	1121.92	LOW FLOW		100	No	
SEAS2By	CCR	40.80	2	1111.26		No	100	Yes	
COOLING POND	A	N/A	N/A	N/A	LOW FLOW	No	100	Yes	26
EVAPORATION POND		4.7			Grab	NA	N/A	No	1,3
	A	N/A	N/A	NA	Grab	N/A	N/A	No	1,3
HOLDING POND	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	NA	N/A	No	1,3

B=4 1600 None 500 HNO3 500 HNO3 FIHM 500 HOSOU

500 H2504 500 H100 FIL

C=3 Pand"
1000 None
500 Hasoy
500 Hasoy

2-1000 HNOS - 1000 None 500 HNOS

季期的各种

^{** 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

Ground	lwater Ass	essment			Site:	Otte	r Tail Po	ower Co./ Big Stone				
Sampling	Personnel:				Facility ID:							
	225	Halfman			Date: 29 MAR 17							
					Unique Sta	ition ID:						
					Sample ID			Slag 4				
Well Co		@						No.				
Well Lock		Yes No	-		Protective State ID Ta			No ,				
Casing S		Yes No	-		Grout Seal	W		No				
	lecessary:	(100 110	-		Olout oou	mari 100		7.119				
	ormation											
Well Dep		39,23			Well Casin	g Elevation:		NA				
	ted Depth:	39.00				er Elevation:		1				
Casing D	iameter:	2"			Previous S	tatic:		H				
	vel Before Pu	irge: 19.0	els		Water Leve	el After Sample	: 3	1,85				
Well Volu	me: 3	.29	Gallons		Measurem	ent Method:	Elec.	WLTy Steel Tap				
Samplin	g Informati							۸				
ALL YOUR DESIGNATION OF	Conditions:	Temp: 50		Wind: SE	La	Sky:	Clou	ndn				
Sampling	Method:	Grundfos	Bladder SS/T	Disp. Bailer	Whale	Grab Other		1				
	Equipment:	Yes (No)			Pumping R	ate: 0.2	5	gpm				
Well Purg	- Y 7. T	Yes (No)			Time Pum		303	am / pm				
Time Pun					Time of Sa		3:44	am /pm				
Duplicate		Yes (No)	ID: -	_	Sample El-	The state of the s						
Sample A	ppearance:	General: C	ear	Color: NO	ve. Pha	se: NONE		Odor: NONE				
14	1	Specific	Temp	D. O.	Turbidity	Gallons	SEQ					
Time	рН	Cond.	°C	mg/L	NTU	Removed	#	Comments:				
1317	6.55	2836	10.44	AM	NA	3,5	1	1				
1331	4.56	2831	10.67	1		7,0	2					
1344	6.54	2837	10:72			10,5	3					
12.7	-					1013	118					
							4					
	-			R	4	1	5					
Stabilized		No		Amount W	ater Removed	1: 10,5		Gallons				
Commer	its:											

= not in notes

Exceptions to Protocol:

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

Ground	water Ass	essment			Site: Otter Tail Power Co./ Big Stone							
Sampling F	Personnel:				Facility ID:							
		MOHE			Date: 30 Mar 17							
	Jes	F Holfin	kan		Unique Station ID:							
					Sample ID			Slag 5				
Well Con	dition											
Well Locke		(es) No	_		Protective		/	No				
Well Label		Yes (10)			State ID Ta	~		(102				
Casing Str		yes No	-		Grout Seal	Intact? Yes		(No)				
Repairs Ne												
Well Info	rmation							10.00				
Well Depth	n:	39.00	Z		Well Casin	g Elevation:	110	7.30				
Constructe	d Depth:	38.80			Static Water	er Elevation:		3.99				
Casing Dia	meter:	2"			Previous S	tatic: 1683	1.38					
Water Leve	el Before Pu	irge: 23	3.31		Water Leve	el After Sample	: 3	o, les				
Well Volum	ne:	2.54	Gallons	_	Measurem	ent Method:	Elec.					
Sampling	Informati	on					_					
Weather C	onditions:	Temp: 3	8°	Wind: E	-7	Sky:	Sui	NVV				
Sampling N	/lethod:	Grundfos	Bladder SS/T	Disp. Bailer	Whale	Grab Other		/				
	Equipment:	Yes 😡		4 5 7 7 7 7	Pumping R	ate: 2.5		gpm				
Well Purge	d Dry?	(e) No			Time Pump	Began: 8	05	(am)/pm				
Time Purge	ed Dry?	- 819	7.		Time of Sa	mpling: 8	24	(am) / pm				
Duplicate S		Yes (No	ID:	_	Sample El-		7					
Sample Ap	pearance:	General: △	lear	Color: NO	rye Pha	se: NOOA		Odor Nove				
11	71.	Specific	Temp	D. O.	Turbidity	Gallons	SEQ					
Time	pH	Cond.	°C	mg/L	NTU	Removed	#	Comments:				
8:16	65.0	852	9,84	NA	NA	2.75	1	1.				
824	10.97	810	9.41			3,50	2	Recharge				
	18.00		0.70				3	/				
	-						5					
Stabilized?	Yes	/ No!		Amount M	ater Removed		15	Cellera				
Comment		(Ng/		Amount W	aret Metiloveo	3,50		Gallons				
COMMINERIE	J.											

Exceptions to Protocol:

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

Ground	dwater Ass	sessment			Site:	Otte	r Tail Po	ower Co./ Big Stone
Sampling	Personnel:	(6)			Facility ID:			
	Jeff	Lottman	_		Date: 5	9 MARI	7	
			3		Unique Sta	ation ID:	ب	
	7				Sample ID	:		Slag 6
Well Co	ndition					Contractive of the Contractive o		
Well Lock		(Yes No	-		Protective		/	No
Well Lab		Hes No	_		State ID T			Nò
Casing S		Yes No	-		Grout Sea	Intact? Yes		Mò
	Vecessary:							
Well Info	ormation							
Well Dep	th:	37,45			Well Casir	ng Elevation:		111). \$1
Construct	ted Depth:	37.30			Static Wat	er Elevation:	1	087.3
Casing D	iameter:	2"			Previous S	Static:		086,32
Water Le	vel Before Pi	urge: 24	66		Water Lev	el After Sample	9:	34,87
Well Volu	ime: 2	. Ile	Gallons		Measurem	ent Method:	Elec.	WLI) Steel Tape
Samplin	g Informat	ion			41.74.		-	٨
Weather	Conditions:	Temp: So	9	Wind: 5	Ele	Sky:	0/00	nd n
Sampling	Method:	Grundfos	Bladder SS/T	Disp. Bailer	(Whale)	Grab Other		J
Dedicated	d Equipment:	Yes (No			Pumping F	Rate: 0.2	5	gpm
Well Purg	ged Dry?	(es) No			Time Pum	p Began: j	402	am (pm
Time Pur	ged Dry?	1420			Time of Sa	ampling: \	4a5	am kom
	Sample?	Yes (No	ID: -	_	Sample El	A CONTRACTOR OF THE PARTY OF TH	. 1	
	ppearance:		ally Clouds	Color: NO		se: Nove	-1	Odor: NONG
oumpto 1	фросполос	oonordi. Q		00.000	702	20, 20,72		odoi: 1001PE
9		Specific	Temp	D. O.	Turbidity	Gallons	SEQ	
Time	pH	Cond.	°C	mg/L	NTU	Removed	#	Comments:
1411	6,90	1272	12.09	MA	NA	2.25	1	
1420	6.88	1364	12.21			4,50	2	
1425	6.89	1413	12.27			_	3	Rechninge
1			10000	1			5	
							15	
Stabilized	12 Van	(No 2		Amount 10	ater Removed	4-50	10	Gallons

Exceptions to Protocol:

- Not in Notes - Good rachange

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

Groundwater Asses	sment			Site:	Otter	Tail Po	wer Co./ Big Stone
Sampling Personnel:	~			Facility ID:			
Jett H	offmar	7		Date: 29	MARI	7	
				Unique Sta	ation ID:		
				Sample ID		1	Slag 7
Well Condition	200						
	Yes No	4		Protective		7	No.
	Yes No			State ID Ta		<	No
Casing Straight?	es No	2		Grout Seal	Intact? Yes	-	No)
Repairs Necessary:							
Well Information							
Well Depth:	49,05			Well Casin	g Elevation:		1114.39
Constructed Depth:	48.70			Static Water	er Elevation:		1700.7)
Casing Diameter:	2"	2		Previous S	tatic:		1098,98
Water Level Before Purge	e: 13.1	8		Water Leve	el After Sample	:	47,33
Well Volume: 5.76	l	Gallons		Measurem	ent Method:	Elec.	WLI Steel Tape
Sampling Information							
Weather Conditions:	Temp: 50	0	Wind: Ś₹	130	Sky:	Clou	dr.
	Grundfos 、	Bladder SS/T	Disp. Bailer	Whale	Grab Other:		7
Dedicated Equipment: \	Yes (No)			Pumping R	ate: 0, 25		gpm
	Yes) No			Time Pump		1. 1	am pm
Time Purged Dry?	520		English States	Time of Sa	mpling: 15	35	am (pm
	Yes (No)	ID:	_	Sample El-			
LUDDICATE SAMDIE!	100 (110)	- 10	Colon		se: No.No		Odor: NONE
	General SIC	Olaska VALLE	LECTOR IVAMIA				Odol. Mark
	General Slig	ghts Vocat	y Color. Non	- Fila	Se. IVO.IVQ		
Sample Appearance: 0	General Stig	Temp	D. O.	Turbidity	Gallons	SEQ	
Sample Appearance: 0		•	/			SEQ #	Comments:
Sample Appearance: Control of the PH Control of	Specific	Temp	D. O. mg/L	Turbidity NTU	Gallons Removed		
Sample Appearance: Control of the photostate of	Specific Cond.	Temp °C	D. O.	Turbidity	Gallons	1 2	Comments:
Sample Appearance: Control of the photostate of	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	# 1 2 3	
Sample Appearance: Control of the photostate of	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	# 1 2 3 4	Comments:
Sample Appearance: Control of the photostate of	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	# 1 2 3	Comments:

Exceptions to Protocol:

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

Ground	water Ass	sessment			Site:	Otte	r Tail Po	wer Co./ Big Stone
Sampling I	Personnel:				Facility ID:			
	Jef	Hotelma	/ A	-	Date: 29	MAR 17		
			1		Unique Stat	ion ID:		
					Sample ID:			Slag 8
Well Con	dition	100				_		4
Well Locke		Yes No	_		Protective F			No
Well Label		Yes No	_		State ID Ta		_	(No)
Casing Str		(Yes No	_		Grout Seal	Intact? (Yes		No
Repairs No								
Well Info		Pa ne						
Well Depth	1.	57.25)		Well Casing			1127.26
Constructe	ed Depth:	52.09			Static Wate	r Elevation:	11	1109174
Casing Dia	meter.	2"			Previous St	atic:		1110.51
Water Leve	el Before Pu	urge: 17	152		Water Leve	After Sample	e:	37.24
Well Volun	ne: 5	1.66	Gallons		Measureme	nt Method:	Elec.	WLI Steel Tap
Sampling	Informat	ion	14		(-w-18)			N.
Weather C	onditions:	Temp: 50	ງ້	Wind: S	E G	Sky:	Clan	uda
Sampling I	Method:	Grundfos	Bladder SS/T	Disp. Baller	(Whale)	Grab Other		V
	Equipment:	Yes No)		Pumping Ra	ate: 0.3	5	gpm
Well Purge		Yes No	7		Time Pump		:38	am /(pm)
Time Purg	ed Dry?				Time of San	noling: 10	48	am (pm
Duplicate S		Yes (No)	ID:	_	Sample EH:	1		
Sample Ap		General: (Color: A	-	e: Nore		Odor: NOVE
23		Specific	Temp	D. O.	Turbidity	Gallons	SEQ	
Time	pH	Cond.	°C	mg/L	NTU	Removed	#	Comments:
1602	L.99	1354	10.80	NA	NA	5.75	1	
1625	6.23	1361	10.87	1		11.5	2	
1648	6.92	1358	10.97			17,25	3	
	-	1,847,0				7	5	
Ot - L 10 10	(Van)	Na		A	Inter Dames - I	15.00	10	Callana
Stabilized?		No		Amount W	later Removed:	17.25		Gallons

Exceptions to Protocol:

note in notes p.

Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

	ssment			Site:	Otte	r I all Po	wer Co./ Big Stone
Sampling Personnel:				Facility ID:			
Jeff Ha	Fiman			Date:	9 MAR 1	7	
				Unique Sta	tion ID:		
				Sample ID:			Slag 9
Well Condition					~		
	Yes No	4		Protective I			No
Well Labeled?	Yes No	-		State ID Ta			No No
Casing Straight? Repairs Necessary:	Tes No	-		Gibut Sear	intacti 169		NO
Well Information							
Well Depth:	51,27			Well Casing	g Elevation:	10	22.35
Constructed Depth:	49.80			Static Water	r Elevation:	11	06:72
Casing Diameter:	2"	5		Previous St	atic:	11	04,84
Water Level Before Purg	je: \5	. le 3		Water Leve	After Sample		7,37
Well Volume: 5.8		Gallons		Measureme	ent Method:	Elec.	WL) Steel Tape
Sampling Information	n						1
Weather Conditions:	Temp: 5	60	Wind: S	E 15	Sky:	Cloud	
	Grundfos	Bladder SS/T	Disp. Bailer		Grab Other		J
Sampling Method:	Grundros	Diddad Coll	Diop. Danci	(Whale)	CINE CHICK		
	Yes (No)	Diadder Cor I	Diop. Dation	Pumping R			gpm
Dedicated Equipment:		-	Diop. Danoi	_	ate: 0,2		gpm am (pm)
Dedicated Equipment: Well Purged Dry?	Yes (No)	-	Disp. Ballet	Pumping Ra	ate: 0,2	5 707	
Dedicated Equipment: Well Purged Dry? Time Purged Dry?	Yes (No)	ID:	Disp. Duller	Pumping R	Began:)	5 707 819	am (pm)
Dedicated Equipment: Well Purged Dry? Time Purged Dry? Duplicate Sample?	Yes (No) Yes (No)		Color: No	Pumping Ramping Ramping Pump Time Pump Time of Sar Sample EH	ate: 0,2/ Began:) mpling:)	5 707 819 4	am (pm)
Dedicated Equipment: Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance:	Yes No Yes No Yes No General:	ID: <u></u>	Color: No	Pumping Ramping Pumping Ramping Pumping Ramping Pumping Ramping Rampin	Began:) mpling:) i 140 (5 707 819 4	am (pm)
Dedicated Equipment: Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance:	Yes No Yes No		-	Pumping Ramping Ramping Pump Time Pump Time of Sar Sample EH	ate: 0,2/ Began:)' mpling:)' : \\40 (5 707 819 4	am (pm)
Dedicated Equipment: Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance:	Yes No Yes No Yes No General: Specific Cond.	ID:	Color: No	Pumping Rample Filme of Sample EH Phase Turbidity NTU	Began:) mpling:) i: \40 (5 707 819 4	am (pm) am (pm) Odor:
Time pH 1731 681 1755 675	Yes No Yes No Yes No Yes No Specific Cond.	ID:	Color: No.	Pumping Range Time Pump Time of Sar Sample EH Phase Turbidity	Began: 1'mpling: 1's: 140 c	5 707 819 4 SEQ #	am (pm) am (pm) Odor:
Dedicated Equipment: Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: 24 Time pH 1731 275	Yes No Yes No Yes No Yes No Specific Cond.	ID: Temp C D:	Color: No.	Pumping Rample Filme of Sample EH Phase Turbidity NTU	Began: 1 mpling:	5 707 819 4 SEQ #	am (pm) am (pm) Odor:
Dedicated Equipment: Well Purged Dry? Time Purged Dry? Duplicate Sample? Sample Appearance: 24 Time pH 1731 275	Yes No Yes No Yes No Yes No Specific Cond.	ID:	Color: No.	Pumping Rample Filme of Sample EH Phase Turbidity NTU	Began: 1'mpling: 1's: 140 c	5 707 819 4 SEQ #	am (pm) am (pm) Odor:

Exceptions to Protocol:

Note in bothes p.

CRR

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

Callangiel Mase	essment			Site:	Otte	r Tail Po	wer Co./ Big Stone
ampling Personnel:				Facility ID:			
1. F. T.	Timan				OMARIT	7	
	,			Unique Sta	tion ID:		
				Sample ID:			Slag 2B
ell Condition	~				6	5	m 1
ell Locked?	Yes (No)	_		Protective			
ell Labeled? (asing Straight?	Yes No	_		State ID Ta Grout Seal			(No)
epairs Necessary:	(Tes IND	-		Glout Seal	inactr res		CHAO
ell Information							
Carl Cold and State of the Cold	40.93			Well Casin	g Elevation:	1	111/26
onstructed Depth:	40.80				er Elevation:		12.39
sing Diameter:	2"	3		Previous S	tatic:		087-63
ater Level Before Pur	ge: 18.5	87	-	Water Leve	el After Sample	: 3%	itle
ell Volume: 3.	59	Gallons		Measureme	ent Method:	Elec.	WLI/ Steel Tape
ampling Informatio	n						
eather Conditions:	Temp: 35	3	Wind:	モーフ	Sky:	Parthy	Claudy
mpling Method:	Grundfos	Bladder SS/T	Disp. Bailer	Whale	Grab Other	1	J
edicated Equipment:	Yes (No	>		Pumping R	ate: 0,2	5	gpm
	Yes No			Time Pump		:36	(am) pm
ne Purged Dry?	8152			Time of Sa		5le	(am) / pm
plicate Sample?	Yes (No)	ID:	_	Sample EH		,5	
mple Appearance:	General: (Color:		se: NONE		Odor: vane
S	Cu calific	Temp	D. O.	Turbidity	Gallons	SEQ	
ne pH	Specific Cond.	°C	mg/L	NTU	Removed	#	Comments:
151 7,00	1903	9.53	MA	NA	3.75	1	
56 6.99	1928	10.31		1	4.00	2	Richarao
	-	1000			3 - 1	3	P
	-		-			4	
abilized? Yes	No.		Amount M	later Removed	. 400	J	Gallons
	No)	16.51	Amount W	later Removed		3	



Inter-Mountain Labs

Sheridan, WY and Gillette, WY

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INTE	R-MOUNTAIN LABS				This is a legal document; a	ny misrepre	sentation ma	y be o	nstrued	as fraud	l.				#AAED		_
lient	Name			Project Identification			Sampler (S					ticity)			Telephone #		
רעוו	Ly we will see	64,*			Stone	The state of the state of	Salary Contract		All Contracts	Antight.	en. Segrena Segre				SANTANIES &	Light .	-76
-	rt Address			Contact Name					ANAL	YSE	SIPA	RAM	TERS				
	8 North Front St			Tim Portner				œ	20								
4.5	r Ulm, Mn 56073 ce Address	The Street Cr			er@mytl.com /6-8089			+ 228									- 1
21,9411	16		L - 5 353	Purchas	e Order#	Quote#	entral de la company	226		1.5							
			Σ	Total Laborator	ikusyvuustobeng	Election.	is walks	E	## (§						REI	MARKS	\neg
N	LAB ID	DATE	TIME	Si	AMPLE		#of	1 1	7					3/2			
ITEM	(Lab Use Only)	SAMI	PLED		TFICATION	Matrix	Containers	Ra		10 Kg		16.50		1.1.1.7			- 1
1		29 map 17	1628	H2OX - A	1088	WT	2	x						-	MUTL	Work	
2		1	1701	нзох А+1	P8011 A OPO	WT	2	х							order-	31-012	3
3		Bomar 17	824	H4OX A II	090	WT	2	х								THE PERSON NAMED IN	
4		29 marly	1524	H-6 - 171	1085	WT	2	x			- 1			-			
5			1606		1801	WT	2	x			=1						
6	And the state of	1	1706	H-9 - A	F801	WT	2	х									
7			_	Stag 1 NOSH	mple	W	12	×									
8		p9mart7	1344	Slag-4 - A	11091	WT	2	x						113			
9		BOMANT	824	Slag-5 - A	11092	WT	2	x						75			
10		29marly	1425		11093	WT	2	x			-						
11			1525	Slag-7 - A	11094	WT	2	x							-		
12	**************************************	1	1648	Slag-8 - A	11095	WT	2	x							.555		
13																	
14													1	\. =			
	LAB COMMENTS		Relin	iquished By (Signature	Printed)	DATE	TIME		R	eceived	By (Sig	nature/Pr	inted)		DATE	TIME	
		and Marie	9112		of musical and a second state of the second	samarl)	1327	-	_	_							
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				anksa 1529 (K) Japan											-	1	_
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	SHIPPING INFO	Wate	x CODES r WT	Check desired se	ROUND TIMES		MPLIANO			A HON	and the same of	-	Al	ווועכ	ONAL REMAF	ins	
0	FedEx	Soi		☐ Standard tu	A STATE OF THE STA		(SDWA,			8.7	_						
	USPS	Solid		D RUSH - 5 W	orking Days	PWSID	/ Permit #		STATE OF								
	Hand Carried	Filte			< 2 Working Days	Chlorina		1 -1		Υ /					,		
ш	Other	Othe	r OT	Rush & Urgent S	Surcharges will be applied	ample	Disposal:	Lab	- 400	Client	27.23			_			



Inter-Mountain Labs

Sheridan, WY and Gillette, WY

All shaded fields must be completed		
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INTE	R-MOUNTAIN LABS	1 1 1 1			This is a legal docume	ent; any misrepres	entation ma	y be cons	rued as fi	aud.				#VAED	
	Name		w	Project Identificat	ion		Sampler (S		ttestatio	n of Auth				Telephone#	
Repor	t Address	i i		Ottertail Power	Big Stone	ostett. Vill		A				ACTED		THE STANFOR	ENTER TOLERS
	North Front St			Tim Portner		355.4	and the	Subject Len	VALYS) EQ / I	AKAR	/ETER	Nace of		
	Ulm, Mn 56073				ortner@mytl.com		erasiona Separata	228							
nvoic	e Address		Charles Sales Will	Phone 50	7-276-8089										
San	ie -	11 . e. 1	1 + 6 4 E		chase Order#	Quote#	0.5 N	226 +							
		AND RATE	74 F 12 (24)	克尔巴斯海绵 斯	SAMPLE	this the same		ull distribution						REMA	RKS
ITEM	(Lab Use Only)	DATE	TIME	ID	ENTIFICATION	Matrix	# of Containers	6							
1		29 MART7	18:19	Slag 9	- A11096	WT	2	x							
2		_		Stag 9 Deep		CWI	4	*		1			1000		
3		30 MAPLY	85Ce	Slag 2B	A11097	WT	.2	x	-3 =	YY C					
4	19 19 19 19 19 19 19 19 19 19 19 19 19 1							x		N					
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	LAB COMMENTS		Reli	nquished By (Signa	ature/Printed)	DATE	TIME		Recei	ved By (S	Signature	Printed)		DATE	TIME
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Page:

FINAL REPORT COMPLETION DATE: 23 Jun 17 QX

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: SLAG 4

Report Date: 20 Jun 2017 Lab Number: 17-A18623 Work Order #: 31-0190 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 3 May 2017 11:10
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 7:23	
Radium 228	SEE ATTAC	HED		EPA M9320	20 Jun 17 7:23	
pH, Field	6.59	units	1.00	I-1586-85	3 May 17 11:10	DGF
pH	* 6.9	units	1.0	SM 4500 H+ B-2000	4 May 17 17:01	DK
Sulfate	1440 ~	mq/L	5.0	ASTM D516-07	11 May 17 8:19	KCJ
Chloride	52.6	mg/L	3.0	SM 4500 C1 E	5 May 17 12:11	AKF
Mercury	0.008	ug/L	0.005	EPA 245.7	18 May 17 15:10	RMB
Solids, Total Dissolved	2520	mg/L	10	SM 2540 C-97	5 May 17 13:54	RC
Calcium	458.0 ~	mq/L	0.500	SW6010C	9 May 17 10:44	RC
Lithium	0.196	mg/L	0.005	SW6010C	9 May 17 10:44	RC
Barium	0.043	mg/L	0.005	SW6010C	9 May 17 10:44	RC
Chromium	< 0.01	mg/L	0.01	SW6010C	9 May 17 10:44	
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	9 May 17 10:44	RC
Boron	0.910	mq/L	0.100	SW6010C	9 May 17 10:44	RC
Antimony	< 2.5 8	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	
peryrrum	@See Narr		2100	17077	- FILE - HELDER	
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	
Molybdenum	< 2.5 @	ug/L	0.5	SW6020A	17 May 17 13:16	
Selenium	< 5 @^	ug/L	0.5	SW6020A	17 May 17 13:16	
Thallium	< 0.5 @	ug/L	0.1	SW6020A	17 May 17 13:16	
Fluoride	0.270	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

| e Due to sample quantity # = Due to internal standard response

CERTIFICATION: NN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-H 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: SLAG 5

Report Date: 20 Jun 2017 Lab Number: 17-A18624 Work Order #: 31-0190 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 3 May 2017 15:36
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 7:23	ABL
Radium 228	SEE ATTAC	HED		EPA M9320	20 Jun 17 7:23	ABL
pH, Field	7.15	units	1.00	1-1586-85	3 May 17 15:36	MS
pH	* 7.2	units	1.0	SM 4500 H+ B-2000	4 May 17 17:01	DK
Sulfate	88.0 @	mg/L	5.0	ASTM D516-07	11 May 17 8:19	KCJ
Chloride	9.2	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	529	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	0.025	mg/L	0.005	SW6010C	9 May 17 10:44	RC
Barium	0.145	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	0.527	mq/L	0.100	SW6010C	9 May 17 10:44	RC
	< 2.5 @	ug/L	0.5	SW6020A	17 May 17 13:16	RMV
Antimony	< 2.5 @	ug/L	0.5	SW6020A	17 May 17 13:16	RMV
Arsenic	< 2.5	ug/L	0.05	SW6020A	17 May 17 13:16	RMV
Beryllium	@See Narr		2.75	2015250		
was almost annu	< 0.5 @	ug/L	0.1	SW6020A	17 May 17 13:16	RMV
Cadmium	< 2.5 @	ug/L	0.5	SW6020A	17 May 17 13:16	RMV
Lead	14.3 0	ug/L	0.50	SW6020A	17 May 17 13:16	RMV
Molybdenum	< 5 @^	ug/L	0.5	SW6020A	17 May 17 13:16	RMV
Selenium	< 0.5 @		0.1	SW6020A	17 May 17 13:16	RMV
Thallium Fluoride	0.280	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 analyte requiring a dilution as coded below:

Q = Due to sample matrix
| = Due to concentration of other analytes
| = Due to sample quantity
| + Due to internal standard response
| - Due to sample quantity
| + Due to internal standard response
| - Due to sample quantity | + 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: SLAG 6

Report Date: 20 Jun 2017 Lab Number: 17-A18625 Work Order #: 31-0190 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 3 May 2017 12:55
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 7:24	ABL
Radium 228	SEE ATTAC	HED		EPA M9320	20 Jun 17 7:24	ABL
pH, Field	6.97	units	1.00	I-1586-85	3 May 17 12:55	DGF
pH	* 7.1	units	1.0	SM 4500 H+ B-2000	4 May 17 17:01	DK
Sulfate	368 ~	mg/L	5.0	ASTM D516-07	11 May 17 8:19	KCJ
Chloride	8.8	mg/L	3.0	SM 4500 Cl E	5 May 17 12:11	AKF
Mercury	0.014	ug/L	0.005	EPA 245.7	18 May 17 15:10	RMB
Solids, Total Dissolved	1040	mg/L	10	SM 2540 C-97	5 May 17 13:54	RC
Calcium	168.0	mg/L	0.500	SW6010C	9 May 17 10:44	RC
Lithium	0,101	mg/L	0.005	SW6010C	9 May 17 10:44	RC
Barium	0.093	mg/L	0.005	SW6010C	9 May 17 10:44	RC
Chromium	0.017	mg/L	0.010	SW6010C	9 May 17 10:44	RC
Cobalt	< 0.01	mg/L	0.005	SW6010C	9 May 17 10:44	RC
Boron	2.060	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	3.74 @	ug/L	0.50	SW6020A	17 May 17 13:16	RMV
Beryllium	< 2.5	ug/L	0.05	SW6020A	17 May 17 13:16	RMV
F. 15 10 10 10 10 10 10 10 10 10 10 10 10 10	@See Narra			Granden .		15.77
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	17 May 17 13:16	RMV
Lead	3.74 €	ug/L	0.50	SW6020A	17 May 17 13:16	RMV
Molybdenum	7.58 @	ug/L	0.50	SW6020A	17 May 17 13:16	RMV
Selenium	5.56 @^	ug/L	0.50	SW6020A	17 May 17 13:16	RMV
Thallium	< 0.5 @	ug/L	0.1	SW6020A	17 May 17 13:16	RMV
Fluoride	0.630	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:

B = Due to sample matrix
| = Due to concentration of other analytes
| = Due to sample quantity
| = Due to internal standard response
| = Due to sample quantity | + = Due to internal standard response
| = Due to sample quantity | + = 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: SLAG 7

Report Date: 20 Jun 2017 Lab Number: 17-A18626 Work Order #: 31-0190 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 3 May 2017 11:55
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 7:24	ABL
Radium 228	SEE ATTAC			EPA M9320	20 Jun 17 7:24	ABL
pH, Field	6.90	units	1.00	I-1586-85	3 May 17 11:55	DGF
	* 7.2	units	1.0	SM 4500 H+ B-2000	4 May 17 17:01	DK
pH Sulfate	534 ~	mg/L	5.0	ASTM D516-07	11 May 17 8:19	KCJ
Chloride	5.0	mg/L	3.0	SM 4500 C1 E	5 May 17 12:11	AKE
POLIT TO ALL TO SECOND	0.006	ug/L	0.005	EPA 245.7	18 May 17 15:10	RMB
Mercury Solids, Total Dissolved	1250	mg/L	10	SM 2540 C-97	5 May 17 13:54	RC
	224.0	mg/L	0.500	SW6010C	9 May 17 10:44	RC
Calcium	0.074	mg/L	0.005	SW6010C	9 May 17 10:44	RC
Lithium	0.047	mg/L	0.005	SW6010C	9 May 17 10:44	RC
Barium	0.010	mg/L	0.010	SW6010C	9 May 17 10:44	RC
Chromium	< 0.01	mg/L	0.005	SW6010C	9 May 17 10:44	RC
Cobalt	1.230	mg/L	0.100	SW6010C	9 May 17 10:44	RC
Boron	< 2.5 @		0.5	SW6020A	17 May 17 13:16	17.7
Antimony		ug/L	0.5	SW6020A	17 May 17 13:16	RMV
Arsenic	< 2.5 @	ug/L	0.05	SW6020A	17 May 17 13:16	
Beryllium	< 0.25	ug/L	0.03	SHOOZOA	17 1303 11 13110	
L TOWN	@See Narr		0.1	SW6020A	17 May 17 13:16	RMV
Cadmium	< 0.5 @	ug/L		SW6020A	17 May 17 13:16	RMV
Lead	< 2.5 @	ug/L	0.5	SW6020A	17 May 17 13:16	
Molybdenum	4.27 @	ug/L	0.50		17 May 17 13:16	RMV
Selenium	< 5 6^	ug/L	0.5	SW6020A	17 May 17 13:16	
Thallium	< 0.5 @	ug/L	0.1	SW6020A		RC
Fluoride	0.510	mg/L	0.020	EPA 300.0	5 May 17 16:57	r.c

* 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: SLAG 8

Report Date: 20 Jun 2017 Lab Number: 17-A18627 Work Order #: 31-0190 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 3 May 2017 14:21
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 7:24	ABL
Radium 228	SEE ATTAC	201 128 1		EPA M9320	20 Jun 17 7:24	ABL
pH, Field	6.99	units	1.00	I-1586-85	3 May 17 14:21	DGE
pH pH	* 7.3	units	1.0	SM 4500 H+ B-2000	4 May 17 17:01	DK
Sulfate	231 @	mg/L	5.0	ASTM D516-07	11 May 17 8:19	KCJ
Chloride	39.7	mg/L	3.0	SM 4500 CL E	5 May 17 12:11	
Mercury	< 0.005	ug/L	0.005	EPA 245.7	18 May 17 15:10	RMB
Solids, Total Dissolved	842	mg/L	10	SM 2540 C-97	5 May 17 13:54	RC
Calcium	109.0	mg/L	0.500	SW6010C	9 May 17 10:44	
Lithium	0.056	mg/L	0.005	SW6010C	9 May 17 10:44	
Barium	0.055	mg/L	0.005	SW6010C	9 May 17 10:44	
Chromium	< 0.01	mg/L	0.01	SW6010C	9 May 17 10:44	
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	9 May 17 10:44	RC
Boron	0.555	mg/L	0.100	SW6010C	9 May 17 10:44	
Antimony	< 2.5 @	ug/L	0.5	SW6020A	17 May 17 13:16	
Arsenic	< 2.5 @	ug/L	0.5	SW6020A	17 May 17 13:16	RMV
	< 0.25	nd/F	0.05	SW6020A	17 May 17 13:16	
Beryllium	@See Narr		0.100		The state of the state of	
Conduct in	< 0.5 @	ug/L	0.1	SW6020A	17 May 17 13:16	RMV
Cadmium	< 2.5 @	ug/L	0.5	SW6020A	17 May 17 13:16	
Lead	9.07 @	ug/L	0.50	SW6020A	17 May 17 13:16	
Molybdenum	19.0 @^	ug/L	0.50	SW6020A	17 May 17 13:16	
Selenium	< 0.5 @	ug/L	0.1	SW6020A	17 May 17 13:16	
Thallium Fluoride	0.540	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.



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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: SLAG 9

Report Date: 20 Jun 2017 Lab Number: 17-A18628 Work Order #: 31-0190 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 3 May 2017 15:38
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 7:24	ABL
Radium 228	SEE ATTAC			EPA M9320	20 Jun 17 7:24	ABL
pH, Field	6.80	units	1.00	I-1586-85	3 May 17 15:38	DGF
pH PIEIG	* 7.1	units	1.0	SM 4500 H+ B-2000	4 May 17 17:01	DK
Sulfate	1020 -	mg/L	5.0	ASTM D516-07	11 May 17 8:19	KCJ
Chloride	6.8	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	1790	mg/L	10	SM 2540 C-97	5 May 17 13:54	RC
Calcium	346.0	mg/L	0.500	SW6010C	9 May 17 10:44	RC
Lithium	0.123	mg/L	0.005	SW6010C	9 May 17 10:44	RC
Barium	0.026	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	0.011 ^	mg/L	0.005	SW6010C	9 May 17 10:44	RC
Boron	0.240	mg/L	0.100	SW6010C	9 May 17 10:44	RC
Antimony	< 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
seryrraum	@See Narr					
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
Molybdenum	9.54 @	uq/L	0.50	SW6020A	17 May 17 13:16	RMV
Selenium	< 5 @^	uq/L	0.5	SW6020A	17 May 17 13:16	RMV
Fhallium	< 0.5 @	ug/L	0.1	SW6020A	17 May 17 13:16	RMV
Fluoride	0.250	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:

8 = Due to sample matrix
1 = Due to sample quantity
4 = Due to internal standard response

CERTIFICATION: HN 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

Sample Description: SLAG 2B

Report Date: 20 Jun 2017 Lab Number: 17-A18629 Work Order #: 31-0190 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 3 May 2017 12:26
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 7:25	ABL
Radium 228	SEE ATTAC	HED		EPA M9320	20 Jun 17 7:25	ABL
pH, Field	7.02	units	1.00	I-1586-85	3 May 17 12:26	DGF
Hq	* 7.1	units	1.0	SM 4500 H+ B-2000	4 May 17 17:28	DK
Sulfate	856 ~	mg/L	5.0	ASTM D516-07	11 May 17 8:19	KCJ
Chloride	35.7	mg/L	3.0	SM 4500 C1 E	5 May 17 12:11	AKE
Mercury	0.012	ug/L	0.005	EPA 245.7	18 May 17 15:10	RMB
Solids, Total Dissolved	1550	mg/L	10	SM 2540 C-97	5 May 17 13:54	RC
Calcium	248.0	mg/L	0.500	SW6010C	9 May 17 10:44	RC
Lithium	0.036	mg/L	0.005	SW6010C	9 May 17 10:44	RC
Barium	0.101	mg/L	0.005	SW6010C	9 May 17 10:44	RC
Chromium	0.015	mg/L	0.010	SW6010C	9 May 17 10:44	RC
Cobalt	< 0.01 ^	mg/L	0.005	SW6010C	9 May 17 10:44	RC
Boron	3,660	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	2.50 @	ug/L	0.50	SW6020A	17 May 17 13:16	RMV
Beryllium	< 0.25	ug/L	0.05	SW6020A	17 May 17 13:16	RMV
	@See Narr					
Cadmium "	< 0.5 €	ug/L	0.1	SW6020A	17 May 17 13:16	RMV
Lead	3.17 €	ug/L	0.50	SW6020A	17 May 17 13:16	RMV
Molybdenum	4.89 @	ug/L	0.50	SW6020A	17 May 17 13:16	RMV
Selenium	< 5 @^	ug/L	0.5	SW6020A	17 May 17 13:16	RMV
Thallium	< 0.5 @	ug/L	0.1	SW6020A	17 May 17 13:16	RMV
Fluoride	0.100	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 Minnemota Department of Nealth 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 matrix
2 = Due to sample quantity
3 = Due to internal standard response
CERTIFICATION: MN LAB # 027-015-125 NI LAB # 999447680 ND MICRO # 1013-M ND NW/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.mytl.com



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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.



Date: 6/19/2017

CLIENT:

MVTL Inc.

CASE NARRATIVE

Project:

Ottertail Power Big Stone

Report ID: \$1705190001

Lab Order:

S1705190

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: 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: Lab ID:

Ottertail Power Big Stone

ClientSample ID: A18623 Slag-4

\$1705190-007

COC:

WEB

Date Reported 6/19/2017

Report ID

\$1705190001

WorkOrder:

S1705190

CollectionDate: 5/3/2017 11:10:00 AM

5/9/2017 11:24:00 AM

DateReceived:

FleldSampler:

Matrix: Water

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/	Init
Radionucildes - Total							
Radium 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	06/04/2017 254	MB
Radium 228 Precision (±)	NA	pCI/L			Ga-Tech	06/04/2017 254	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

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Sample Analysis Report

MVTL Inc Company:

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Big Stone

Lab ID:

\$1705190-008 ClientSample ID: A18624 Slag-5

COC:

WEB

Date Reported

6/19/2017

Report ID

S1705190001

WorkOrder:

\$1705190

CollectionDate: 5/3/2017 3:36:00 PM

DateReceived: FieldSampler:

5/9/2017 11:24:00 AM

Matrix:

Water

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/ini	
Radionuclides - Total					1		
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	05/30/2017 1242	MB
Radium 226 Precision (±)	NA	pCI/L			SM 7500 Ra-B	05/30/2017 1242	MB
Radium 228	NO	pCi/L		2	Ga-Tech	06/04/2017 557	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	06/04/2017 557	MB

These results apply only to the samples tested.

Qualifiers:

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 leboratory
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

MVTL Inc Company:

1126 N Front St

New Ulm, MN 56073

ProjectName: Lab ID:

Ottertail Power Big Stone

ClientSample ID: A18625 Slag-6

S1705190-009

COC:

WEB

Date Reported

6/19/2017

Report ID

S1705190001

WorkOrder:

\$1705190

CollectionDate: 5/3/2017 12:55:00 PM DateReceived:

5/9/2017 11:24:00 AM

FieldSampler:

Matrix: Water

Commente

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/In	
Radionuclides - Total							
Radium 226	ND	pCI/L		1	SM 7500 Ra-B	05/30/2017 1242	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	05/30/2017 1242	MB
Radium 228	ND	pGi/L		2	Ga-Tech	06/04/2017 900	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	06/04/2017 900	MB

These results apply only to the samples tested.

Qualiflers:

Analyte 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

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

MVTL Inc Company:

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Big Stone

Lab ID: ClientSample ID:

S1705190-010 A18626 Slag-7

COC:

WEB

Date Reported

6/19/2017

Report ID

S1705190001

WorkOrder:

S1705190

CollectionDate: 5/3/2017 11:55:00 AM

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

FieldSampler:

Water Matrix:

Commante

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Ini	
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	05/30/2017 1242	MB
Radium 226 Precision (±)	NA	pCI/L			SM 7500 Ra-B	05/30/2017 1242	MB
Radium 228	ND	pCi/L		2	Ga-Tech	06/04/2017 1204	MB
Radium 228 Precision (±)	NA	pCI/L			Ga-Tech	06/04/2017 1204	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 10 of 13



Sample Analysis Report

MVTL Inc Company:

1126 N Front St

New Ulm, MN 56073

ProjectName: Ottertail Power Big Stone Lab ID:

S1705190-011 ClientSample ID: A18627 Slag-8 WEB

COC:

Date Reported 6/19/2017

Report ID S1705190001

WorkOrder:

\$1705190

CollectionDate: 5/3/2017 2:21:00 PM DateReceived: 5/9/2017 11:24:00 AM

FieldSampler:

Matrix: Water

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Ini	
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	05/30/2017 1242	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	05/30/2017 1242	MB
Radium 228	ND	pCi/L		2	Ga-Tech	06/04/2017 1507	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	06/04/2017 1507	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank B

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

Metrix Effect

Reviewed by: All

Wade Nieuwsma, Assistant Laboratory Manager

Page 11 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:

S1705190-012 A18628 Slag-9

COC:

WEB

Date Reported

6/19/2017

Report ID

S1705190001

WorkOrder:

S1705190

CollectionDate: 5/3/2017 3:38:00 PM DateReceived:

5/9/2017 11:24:00 AM

FleidSampler:

Matrix:

Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/In	
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	05/30/2017 1242	MB
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	05/30/2017 1242	MB
Radium 228	ND	pCi/L		2	Ga-Tech	06/04/2017 1810	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	06/04/2017 1810	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

X Matrix Effect

Reviewed by: All

Wade Nieuwsma, Assistant Laboratory Manager

Page 12 of 13



Sample Analysis Report

Company:

MVTL Inc

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Big Stone

Lab ID:

S1705190-013 ClientSample ID: A18629 Slag-2B

COC:

WEB

Date Reported

6/19/2017

Report ID

\$1705190001

WorkOrder:

\$1705190

CollectionDate: 5/3/2017 12:26:00 PM

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

FieldSampler:

Matrix:

Water

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/In	
Radionuclides - Total							
Radium 226	ND	pCi/L		1	SM 7500 Ra-B	05/30/2017 1242	MB
Radium 226 Precision (±)	NA	pCI/L			SM 7500 Ra-B	05/30/2017 1242	MB
Radium 228	ND	pCi/L		2	Ga-Tech	06/04/2017 2113	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	06/04/2017 2113	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 Detected at the Reporting Limit

Splke Recovery outside accepted recovery limits

RL - Reporting Limit

Calculated Value

Analyzed at IML Gillette 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 13 of 13



Inter-Mountain Labs

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

ANALYTICAL QC SUMMARY REPORT

CLIENT:

Project:

MVTL Inc

S1705190 Work Order:

Ottertail Power Big Stone

Date: 6/19/2017

Report ID: S1705190001

m 228 by Ga/Tech Sample Type MBLK		Units: pCi/L						
MB-440 (06/03/17 11:39)	RunNo: 146325	Prep	Date: 05/2	24/17 14:00	Bat	chID 13229		
Analyte	Result	RL	Splke	Ref Samp	%REC	% Rec Limits	Qu	
Total Radium 228	ND	1						
MB-439 (06/16/17 21:41)	RunNo: 146951	Prep	Date: 05/2	22/17 13:02	Bat	chID 13303	77	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qu	
Total Radium 228	ND	1						
m 228 by Ga/Tech	Sample Type LCS		Units	: pCi/L				
LCS-440 (06/03/17 14:42)	RunNo: 146325	Prep	Date: 05/2	4/17 14:00	Bate	chID 13229		
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua	
Total Radium 228	43	1	40.1		108	65.9 - 132		
LCS-439 (06/17/17 00:44)	RunNo: 146951	Prept	Date: 05/2	2/17 13:02	Bato	hID 13303		
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua	
Total Radium 228	43	1	40.1		108	65,9 - 132		
m 228 by Ga/Tech	Sample Type LCSD		Units	: pCl/L				
LCSD-439 (06/17/17 03:47)	RunNo: 146951	Prepi	Date: 05/2	2/17 13:02	Bato	hID 13303		
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qua	
Total Radium 228	46	1	43	6.54	115	20		
m 228 by Ga/Tech	Sample Type MS		Units	pCi/L				
MS-440 (06/03/17 20:48)	RunNo: 146325	PrepI	Date: 05/2	4/17 14:00	Bato	hID 13229	- 5.	
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Que	
Total Radium 228	45	1	40.1	ND	111	50 - 139		
S1705188-004AMS (06/19/17 01:34)	RunNo: 146951	PrepD	Date: 05/2	2/17 13:02	Bato	hID 13303		
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua	
Total Radium 228	86	1	80.1	1	105	50 - 139		
n 228 by Ga/Tech	Sample Type MSD		Units:	pCi/L				
MSD-440 (06/03/17 23:51)	RuпNo: 146325	PrepD	ate: 05/24	4/17 14:00	Batc	hID 13229		
Analyte	Result	RL.	Conc	%RPD	%REC	% RPD Limits	Qua	
Total Radium 228	44	1	45	2.64	108	20		
S1705188-004AMSD (06/19/17 04:37)	RunNo: 146951	PrepD	ate: 05/22	2/17 13:02	Batch	1ID 13303		
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual	

Qualiflers:

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

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



ANALYTICAL QC SUMMARY REPORT

CLIENT: Work Order:

Project:

MVTL Inc

S1705190

Ottertail Power Big Stone

Date: 6/19/2017

Report ID: S1705190001

Radium 226 in Water -	Sample Type MBLK		Units	pCI/L			
MB-1754 (05/30/17 09:52)	RunNo: 146341	PrepD	Date: 05/2	2/17 0:00	Bate	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:	pCI/L			
LCS-1754 (05/30/17 09:52)	RunNo: 146341	PrepD	ete: 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	PrepD	ate: 05/22	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		Units:	pCi/L			
S1705189-003AMS (05/30/17 09:52)	RunNo: 146341	PrepD	ate: 05/22	/17 0:00	Bato	hID 13230	
Analyte	Result	RL	Splke	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	- 11	1	12.8	ND	83.2	65 - 131	

Qualifiers:

Analyte detected in the associated Method Blank

G Analyzed at IML Gillette leboratory

Analyte detected below quantitation limits

ND Not Detected at the Reporting Limit

RPD outside accepted recovery limits R

Matrix Effect X

Value above quantitation range

H Holding times for preparation or analysis exceeded

Analyzed by another laboratory

0 Oulside the Range of Dilutions

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
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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 Work

Work Order: 201731-0190

ab IDs: 1/-A1861/ to 1/-A	18029							Work Order: 201/31-0190										
malyte and the second	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	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 2.0	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		17A18619q 17A18628q	<0.5 <0.5	5.47 4.85	109 97	75-125 75-125		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		360.0 298.0	88 100	9.0 1.4	10 10	107 100	90-110 90-110	< 0.5	
Chloride mg/L		Į.	-	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	77770	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	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	< 0.005	
Fluoride mg/L	1	7.)Z)-	0.20 0.20	a18619qc a18627qc	0.540 0.540	0.720 0.740	90 100	75-125 75-125		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	20170	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	7	
Lithium mg/L	1.000 1.000	101 101	85-115 85-115	2500	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 0.0	10 10	102 103	90-110 90-110		



1126 N. Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890
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1201 Lincoln Highway ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885
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Page: 2 of 2

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

ab IDs: 17-A18617 to 17-A18629 Project: BIG STONE PLANT 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 %	Laboratory of the Continue of	MSD/ 4 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-A18618 17-A18627	< 0.005 < 0.005	0.101 0.103	101 103	63-111 63-111	0.101 0.103	0.102 0.105	102 105	1.0 1.9	18 18	94 98	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	17A18619q 17A18628q	4.12 9.54	30.1 31.8	104 89	75-125 75-125	30.1 31.8	30.7 34.8	106 101	2.0 9.0	10 10	102 102	90-110 90-110	< 0.5 < 0.5
pH units				:			:			7.0 7.1 8.1	7.0 7.1 8.1	:	0.0 0.0 0.0	2.5 2.5 2.5	101 101 101	90-110 90-110 90-110	• .
Selenium ug/L	25.0 25.0	107 107	85-115 85-115	25.0 25.0	17A18619q 17A18628q	<5 <5	31.2 27.0	125 108	75-125 75-125	31.2 27.0	29.5 26.6	118 106	5.6 1.5	10 10	102 103	90-110 90-110	
Solids, Total Dissolved mg/L	2			:	1:	7	1		E.	2160 1790	2260 1770		4.5 1.1	8	102	85-115	< 10
Sulfate mg/L	1	4	2	500 500	17-A18609 17-A18620	140 71.1	651 550	102 96	74-128 74-128	100,000	674 557	107 97	3.5 1.3	5 5	101 101	80-120 80-120	0.00
Thallium ug/L	5.00 5.00	102 102	85-115 85-115	1000	17A18619q 17A18628q	<0.5 <0.5	5.10 4.96	102 99	75-125 75-125		5.69 5.10	114 102	10.9 2.8	10 10	99 102	90-110 90-110	

The calcium matrix spike recovery was outside the acceptance limits, see narrative. The thallium duplicate RPD was outside the acceptance limits, see narrative. The beryllium known was outside the acceptance limits, see narrative.

Approved by

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 Date 4 May 17 pages 1-21

Project Otter Tail Power Company	Project Type:	Big Stone Plant CCR	Name of Samplers:	DE MS
Report Otter Tail Power Company	Carbon Copy:			1110
Attn: Paul Vukonich	Attn:		Quote Number:	
Address P.O. Box 496	Address:		Work Order Number:	31-0190
Fergus Falls, MN 56538-0496	1		Lab Numbers:	01 01.10
Phone: 218-739-8349				

		Sample In	formation									Bott	le Ty	/pe					Analysis
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	1000 HNO3	Fillered Yor M	1000 попе	500 HNO3	14	18	Filler? Y or M	1000 Ambar	1000 Amber	500 NaOH	Other: 150 Haz	Other 150 M.	Analysis Required
A18617			3May 17	1056	GW		2	N	1	1	N				250				See Attached
18	НЗОХ		1,	1139	GW		2	N	1	1	N					0 10		75.5	
19	H4OX	1		1214	GW		2	N	1	1	N			-		1		His	
30	H-6	1		1253	GW		2	N	1	1	N			L-		h-T		1	
	H-8			1348	GW	-	2	N	1	1	N		-		1000	57 1	1	1	
22	H-9		Land Comment	1460	GW		2	N	1	1	N					1			
-	Slag 1			-	GW		2	N	-1	1	N							-	
73	Slag 4	1		1110	GW	1	2	N	1	1	N								
	Slag 5			1536	GW		2	N	1	1	N						-		/
25	Slag 6	4	1	1255	GW		2	N	1	1	N				1				

Comments:

WORK ORDER #2

Samples Relino	uished By:	0+	En	Samples Received By	il. Alldin	
Date: 3Mqul		Time:	1847 Temp: 0.0	Date: 4 / 1/04 /7	Time:7:15	Temp: 1.00
Samples Relind	uished into:	(Fridge)	Log in Cart Other:			77 7 7 7 7 7 7
Samples Relind	uished By:			Samples Received By	<i>(</i> :	
Date:		Time:	Temp:	Date:	Time:	Temp:
Delivery:	Samplers	Other:		Seal Number(s) - If U	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 Power Company	Project Type:	Big Stone Plant CCR	Name of Samplers:	00 446
Report Otter Tail Power Company	Carbon Copy:			DF, MS
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 Information							Bottle Type									Analy		
cab Number	Sample ID	Unique Station ID	Date	Тіте	Sample Type	Sample Location	1000 HINO3	Filtered Yor N	1000 none	500 HNO3	1.	18	Filler? Y or M		1000 Amber	500 NaOH	Other: 150 Hon	Other 150 No.	Analysis Required
26			3 May 17	1155	GW	77	2.	N	1	1	N	H		1					See Attached
27	Slag 8	-	1,	14:21	GW		2	N	1	1	N	h=y		. 11			-	1-2	
	Slag 9			1539	GW		2	N	1	1	N	1		1	-				
	Slag 9 Dec	ер		-	GW		2	N	1	1	N								
	Slag 2B		1	1226	GW		2	N	1	1	N					1			
								0.											
omme	nts:	-		-							1	_							

WORK ORDER #2

D 1 . D .!!	- dala - d D -	11		10 1 0 1 1	1 1	
Samples Relin		IJ F	2	Samples Received	By: 11. Allow	
Date: 3M	917	Time: 184	7 Temp: 0.0	Date: 4 May 17	Time: 715	Temp: 1-0C
Samples Relin	quished into:	Fridge Lo	g in 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	(CE)	Other:	Seals Intact?	Yes No	



5911-7 2017

Big Stone Sampling 2017

Denth (Inches) Floretion Equipment Science (miles and a	£	Goes	Pump Rate	Dedicated?	Sample Equipment	Well Elevation	(Inches)	Well Depth	Parameter List	Site
18.74							(mones)		A	WELL10
1,0	1,3						7		Â	WELL11
140 100 110 110	1,3									
112.40 4 1071.89 Other Pump Yes 20,000 No 1,3	1,3	No							A	WELL12
32.50 2 1102.17 Baller Yes N/A Yes 1.3	1.3	Yes	N/A	Yes					В	'S1
43.12 2 1102.39 Baller Yes N/A Yes 1.3	1.3	Yes	N/A	Yes	Baller				В	S2
62.50 2 1102.65 Baller Yes N/A No 13	1.3			Yes	Baller	1102.85			В	S3
27.70 2 1090.57 Bailer Yes N/A Yes 1,3	13				Bailer	1090.57	2	27.70	8	S4.
46.72 2 1091.40 Bailer Yes N/A Yes 1,3	1,0					1091.40		46.72	В	\$5
AN AN AN ANA ANA ANA ANA ANA ANA ANA AN									В	S6
20.04					the management				C	-H1OX
66.44				2.000					C	HINT
7.11									C, CCR	HZOX
20.00									G	HZINT
62.30 2 1103.91 Bailer Yes N/A Yes 1,3										
22.55 2 1095.18 Bladder Yes 100 Yes 1,3 54.31 2 1095.17 Whale No 2000 No 1,3	1,3	Yes					2		C, CCR	H3OX
54.31 2 1095.17 Whale No 2000 No 1,3	1,3	No	2000	No					С	H3INT
27.70 2 4100.72 Diedder V 400	1.3	No	100	Yes	Bladder	1108.22	2		C, CCR	H4OX
60.01 2 1108.61 Keck/Tsunami No 2000 Yes 1.3				No	Keck/Tsunami	1108.61		60.01	C	H4INT
43.30 2 1122.80 Whale No 1000 No 1,3	1.3			No	Whale	1122.80	2	43.30	C	H5*
15.00 2 1097.76 Bladder Yes 100 Yes 1,3	1.3				Bladder	1097.76	2	15.00	C, CCR	
33.20 2 1106.06 Whale No 1000 Yes 1,3							2	33.20	C	117-
22.05 2 1081.23 Bladder Yes 100 No 1,3				7-7-8				22.05	C, CCR	- 4HB=
30.20 2 1086.21 Bladder Yes 100 No	1,3							30.20	C, CCR	-1H9=
1.1.1.1	4.0								В	-BC1
1222 1 101111 0000 Are 190 190 190	1,3				711-211-21				В	BG101-
00.10	1,3							12.7	В	BC2R
32.48 2 1115.28 Baller Yes N/A No 1,3 35.15 2 1114.42 Baller Yes N/A Yes 1.3	1,3								В	BC3Rs
35.15 2 1114.42 Baller Yes N/A Yes 1,3	1,3				No. of the last of					
32.48 2 1115.28 Baller Yes N/A No 1,3 35.15 2 1114.42 Baller Yes N/A Yes 1,3 34.60 2 1113.86 Baller Yes N/A Yes 1,3 37.32 2 1123.02 Baller Yes N/A No 1,3 37.32 2 1123.02 Baller Yes N/A No 1,3	1,3								В	BC4R*
37.92 2 1123.02 Bailer Yes N/A No 1,3	1,3	No							В	BCSR
50.50 2 1121.00 Dallel 765 N/A NO 1.3	1,3	No	NA						В	BC6R
34.90 2 TBD LOW FLOW No 100 Yes 4,3	1.3	Yes		No	LOW FLOW			34.90		CSTAGA 3
	-3.5		400			4411.06				SDAG2
2 100							2			SDAGS -
	12	Na		No	LOW FLOW	TBD	2	39.00	CCR	-(SEAGH
39.00 2 TBD LOW FLOW No 100 No 1,3 38.80 2 1107.30 LOW FLOW No 100 Yes 1,3 37.30 2 1111.51 LOW FLOW No 100 Yes 1,3 48.70 2 1114.39 LOW FLOW No 100 Yes 1,3	1.3				LOW FLOW	1107.30	2	38.80	CCR	SLAG5
37.30 2 1111.51 LOW FLOW No 100 Yes 1.3	13							37.30	CCR	SUAGO
48.70 2 1114.39 LOW FLOW No 100 Yes 4.3	113								CCR	SEAG7
52.09 2 1127.26 LOW FLOW No 100 No 1-3	110						2		CCR	SCAGS
14 44 1	713							20.00.00	CCR	SEAG9
1111 1 410701 FEMILIEM NV 199										- CLAGS DEEP
1212 117712 71771717 77									CCR	SEAG2B
100 100										COOLING POND
N/A N/A N/A Grab N/A N/A NO 1,3	1,3								A	EVAPORATION POND
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	1,3								A	HOLDING POND
N/A N/A N/A Grab N/A N/A N/A 1.3	1,3	No	N/A	NA	Grab	N/A	N/A	N/A	C	RECLAIM POND

1000 NONE SOO HNOS SOO HISOY SOO HADS FILL

Pond ooo wone SOO HASOY

^{** 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 Parameters

Field pH Field Temperature Field Conductivity

Lab Parameters

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"

PM.

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.

Groundy	vater Assess	sment			Site:	Ott	er Tai	Power Co./ Big Stone				
Sampling P	ersonnel:				Facility ID: -							
	Justy Faceby	n			Date: 3May 17							
	,				Unique S	tation ID -	-					
			_		Sample I	D:		Slag 4				
Well Con	dition					1.17%						
Well Locke	d?	(res) No			Protective	e Posts? (res	9	No				
Well Labele		Yes No	KI la		State ID			(No				
Casing Stra		(Pes) No	10.00		Grout Se	al Intact? Yes	5	400				
Repairs Ne	cessary:											
Well Infor		9.24			Well Cas	ing Elevation):	NA				
Constructed		39.00	_			ater Elevation		1				
Casing Dia		2"	-		Previous							
	Before Purge:	17.95				vel After Sar	nı	21.35				
Well Volum		47	Gallons	3				. WEN Steel Tape				
		*			1							
	Information	- 6	8			-	0.2					
Weather Co	A CONTRACT OF THE PARTY OF THE			Wind:			: Ma	stly Cloudy				
Sampling M		Grundfos	filadder	PDISP. E		Grab Othe		200				
Dedicated E		Yes No			Pumping			gpm				
Well Purge Time Purge		Yes (No	_			np Begai		am/pm				
Duplicate S		Yes (No) ID: -	2.0	Sample 5	H: 193.0	9	ino and pm				
Sample App			_	Color		se: None	_	Odor: None				
Sample App	carance.	General. 9	L Cionay	COIOI	Date File	oc. Juone	_	oddi. Jopie				
_ (B)		Specific	Temp	D. O.	Turbidity	Gallons	SE					
Time	pH	Cond.	°C	mg/L	NTU	Removed	Q#	Comments:				
1042	6.56	2996	11.60	NA		3.5	1					
1056	6.58	2489	11.36		1	7	2					
1110	6.59	2984	11.78			105	3					
							4					
		1 / 1		1	1	-	5					
Stabilized?	res	No		Amou	nt Water F	10.5		Gallons				
Comments	3:											

New	Ulm,	MN	560

	luwater	Assessm	61	3 3	Site:	Otte	r Tail Po	ower Co./ Big
Sampli	ng Person	n .			Facility ID:			
		Max+Sx	en		Date: 37	Maril		
					Unique Sta	ition ID:		
					Sample ID		S	lag 5
Well C	ondition							
Well Lo	cked?	(Yes No			Protective	Posts? Res)	No
Well La	beled? (Yes No			State ID Ta	ag? Yes	(No
Casing	Straight?	(Yes) No			Grout Seal	Intact? Yes		(No)
	Necessa							
Well Ir	nformatio	on						2.00
Well De	epth:	39.00			Well Casin	g Elevation:	1107	30
Constru	icted Depl	t 38.80			Static Water	er Elevation: /	082.	
Casing	Diameter:	2"	5		Previous S	tatic: 1083.8	9	
Water I	evel Befo	re Purge	14.81		Water Leve	el After Sample	3	6-27
Well Vo		2.31	Gallons		Measurem	ent Method:	Elec.	
					1			
	ing Infor		3	Wind:	200	Sky:	Rai	2
Weathe		rTemp: 6	Bladder SS/T	Wind: U	NO 10	Sky: Grab Other		1
Weathe Samplin	er Conditiong Method	r Temp: 6	Bladder SS/T		vvnate,	Grab Other		
Weathe Samplir Dedicat	er Conditiong Method ted Equipm	rTemp: 6 : Grundfos n Yes No	Bladder SS/T		Pumping R	Grab Other:	5	gpm
Weathe Samplir Dedicat Well Pu	er Conditiong Method	r Temp: 6 : Grundfos n Yes No	Bladder SS/T		Pumping R Time Pump	Grab Other ate: O.) Began: /5	5	gpm am /
Weathe Samplir Dedicat Well Pu Time Pi	er Condition ng Method ted Equipn urged Dry? urged Dry?	r Temp: 6 : Grundfos n Yes No	Bladder SS/T		Pumping R	Grab Other late: 0, 2 Began: 15 mpling: 15	5	gpm
Weather Sampling Dedicate Well Pu Time Pu Duplica	er Condition ng Method ted Equipn urged Dry? urged Dry' te Sample	r Temp: 6 Grundfos n Yes No Yes No	Bladder SS/T	Disp. Bailer	Pumping R Time Pump Time of Sa Sample EH	Grab Other ate: 0.2 Began: 15 mpling: 15	5 121 36	gpm am / am /
Weather Sampling Dedicate Well Pu Time Pu Duplica	er Condition ng Method ted Equipn urged Dry? urged Dry' te Sample	r Temp: 6 : Grundfos n Yes No No 153	Bladder SS/T		Pumping R Time Pump Time of Sa Sample EH	Grab Other late: 0, 2 Began: 15 mpling: 15	5 121 36	gpm am /
Weather Sampling Dedicate Well Pu Time Pu Duplica	er Condition ng Method ted Equipn urged Dry? urged Dry' te Sample	r Temp: 6 : Grundfos n Yes No No 153	Bladder SS/T	Disp. Bailer	Pumping R Time Pump Time of Sa Sample EH	Grab Other ate: 0.2 Began: 15 mpling: 15	5 121 36	gpm am / am /
Weather Samplir Dedicate Well Pur Time Pur Duplicate Sample	er Condition Method Red Equipmurged Dry? urged Dry? te Sample Appearar	r Temp: 6 : Grundfos n Yes No ? 153 GYes No General: Cond.	ID:	Disp. Bailer Color: V	Pumping R Time Pump Time of Sa Sample EH	Grab Other: ate: 0.2 Began: 15 mpling: 15 cs: 162.9	5 121 36 nent	gpm am / am /
Weather Sampling Dedicate Well Purime Pupilicate Sample	er Conditiong Method ted Equipnurged Dry? urged Dry? te Sample Appearar	r Temp: 6 : Grundfos n Yes No Yes No 153 GYes No General: C	Bladder SS/T	Color: V	Pumping R Time Pump Time of Sa Sample EH O Pha Turbidity NTU	Grab Othersate: O. 2 Began: /5 mpling: (5- i: 162.9 se:\+ \$2.4\day Gallons Removed	SEQ	gpm am / am /
Weather Sampling Dedicate Well Purime Pupilicate Sample	er Condition Method Red Equipmurged Dry? urged Dry? te Sample Appearar	r Temp: 6 : Grundfos n Yes No ? 153 GYes No General: Cond.	ID:	Color: V	Pumping R Time Pump Time of Sa Sample EH	Grab Othersate: O. 2 Began: /5 mpling: (5- i: 162.9 se:\+ \square à.\(\delta\)	5 521 36 nent SEQ #	gpm am / am /
Weather Sampling Dedicated Well Purificated Duplicated Sample 10 Time 153/	er Conditiong Method ted Equipm trged Dry? trged Dry? te Sample Appearar	r Temp: 6 : Grundfos n Yes No Pes No 153 TYes No n General: Cond.	ID:	Color: V	Pumping R Time Pump Time of Sa Sample EH O Pha Turbidity NTU	Grab Othersate: O. 2 Began: /5 mpling: (5- i: 162.9 se:\+ \$2.4\day Gallons Removed	SEQ #	gpm am / am / Odor: v\ g
Weather Sampling Dedicate Well Purime Pupilicate Sample	er Condition Method Red Equipmurged Dry? urged Dry? te Sample Appearar	r Temp: 6 : Grundfos n Yes No Pes No 153 TYes No n General: Cond.	ID: Lew Control of the control of th	Color: V	Pumping R Time Pump Time of Sa Sample EH O Pha Turbidity NTU	Grab Othersate: O. 2 Began: /5 mpling: (5- i: 162.9 se:\+ \$2.4\day Gallons Removed	55 121 36 nent SEQ #	gpm am / am /
Weather Sampling Dedicated Well Purime Pupilicated Sample 10 Time 153/	er Conditiong Method ted Equipm trged Dry? trged Dry? te Sample Appearar	r Temp: 6 : Grundfos n Yes No Pes No 153 TYes No n General: Cond.	ID: Lew Control of the control of th	Color: V	Pumping R Time Pump Time of Sa Sample EH O Pha Turbidity NTU	Grab Othersate: O. 2 Began: /5 mpling: (5- i: 162.9 se:\+ \$2.4\day Gallons Removed	55 521 36 nent SEQ #	gpm am / am / Odor: v\ g

Minnesota Valley Testing Laboratories, Inc.

	1000	market and the second	Charles Allerande
Maria	I Illum	RANI	56073
NEW	Ulim.	IVIIV	DOULS

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507 354 8517

	Groundwater Assessment				Site:	O	ter Ta	il Power Co./ Big Stone
Sampling	Personnel:				Facility ID:			
		(45vV)			Date:	3M9417	5	
	with 1	n ye	-		Unique Sta	ation ID		
_					Sample ID		=	Slag 6
Well Co	ndition					1 47 - 17		
Well Loc	ked?	(No			Protective	Posts? (Ye	3	No
Well Lab	eled?	(es No			State ID T	ag? Ye	s	(MD)
Casing S	Straight?	YES No			Grout Sea	I Intact? Ye	es	COND
	Necessary:				-			
	formation							
Well Dep	oth: 3	7.50			Well Casir	ng Elevation:		A'A
	ted Depth:	37.30	3			ter Elevation:		1
Casing D		2"	7		Previous S	Static:		1
	evel Before Pu	rge: 24,4	6		Water Lev	el After Sam	C	31.39
Water Le	evel belole ru						_	75
		1.13	Gallons		Measurem	ent Method:	Elec.	Wbl Steel Tape
Water Le			Gallons	0	Measurem	nent Method:	€lec.	Wbi Steel Tape
Well Volu	ume: 🤸	1.13	Gallons	+	Measurem	nent Method:	Elec.	. Wild Steel Tape
Well Volu Samplir	ng Informati	0n	Gallons	Wind: A	1			
Well Volu Samplin Weather	ng Informati	on Temp: G	Gallons		1 1W 7	Sk	ty: P	Mel Steel Tape
Sampling Weather Sampling	ng Informati Conditions:	on Temp: 6	Gallons	Wind: A	いい フ Whale	Sk Grab Otl	ty: P	thy. Chydy
Sampling Weather Sampling Dedicate	ng Informati Conditions: Method: d Equipment:	on Temp: Grundfos Yes (1)	Gallons		いめ フ Whale Pumping F	Sk Grab Ott Rate: 0,2	ty: P	thy. Claridy
Sampling Weather Sampling Dedicate Well Purg	ng Informati Conditions: Method: d Equipment: ged Dry?	on Temp: (Grundfos Yes (No	Gallons		Whale Pumping F Time Pum	Sk Grab Ott Rate: 0:2	ty: P	gpm am / God
Sampling Weather Sampling Dedicate Well Purg Time Purg	ng Informati Conditions: Method: d Equipment: ged Dry? rged Dry?	on Temp: Grundfos Yes (D) (PS) No	Gallons 3 Bedder SSI		Whale Pumping F Time Pum Time of Sa	Sk Grab Ott Rate: 0,2 ip Began: /; ampling: /	ty: P	gpm am / God
Sampling Weather Sampling Dedicate Well Purg Time Pur	ng Informati Conditions: Method: d Equipment: ged Dry? rged Dry? e Sample?	on Temp: Grundfos Yes No 1250 Yes No	Gallons 3 Byadder \$\$7	Disp. Bailer	Whale Pumping F Time Pum Time of Sa Sample El	Sk Grab Ott Rate: 0,2 ip Began:); ampling: j	ty: P	gpm am / 6m² am / 6m²
Sampling Weather Sampling Dedicate Well Purg Time Pur Duplicate	ng Informati Conditions: Method: d Equipment: ged Dry? rged Dry?	on Temp: Grundfos Yes No 1250 Yes No	Gallons 3 Bedder SSI		Whale Pumping F Time Pum Time of Sa Sample El	Sk Grab Ott Rate: 0,2 ip Began: /; ampling: /	ty: P	gpm am / God
Sampling Weather Sampling Dedicate Well Purg Time Pur Duplicate Sample A	ng Informati Conditions: Method: d Equipment: ged Dry? rged Dry? e Sample?	on Temp: (Grundfos Yes (No 1250 Yes (O General:	Gallons 3 Byadder \$\$7	Disp. Bailer Color: 7	Whale Pumping F Time Pum Time of Sa Sample El	Sk Grab Ott Rate: 0:2 pp Began: // ampling: 1 H: 1615 se: Nave	ty: Printer: 5 241 255	gpm am / 6m am / 6m Odor: Nore
Sampling Weather Sampling Dedicate Well Purg Time Pur Duplicate Sample A	ng Informati Conditions: Method: d Equipment: ged Dry? rged Dry? e Sample? Appearance:	on Temp: Grundfos Yes No 1250 Yes No	Gallons Bledder SS/1 ID: — Cloudy	Disp. Bailer Color: 7	Whale Pumping F Time Pum Time of Sa Sample El	Sk Grab Ott Rate: 0,2 ip Began:); ampling: j	ty: P	gpm am/6m am/6m Odor: Nese
Sampling Weather Sampling Dedicate Well Purg Time Pur Duplicate Sample A	ng Informati Conditions: Method: d Equipment: ged Dry? rged Dry? e Sample? Appearance:	on Temp: Grundfos Yes No 1250 Yes No General: Specific Cond.	Gallons Bladder SST ID: Cloudy Temp CC	Color: 79	Whale Pumping F Time Pum Time of Sa Sample El	Sk Grab Ott Rate: 0,2 ip Began:); ampling: H: G 5 se: Nave	xy: 10 mer: 5 241 255	gpm am / 6m am / 6m Odor: Nore
Sampling Weather Sampling Dedicate Well Purg Time Pur Duplicate Sample A	ng Informati Conditions: Method: d Equipment: ged Dry? rged Dry? e Sample? Appearance:	on Temp: Grundfos Yes No 1250 Yes No General:	Gallons Bredder SS/ ID: Cloudy	Disp. Bailer Color: 7	Whale Pumping F Time Pum Time of Sa Sample El	Sk Grab Ott Rate: 0,2 pp Began:); ampling: 1 H: 1615 se: Nave	xy: }- ner: 5 241 255	gpm am/6m am/6m Odor: Nese
Sampling Weather Sampling Dedicate Well Purg Time Pur Duplicate Sample A	ng Informati Conditions: Method: d Equipment: ged Dry? rged Dry? e Sample? Appearance:	on Temp: Grundfos Yes No 1250 Yes No General: Specific Cond.	Gallons Bladder SST ID: Cloudy Temp CC	Color: 79	Whale Pumping F Time Pum Time of Sa Sample El	Sk Grab Ott Rate: 0,2 ip Began:); ampling: H: G 5 se: Nave	SEQ #	gpm am/6m am/6m Odor: Nese
Sampling Weather Sampling Dedicate Well Purg Time Pur Duplicate Sample A	ng Informati Conditions: Method: d Equipment: ged Dry? rged Dry? e Sample? Appearance:	on Temp: Grundfos Yes No 1250 Yes No General: Specific Cond.	Gallons Bladder SST ID: Cloudy Temp CC	Color: 79	Whale Pumping F Time Pum Time of Sa Sample El	Sk Grab Ott Rate: 0,2 ip Began:); ampling: H: G 5 se: Nave	SEQ # 1 2 3	gpm am/6m am/6m Odor: Nese
Sampling Weather Sampling Dedicate Well Purg Time Pur Duplicate Sample A	ng Informati Conditions: Method: d Equipment: ged Dry? rged Dry? e Sample? Appearance:	on Temp: Grundfos Yes No 1250 Yes No General: Specific Cond.	Gallons Bladder SST ID: Cloudy Temp CC	Color: 79	Whale Pumping F Time Pum Time of Sa Sample El	Sk Grab Ott Rate: 0,2 ip Began:); ampling: H: G 5 se: Nave	SEQ #	gpm am/6m am/6m Odor: Nese

Comments:

* Good Recharge

(数)	New Ulm,	MN	560
25.00			00 1

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Groun	dwater A	ssessmer	nt		Site:	Otte	rT	ail Power Co./ Big Ston		
Samplin	g Personne	l:			Facility ID:					
	Duxly 8	augus 10			Date:					
	1				Unique Station ID: -					
			Ξ,		Sample ID);		Slag 7		
Well Co	ondition					Court Car				
Well Loc	ked?	(res) No			Protective	Posts? (E)	in.	No		
Well Lab	eled?	(res) No			State ID To			(1)		
	Straight?	(es No			Grout Sea	Intact? Yes	. 1	(40)		
Repairs	Necessary:									
Well In	formation									
Well Der	oth:	49.05			Well Casin	g Elevation:		NA		
	ted Depth:	48.70	_			er Elevation:		1		
	Diameter:	2"			Previous S			1		
	evel Before	Purge: 13	1.48		Water Lev	Water Level After Sampl 39,40				
Well Vol	ume: 5	.88	Gallons		Measurem	ent Method:	É	ec WL Steel Tape		
					1			THE PARTY OF THE P		
Weather Sampling	ng Inform Conditions Method: d Equipme	: Temp: (Bladder SSO	Wind: Disp. Bailer	Whale Pumping F	Sky: Grab Other Rate: 0.25		Mostly Cloudy		
	ged Dry?	Yes No	_		Time Pum		2¢			
	rged Dry?	1150	-		Time of Sa		53	@m/pm		
	Sample?	Yes (No)	_ID:		Sample El-			Carly 7 pm		
	Appearance		51. Cloudy	Color:		se: Nere	-	Odor: None		
	77		7			1,6		700.2		
(29)	at.	Specific	Temp ^O C	D. O.	Turbidity	Gallons	SEQ	Comments		
Time	pH	Cond.		mg/L	NTU	Removed		Comments:		
1150	6.90	1650	10,54	NA	NA	6	1			
		1	-	1	1		2			
		-					4			
				1		1				
wet	1 90	1-202	13 47 -				16	17 1		
1155 Stabilized	6.90	No 3	11.87	Ameura	Vater Remove	d: 6	5	Reckning Gallons		

545A	New	Ulm,	MN	5607
77				

Well Casi Static Wa Previous S Water Lev	a Posts Yes al Intact Yes ing Elevation:				
Protective State ID T Grout Sea Well Casi Static Wa Previous S Water Lev Measuren	e Posts Ves Fag? Yes al Intact Yes Ing Elevation: Static: vel After Samp	No (No) NA 1 30, 10 WD Steel Tape			
Protective State ID 1 Grout Sea Well Casi Static Wa Previous 3 Water Lev Measuren	Posts Yes Fag? Yes al Intact Yes Ing Elevation: Static: vel After Samp	No (No) NA 1 30, 10 WD Steel Tape			
Well Casi Static Wa Previous S Water Let Measuren	Posts Yes Fag? Yes al Intact Yes Ing Elevation: Static: vel After Samp	No (No) NA 1 30, 10 WD Steel Tape			
Well Casi Static Wa Previous S Water Lev Measuren	rag? Yes al Intact Yes ang Elevation: ster Elevation: Static: vel After Samp	NA JOSEPH Tape			
Well Casi Static Wa Previous S Water Lev Measuren	rag? Yes al Intact Yes ang Elevation: ster Elevation: Static: vel After Samp	NA JOSEPH Tape			
Well Casi Static Wa Previous S Water Lev Measuren	ing Elevation: ster Elevation: Static: vel After Samp	NA			
Well Casi Static Wa Previous S Water Lev Measuren	ing Elevation: iter Elevation: Static: vel After Samp	NA 1 30, 10 . WD Steel Tape			
Static Wa Previous S Water Lev Measuren	ter Elevation: Static: vel After Samp	30, 10 WD Steel Tape			
Static Wa Previous S Water Lev Measuren	ter Elevation: Static: vel After Samp	30, 10 WD Steel Tape			
Static Wa Previous S Water Lev Measuren	ter Elevation: Static: vel After Samp	30, 10 WD Steel Tape			
Previous S Water Lev Measuren	Static: vel After Samp	. Wi) Steel Tape			
Water Lev Measuren	vel After Samp	. Wi) Steel Tape			
Measuren		. Wi) Steel Tape			
T	nent Method: Erec				
d: WNW 10					
d: WNW 10					
Bailer (Whale)	Grab Other:	gpm gpm			
		am / 600			
		311.1			
		Odor: None			
	12				
		THE RESERVE OF THE RE			
		Comments:			
DA NA					
		-			
- 1		-			
ount Water Remove	ed: 17.35	Gallons			
ias to ha	we gothen h	nit by mad			
		and the same of the same of			
	Pumping Time Pun Time of S Sample E Or: Now Pho O. Turbidity NTU VA NA Dunt Water Remove	Pumping Rate: 0.25 Time Pump Begs 312 Time of Sampling 142 Sample EH: 141.5 Dr: Now Phase: Now Phase: Now 11.5 I Turbidity Gallons SEC Removed # UA NA 5.75 1 11.5 2 17.25 3 4 5 Dunt Water Removed: 17.25			

New	Ulm.	MN	56073

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Ground	dwater A	ssessmen	t		Site:	Otte	r Ta	il Power Co./ Big Stone
Sampling	Personnel	:			Facility ID:	-		
		resyn			Date:	3 May 17		
"		1	-		Unique St	ation (D: -	-	
			Ξ.		Sample ID):		Slag 9
Well Co	ndition							
Well Loc	ked?	(res) No	0		Protective	Posts? (es	>	No
Well Lab	eled?	res No			State ID T			(B)
Casing S	traight?	(Pes) No			Grout Sea	Intact? Yes		(No)
Repairs I	Vecessary:	0						
Well Inf	ormation	Service -						
Well Dep	th:	7.25			Well Casir	ng Elevation:		NA
	ted Depth:	49.80				er Elevation:		
Casing D	iameter:	2"			Previous S	Static:		1
Water Le	vel Before		.96		Water Lev	el After Samp	ole	_23.42
Well Volu	ime:	5.92	Gallons		Measurem	ent Method:	E	ec. W Steel Tape
Dedicate Well Purg Time Pur Duplicate	Method: d Equipmer ged Dry? ged Dry? Sample?	Grundfos nt: Yes 16 Yes 16 Yes 16	G4 effedder sser	Disp. Bailer	Pumping F Time Pum Time of Sa Sample El		26	gpm am / pm am / pm
Sample F	ppearance	: General:	Clear	Color: N	one Pha	se: None		Odor: Nom
Time	рН	Specific Cond.	Temp °C 13.05	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ#	
1450	6.8	2390	1260	NA	NA	6	1	
1514	6.79	2380	11.67		1	13	2	
1538	6.80	2285	11.60			18	3	
18.0	111111	1 1 2 6 6				THE STATE OF	4	
			1				5	
Stabilized	i Yes	No		Amount V	Valer Remove	d: 18		Gallons
Commer	nts:							

No. of Section 1

Groun	ndwater	Assessme	r		Site:	Otte	r Tai	l Power Co./ Big Stone	
Samplin	g Person	ne			Facility ID: —				
	Dioty	Farasun			Date:	3May 17			
		7			Unique Sta	ation ID: '-			
					Sample ID			Slag 2B	
Well C	ondition								
Well Lo	cked?	Yes (No)			Protective	Posts? (Yes	>	No	
Well La	beled?	VES No			State ID Ta			(ND)	
	Straight?	Mes No				Intact? Yes		ND	
	Necessa		-						
Well In	formatic							71.0	
Well De	pth:	40.94			Well Casin	g Elevation:		NA	
Constru	cted Dept					er Elevation:			
	Diameter:		- 2		Previous S			T	
	evel Befor		178			el After Samp	le	39.45	
Well Vo		3.78	Gallons			ent Method:		ec. WDSteel Tape	
		2.1.0	- enterior		1				
	ing Infor		7	140 1 11		01-	0	n - 1	
	r Condition			Wind: N		· Sky:	1	Hy. Cloudy	
	g Method:		pladder SS/T	Disp. Baller	Whale	Grab Other	_		
		n∈Yes (No)	-			Rate: 0,25	100	gpm	
		(Es) No	45		Time Pum		105	am / 🚳	
	rged Dry?		- ID		Time of Sa	mpling: 12	24	am / m	
		? Yes (No)	ID:	-	Sample El			Oles II	
sample	Appearan	c General:	Cloudy	Color: Tar) Pha	se: Ll. Sa	4.	Odor: None	
0				4		1	S		
UG							E		
	*	Specific	Temp	D. O. '	Turbidity	Gallons	Q		
Time	pH	Cond.	°C	mg/L	NTU	Removed	#	Comments:	
1221	7.95	1880	10.75	NA	NA	1 4	1		
	1			1			2		
		0					3		
	1	100	TAN THE				4	A CHARLEST	
1226	7.02	1991	12,20	11	1	4	5	Recharge	
tabilize		No)		Amount Wa	ater Remove			Gallons	
Comme									
	3		* 5 Ou	s Recha	100				



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FINAL REPORT COMPLETION DATE:

18 Jul 17 ax

Date Reported: 12 Jul 2017

Work Order #: 31-0261 Account #: 006106

PO #: 48680

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

Project Name: BIG STONE PLANT CCR

Field Service Manager/Date Reviewed

135/2017

Chemistry bab 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: SLAG 4

Report Date: 12 Jul 2017 Lab Number: 17-A25511 Work Order #: 31-0261 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 6 Jun 2017 11:18 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 14:26	ABL
Radium 228	SEE ATTAC			EPA M9320	10 Jul 17 14:26	ABL
pH, Field	6.58	units	1.00	T-1586-85	6 Jun 17 11:18	BMW
OH CICIO	* 6.8	units	1.0	SM 4500 H+ B-2000	8 Jun 17 11:31	JFG
Sulfate	1420 ~	mg/L	5.0	ASTM D516-07	21 Jun 17 7:17	AKF
Chloride	53.0	mg/L	3.0	SM 4500 C1 E	8 Jun 17 9:39	MRW
Mercury	0.006	ug/L	0.005	EPA 245.7	15 Jun 17 15:04	RMB
Solids, Total Dissolved	2470	mg/L	10	SM 2540 C-97	9 Jun 17 13:12	RC
Calcium	424.0 -	mg/L	0.500	SW6010C	13 Jun 17 13:05	KAM
Lithium	0.146	mg/L	0.005	SW6010C	12 Jun 17 11:28	KAM
Barium	0.024	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	mq/L	0.005	SW6010C	12 Jun 17 11:28	KAM
Boron	0.663	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	1.73 @	ug/L	0.50	SW6020A	14 Jun 17 14:52	RMV
Beryllium	< 0.25	ug/L	0.05	SW6020A	14 Jun 17 14:52	RMV
SCIATION	@See Narr				and the second second	
Cadmium	0.21 @	ug/L	0.10	SW6020A	14 Jun 17 14:52	RMV
Lead	< 1	ug/L	0.5	SW6020A	14 Jun 17 14:52	RMV
Dead	@See Narr		7.5.	C-0.110		
Molybdenum	1.36 @	ug/L	0.50	SW6020A	14 Jun 17 14:52	RMV
Selenium	< 2 6^	ug/L	0.5	SW6020A	14 Jun 17 14:52	
Phallium	< 0.2	ug/L	0.1	SW6020A	14 Jun 17 14:52	
LIGITION	@ See Nar		4.0		-1	4.76
Fluoride	0.330 @	mg/L	0,020	EPA 300.0	9 Jun 17 10:17	RC

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 CCR

Sample Description: SLAG 4

Lab Number: 17-A25511
Work Order #: 31-0261
Account #: 006106
Sample Matrix: GROUNDWATER
Date Sampled: 6 Jun 2017 11:18
Sampled By: MVTL FIELD PERSONNEL
Date Received: 6 Jun 2017 19:07

Report Date: 12 Jul 2017

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.

RD = 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 analytem

Due to sample quantity
CERTIFICATION: NN LAB # 027-015-125
MI LAB # 999447680

ND MICRO # 1013-M

ND WW/TW # 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: SLAG 5

Report Date: 12 Jul 2017 Lab Number: 17-A25512 Work Order #: 31-0261 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 6 Jun 2017 14:53
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	Dat	e lyzed	l T	Analyst
MS Water Digestions					8	Jun 1	7	JMS
Water Digestions						Jun 1		JMS
Radium 226	SEE ATTAC	HED			10	Jul 1	7 14:27	ABL
Radium 228	SEE ATTAC	HED		EPA M9320	10	Jul 1	7 14:27	ABL
pH, Field	7.09	units	1.00	1-1586-85	6	Jun 1	7 14:53	MS
На	* 7.2	units	1.0	SM 4500 H+ B-2000	8	Jun 1	7 11:31	JFG
Sulfate	84.5	mg/L	5.0	ASTM D516-07	21	Jun 1	7 7:17	AKE
Chloride	9.0	mg/L	3.0	SM 4500 C1 E	8	Jun 1	7 9:39	MRW
Mercury	< 0.005	ug/L	0.005	EPA 245,7	15	Jun 1	7 15:04	RMB
Solids, Total Dissolved	472	mg/L	10	SM 2540 C-97	9	Jun 1	7 13:12	RC
Calcium	107.0	mg/L	0.500	SW6010C	13	Jun 1	7 13:05	KAM
Lithium	0.022	mg/L	0.005	SW6010C	12	Jun 1	7 11:28	KAM
Barium	0.132	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	0.495	mg/L	0.100	SW6010C	12	Jun 1	7 11:28	KAM
Antimony	< 1 0	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 @	ug/L	0.1	SW6020A	14	Jun 1	7 14:52	RMV
Lead	1.14	ug/L	0.50	SW6020A	14	Jun 1	7 14:52	RMV
	@See Narr							
Molybdenum	11.8 @	ug/L	0.50	SW6020A	14	Jun 1	7 14:52	RMV
Selenium	< 2 @^	ug/L	0.5	SW6020A	14	Jun 1	7 14:52	RMV
Thallium	< 0.2	ug/L	0.1	SW6020A	14	Jun 1	7 14:52	RMV
CONTRACTOR OF THE PROPERTY OF	@ See Nar		7/2				27135	5537
Fluoride	0.240	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 Minnesota Department of Héalth Accreditation conform to the current TMI standards.
The reporting limit was elevated for any analyte requiring a dilution as coded below:

0 = Due to sample matrix
| = Due to concentration of other analytes
| = Due to concentration of other analytes
| = Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-W 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 CCR

Sample Description: SLAG 6

Report Date: 12 Jul 2017 Lab Number: 17-A25513 Work Order #: 31-0261 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 6 Jun 2017 12:22 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
MS Water Digestions					8 Jun 17		JMS
Water Digestions					8 Jun 17		JMS
Radium 226	SEE ATTAC	HED			10 Jul 17	14:27	ABL
Radium 228	SEE ATTAC	oren,		EPA M9320	10 Jul 17	14:27	ABL
pH, Field	7.15	units	1.00	I-1586-85	6 Jun 17	12:22	BMW
pH PIEIG	* 7.2	units	1.0	SM 4500 H+ B-2000	8 Jun 17	11:31	JFG
Sulfate	374 -	mq/L	5.0	ASTM D516-07	21 Jun 17	7:17	AKF
Chloride	8.8	mq/L	3.0	SM 4500 C1 E	8 Jun 17	9:39	MRW
Mercury	0.014	ug/L	0.005	EPA 245.7	15 Jun 17	15:04	RMB
Solids, Total Dissolved	1060	mg/L	10	SM 2540 C-97	9 Jun 17	13:12	RC
Calcium	182.0	mq/L	0.500	SW6010C	13 Jun 17	13:05	KAM
Lithium	0.076	mg/L	0.005	SW6010C	12 Jun 17	11:28	KAM
Barium	0.069	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	mq/L	0.005	SW6010C	12 Jun 17	11:28	KAM
Boron	1.550	mg/L	0.100	SW6010C	12 Jun 17	11:28	KAM
Antimony	< 1 0	ug/L	0.5	SW6020A	14 Jun 17	14:52	RMV
Arsenic	3.01 @	ug/L	0.50	SW6020A	14 Jun 17	14:52	RMV
Beryllium	< 0.25	ug/L	0.05	SW6020A	14 Jun 17	14:52	RMV
seryrram	@See Narr		45127	544.534			
Cadmium	0.25 @	uq/L	0.10	SW6020A	14 Jun 17	14:52	RMV
Lead	3.62	ug/L	0.50	SW6020A	14 Jun 17	14:52	RMV
beau	@See Narr		25.00				
Molybdenum	7.38 0	ug/L	0.50	SW6020A	14 Jun 17	14:52	RMV
Selenium	4.08 @^	ug/L	0.50	SW6020A	14 Jun 17	14:52	RMV
Phallium	< 0.2	ug/L	0.1	SW6020A	14 Jun 17	14:52	RMV
THE LATE WILL	@ See Nar		(54.4)				
Fluoride	0.500 @	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:

Due to concentration of other analytes
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



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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: SLAG 6

Report Date: 12 Jul 2017
Lab Number: 17-A25513
Work Order #: 31-0261
Account #: 006106
Sample Matrix: GROUNDWATER
Date Sampled: 6 Jun 2017 12:22
Sampled By: MVTL FIELD PERSONNEL

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

Temp at Receipt: 0.8C

As Received Result Method RT. 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: SLAG 7

Report Date: 12 Jul 2017 Lab Number: 17-A25514 Work Order #: 31-0261 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 6 Jun 2017 11:59
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:	27 ABL
Radium 228	SEE ATTAC			EPA M9320	10 Jul 17 14:	27 ABL
pH, Field	7.04	units	1.00	1-1586-85	6 Jun 17 11:	59 BMW
oH .	* 7.3	units	1.0	SM 4500 H+ B-2000	8 Jun 17 11:	31 JFG
Sulfate	513 ~	mg/L	5.0	ASTM D516-07	21 Jun 17 7:	17 AKE
Chloride	5.5	mq/L	3.0	SM 4500 Cl E	8 Jun 17 9:	39 MRW
	0.012	ug/L	0.005	EPA 245.7	15 Jun 17 15:	04 RMB
Mercury	1170	mg/L	10	SM 2540 C-97	9 Jun 17 13:	
Solids, Total Dissolved	365.0 ~	mg/L	0,500	SW6010C	13 Jun 17 17:	
Calcium	0.086	mg/L	0.005	SW6010C	12 Jun 17 12:	
ithium	0.062	mg/L	0.005	SW6010C	12 Jun 17 12:	
Barium	< 0.02 ^	mg/L	0.01	SW6010C	12 Jun 17 12:	
hromium	< 0.005	mg/L	0.005	SW6010C	12 Jun 17 12:	
cobalt	1.090		0.100	SW6010C	12 Jun 17 12:	
Boron	< 1 @	mg/L ug/L	0.5	SW6020A	14 Jun 17 14:	
Antimony	2.32 @		0.50	SW6020A	14 Jun 17 14:	
Arsenic		ug/L	0.05	SW6020A	14 Jun 17 14:	
seryllium	< 0.25	ug/L	0.05	3W0020A	TH OWN TY TAIL	
27977	@See Narr		0.10	SW6020A	14 Jun 17 14:	52 RMV
Cadmium	0.31 0	ug/L	0.50	SW6020A	14 Jun 17 14:	
lead	2.32	ug/L	0.50	SW6020A	14 dan 14 144	72 1414
	@See Narr		0 50	SW6020A	14 Jun 17 14:	52 RMV
olybdenum	4.56 @	ug/L	0.50	SW6020A SW6020A	14 Jun 17 14:	
elenium	2.07 @^	ug/L	0.50	711 507 501	14 Jun 17 14:	
'hallium	< 0.2	ug/L	0.1	SW6020A	14 Jun 17 14;	32 M9V
	@ See Nar		0.000	PP3 200 0	9 Jun 17 10:	17 RC
Fluoride	0.430 @	mg/L	0.020	EPA 300.0	5 Jun 17 10:	LI ING

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

@ = Due to sample matrix # = Due to concentration of other analytes

! = Due to sample quantity # = Due to internal standard response
CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND 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: SLAG 7

Report Date: 12 Jul 2017 Lab Number: 17-A25514 Work Order #: 31-0261 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 6 Jun 2017 11:59
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 Minnesota Department of Health Accreditation conform to the current TN1 standards.
The reporting limit was elevated for any analyte requiring a dilution as coded below:

Q = Due to sample matrix
| = Due to sample quantity
| = Due to sample quantity
| = Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND NW/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: SLAG 8

Report Date: 12 Jul 2017 Lab Number: 17-A25515 Work Order #: 31-0261 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 6 Jun 2017 13:50
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 Analyze	d	Analyst
MC Water Dignetions		-			8 Jun	17	JMS
MS Water Digestions					8 Jun	17	JMS
Water Digestions Radium 226	SEE ATTAC	HED				17 14:27	ABL
Radium 228	SEE ATTAC			EPA M9320	10 Jul	17 14:28	ABL
	7.14	units	1.00	I-1586-85	6 Jun	17 13:50	BMW
pH, Field	* 7.2	units	1.0	SM 4500 H+ B-2000	8 Jun	17 11:50	JFG
PH	253 @	mg/L	5.0	ASTM D516-07	21 Jun		AKE
Sulfate	40.9	mg/L	3.0	SM 4500 C1 E	8 Jun		MRW
Chloride	< 0.005	ug/L	0.005	EPA 245.7		17 15:47	RMB
Mercury	896	mg/L	10	SM 2540 C-97		17 13:12	RC
Solids, Total Dissolved	113.0	mg/L	0.500	SW6010C		17 17:26	KAM
Calcium	0.054	mg/L	0.005	SW6010C		7 12:02	KAM
Lithium	0.044	mg/L	0.005	SW6010C		7 12:02	KAM
Barlum	< 0.02 ^	mg/L	0.01	SW6010C		17 12:02	KAM
Chromium	< 0.005	mg/L	0.005	SW6010C		17 12:02	KAM
Cobalt	0.510	mg/L	0.100	SW6010C		7 12:02	KAM
Boron	< 1 @		0.5	SW6020A		7 16:10	RMV
Antimony	1.06 @	ug/L ug/L	0.50	SW6020A		7 16:10	RMV
Arsenic	< 0.1	ug/L	0.05	SW6020A		7 16:10	RMV
Beryllium	@See Narr		0.00	BWOOZON	14 000	.,	
2014-0-2			0.1	SW6020A	14 Jun	7 16:10	RMV
Cadmium	< 0.2 @	ug/L	0.5	SW6020A		7 16:10	RMV
Lead	< 1 @See Narr	ug/L	0.5	5400208	11 000		
112-2-4 - v-			0.50	SW6020A	14 Jun	7 16:10	RMV
Molybdenum	8.36 @	ug/L	0.50	SW6020A		7 16:10	RMV
Selenium	18.1 @^	ug/L	0.1	SW6020A		7 16:10	RMV
Thallium	< 0.2	ug/L	0.1	SHOOKON	as our	20.10	
Fluoride	@ See Nar 0.530	mg/L	0.020	EPA 300.0	9 Jun	7 17:08	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 smallyte requiring a dilution as coded below:

0 = Due to sample matrix
0 = Due to sample quantity
0 = Due to sample



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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: SLAG 9

Report Date: 12 Jul 2017 Lab Number: 17-A25516 Work Order #: 31-0261 Account #: 006106

Sample Matrix: GROUNDWATER
Date Sampled: 6 Jun 2017 15:15 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					9 Jun 17		JMS
Water Digestions					8 Jun 17		JMS
Radium 226	SEE ATTAC	HED			10 Jul 17	14:28	ABL
Radium 228	SEE ATTAC	HED		EPA M9320	10 Jul 17	14:28	ABL
pH, Field	6.87	units	1.00	1-1586-85	6 Jun 17		BMW
pH	* 7.0	units	1.0	SM 4500 H+ B-2000	8 Jun 17		JEG
Sulfate	1010 ~	mq/L	5.0	ASTM D516-07	21 Jun 17	7:35	AKF
Chloride	7.4	mg/L	3.0	SM 4500 C1 E	8 Jun 17	9:39	MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7	15 Jun 17	15:47	RMB
Solids, Total Dissolved	1740	mg/L	10	SM 2540 C-97	9 Jun 17	13:12	RC
Calcium	364.0 ~	mg/L	0.500	SW6010C	13 Jun 17		KAM
Lithium	0.115	mg/L	0.005	SW6010C	12 Jun 17		KAM
Barium	0.025	mg/L	0.005	SW6010C	12 Jun 17		KAM
Chromium	< 0.02 ^	mg/L	0.01	SW6010C	12 Jun 17		KAM
Cobalt	< 0.005	mg/L	0.005	SW6010C	12 Jun 17		KAM
Boron	0.234	mq/L	0.100	SW6010C	12 Jun 17	12:02	KAM
Antimony	< 1 0	ug/L	0.5	SW6020A	14 Jun 17	16:10	RMV
Arsenic	< 1 0	ug/L	0.5	SW6020A	14 Jun 17		RMV
Beryllium	< 0.25	ug/L	0.05	SW6020A	14 Jun 17		RMV
	@See Narr		2122			70770	-63*2
Cadmium	< 0.2 @	ug/L	0.1	SW6020A	14 Jun 17	16:10	RMV
Lead	< 1	ug/L	0.5	SW6020A	14 Jun 17	16:10	RMV
355.5	@See Narr		- 1.4	3444464	20 (200)	2000	-653
Molybdenum	9.02 @	ug/L	0.50	SW6020A	14 Jun 17	16:10	RMV
Selenium	< 2 @^	ug/L	0.5	SW6020A	14 Jun 17	16:10	RMV
Challium	< 0.2	ug/L	0.1	SW6020A	14 Jun 17		RMV
	@ See Nar		77.17			0.17.04	261-3
Fluoride	0.250	mg/L	0.020	EPA 300.0	9 Jun 17	17:08	RC

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 CCR

Sample Description: SLAG 9

Report Date: 12 Jul 2017
Lab Number: 17-A25516
Work Order #: 31-0261
Account #: 006106
Sample Matrix: GROUNDWATER
Date Sampled: 6 Jun 2017 15:15
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: SLAG 2B

Report Date: 12 Jul 2017 Lab Number: 17-A25517 Work Order #: 31-0261 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 6 Jun 2017 15:38 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 Analy:	ed	Analyst
MS Water Digestions		_			8 Jur	17	JMS
Water Digestions					8 Jur	17	JMS
Radium 226	SEE ATTAC	HED			10 Jul	17 14:28	ABL
Radium 228	SEE ATTAC	44		EPA M9320	10 Jul	17 14:28	ABL
pH, Field	7.84	units	1.00	I-1586-85	6 Jur	17 15:38	BMW
pH TIGIG	+ 7.4	units	1.0	SM 4500 H+ B-2000	8 Jur	17 11:50	JFG
Sulfate	802 ~	mq/L	5.0	ASTM D516-07	21 Jur	17 7:35	AKF
Chloride	33.3	mg/L	3.0	SM 4500 C1 E	8 Jur	17 9:39	MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7	15 Jur	17 15:47	RMB
Solids, Total Dissolved	1440	mg/L	10	SM 2540 C-97	9 Jur	17 13:12	RC
Calcium	226.0 ~	mg/L	0.500	SW6010C	13 Jur	17 17:26	KAM
Lithium	0.117	mg/L	0.005	SW6010C	12 Jur	17 12:02	KAM
Barium	0.095	mg/L	0.005	SW6010C	12 Jur	17 12:02	KAM
Chromium	< 0.02 ^	mg/L	0.01	SW6010C	12 Jur	17 12:02	KAM
Cobalt	0.005	mq/L	0.005	SW6010C	12 Jur	17 12:02	KAM
Boron	3,360	mg/L	0.100	SW6010C	12 Jur	17 12:02	KAM
Antimony	< 1 @	ug/L	0.5	SW6020A	14 Jun	17 16:10	RMV
Arsenic	1.14 @	ug/L	0.50	SW6020A	14 Jur	17 16:10	RMV
Beryllium	< 0.25	ug/L	0.05	SW6020A	14 Jur	17 16:10	RMV
seryrizam	@See Narr		1601.6				
Cadmium	< 0.2 @	uq/L	0.1	SW6020A	14 Jun	17 16:10	RMV
Lead	< 1	ug/L	0.5	SW6020A	14 Jun	17 16:10	RMV
beau	@See Narr						
Molybdenum	5.27 @	uq/L	0.50	SW6020A	14 Jun	17 16:10	RMV
Selenium	< 2 @^	ug/L	0.5	SW6020A	14 Jun	17 16:10	RMV
Thallium	< 0.2	ug/L	0.1	SW6020A	14 Jun	17 16:10	RMV
TIGHT A TIME	@ See Nar		2,2	40.0/2/4.20			
Fluoride	< 0.2 @	mg/L	0.02	EPA 300.0	9 Jun	17 17:08	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: SLAG 2B

Report Date: 12 Jul 2017
Lab Number: 17-A25517
Work Order #: 31-0261
Account #: 006106
Sample Matrix: GROUNDWATER
Date Sampled: 6 Jun 2017 15:38
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 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 matrix
| = Due to sample quantity

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



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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.

MVTL

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Quality Control Report

ab IDs: 17-A25505 to 17-A	25517	Pr	oject: BIC	STON	E PLANT CCI	3	Work	Order: 2	01731-02	61							
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	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		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		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	(3.1			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 5	96 96	90-110 90-110	<3 <3
Chromium mg/L	1.000 1.000	101 101	85-115 85-115		17A25512q 17A25012q	<0.01 <0.01	1.010 0.981	101 98	75-125 75-125		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		0.948 0.988	95 99	0.9 3.3	10 10	100 100	90-110 90-110	< 0.005 < 0.005
Fluoride mg/L	1	3	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	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		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 1.000	99 99	85-115 85-115		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	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0



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Quality Control Report

Lab IDs: 17-A25505 to 17-A25517 Project: BIG STONE PLANT CCR Work Order: 201731-0261

Analyte	LCS Spike Amt	LES 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	:	-		7.3 7.0	7.4 7.1		1.4 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 1.8	10 10	102 107	90-110 90-110	100
Solids, Total Dissolved mg/L		2	, ž	1			:		1	1170 561	1170 550	:	0.0 2.0	8	93	85-115	< 10
Sulfate mg/L		1	:-	500 500	17-A25514 17-A25524	513 97.4	1070 647	111 110	74-128 74-128	100.00	1040 647	105 110	2.8	5 5	99 99	80-120 80-120	
Thallium ug/L	5.00 5.00	98 98	85-115 85-115		17A25514q a25082qc	< 0.2 < 0.1	4.91 5.24	98 105	75-125 75-125		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:



Inter-Mountain Labs

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

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



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 Big Stone

Lab ID: ClientSample ID:

S1706214-007 Slag-4 A25511

COC:

WEB

Date Reported

7/10/2017 S1706214001

Report ID

WorkOrder:

S1706214

CollectionDate: 6/7/2017 11:18:00 AM DateReceived:

6/9/2017 11:43:00 AM

FieldSampler:

Matrix: Water

150				
•	m	-	-	
	37.55	311	er	ш

Analyses	Result	Result Units Qual RL Me		Method	Date Analyzed/I	nit	
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	07/05/2017 948	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	07/05/2017 948	MB

These results apply only to the samples tested.

Qualiflers:

B Analyte detected in the associated Method Blank

E

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

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

0 Outside the Range of Dilutions

Matrix Effect

Reviewed by: all

Wade Nieuwsma, Assistant Laboratory Manager

Page 7 of 13



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

Sample Analysis Report

MVTL Inc. Company:

1126 N Front St

New Ulm, MN 56073

ProjectName:

Ottertail Power Big Stone

Lab ID:

\$1706214-008 ClientSample ID: Slag-5 A25512

COC:

WEB

Date Reported 7/10/2017

Report ID

S1706214001

WorkOrder:

S1706214

CollectionDate: 6/7/2017 2:53:00 PM

DateReceived:

6/9/2017 11:43:00 AM

FleidSampler:

Matrix:

Water

-						
ĸ.	a	m	m	eı	ı	15

Analyses	Result	Result Units		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	07/05/2017 1252	MB	
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	07/05/2017 1252	MB	

These results apply only to the samples tested.

Qualiflers:

B 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

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

0 Outside the Range of Dilutions

Matrix Effect

Reviewed by: all

Wade Nieuwsma, Assistant Laboratory Manager

Page 8 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:

Otterfail Power Big Stone

Lab ID: ClientSample ID:

S1706214-009 Slag-6 A25513

COC:

WEB

Date Reported

7/10/2017

Report ID

S1706214001

WorkOrder:

S1706214

CollectionDate: 6/7/2017 12:22:00 PM

DateReceived:

6/9/2017 11:43:00 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	06/21/2017 1048	MB	
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	06/21/2017 1048	MB	
Radlum 228	ND	pCi/L		2	Ga-Tech	07/05/2017 1555	MB	
Radium 228 Precision (±)	NA	pCVL			Ga-Tech	07/05/2017 1555	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 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 quantilation limits

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

Matrix Effect X

Reviewed by: All

Wade Nieuwsma, Assistant Laboratory Manager

Page 9 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:

\$1706214-010 Slag-7 A25514

COC:

WEB

Date Reported

7/10/2017

Report ID

S1706214001

WorkOrder:

S1706214

CollectionDate: 6/7/2017 11:59:00 AM

DateReceived:

6/9/2017 11:43:00 AM

FieldSampler:

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nlt
Radionuclides - Total					1 1		
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	07/05/2017 1858	MB
Radium 228 Precision (±)	NA	pCI/L			Ga-Tech	07/05/2017 1858	MB

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 laboratory H

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: all

Wade Nieuwsma, Assistant Laboratory Manager

Page 10 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:

S1706214-011 Slag-8 A25515

ClientSample ID: COC:

WEB

Date Reported

7/10/2017

Report ID

S1706214001

WorkOrder:

\$1706214

CollectionDate: 6/7/2017 1:50:00 PM

DateReceived: 6/9/2017 11:43:00 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	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 2200	MB
Radium 228 Precision (±)	NA.	pCi/L			Ga-Tech	07/05/2017 2200	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 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 11 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

Ottertail Power Big Stone

ProjectName: Lab ID:

S1706214-012 Slag-9 A25516

ClientSample ID: COC:

WEB

Date Reported 7/10/2017

Report ID

S1706214001

WorkOrder:

S1706214

CollectionDate: 6/7/2017 3:15:00 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	pCi/L		2	Ga-Tech	07/06/2017 103	MB
Radium 228 Precision (±)	NA	pCVL			Ga-Tech	07/06/2017 103	MB

These results apply only to the samples tested.

Qualiflers:

Analyte detected in the associated Method Blank B

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 C

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 12 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:

Otterfail Power Big Stone

Lab ID: ClientSample ID:

S1706214-013 Slag-2B A25517

COC:

WEB

Date Reported

7/10/2017

Report ID

S1706214001

WorkOrder:

S1706214

CollectionDate: 6/7/2017 3:38:00 PM

DateReceived: FieldSampler:

6/9/2017 11:43:00 AM

Matrix:

Water

			_			_
Result	Units	Qual	RL	Method	Date Analyzed/I	nit
ND	pCi/L		1	SM 7500 Ra-B	06/21/2017 1443	MB
NA	pCi/L			SM 7500 Ra-B	06/21/2017 1443	MB
ND	pCI/L		2	Ga-Tech	07/06/2017 406	MB
NA	pCI/L			Ga-Tech	07/06/2017 406	MB
	ND NA ND	ND pCI/L NA pCi/L ND pCI/L	ND pCi/L NA pCi/L ND pCi/L	ND pCi/L 1 NA pCi/L ND pCi/L 2	ND pCi/L 1 SM 7500 Ra-B NA pCi/L SM 7500 Ra-B ND pCi/L 2 Ga-Tech	ND pCi/L 1 SM 7500 Ra-B 06/21/2017 1443 NA pCi/L SM 7500 Ra-B 06/21/2017 1443 ND pCi/L 2 Ga-Tech 07/06/2017 406

These results apply only to the samples tested.

Qualifiers:

Analyle delected in the associated Method Blank

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

C Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

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

Outside the Range of Dilutions

Matrix Effect

Reviewed by: All

Wade Nieuwsma, Assistant Laboratory Manager

Page 13 of 13



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

ANALYTICAL QC SUMMARY REPORT

CLIENT:

MVTL Inc

Date: 7/10/2017

Work Order:

S1706214

Report ID: S1706214001

Project:

Ottertail Power Big Stone

	martan / array big atoma							
Radium 228 by 0	Ga/Tech	Sample Type MBLK		Unit	s: pCi/L			
MB-444 (0	06/28/17 22:40)	RunNo: 14753	6 Prep	Dale: 06/	12/17 14:00	Bet	chID 13368	
	Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
	Total Radium 228	ND	1					
MB-445 (0	07/04/17 18:34)	RunNo: 147649	Prep	Date: 06/	14/17 12:00	Bal	chID 13385	
-	Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
	Total Radium 228	ND	1					
Radium 228 by G	Ba/Tech	Sample Type LCS		Units	: pCi/L			
LCS-444 ((06/29/17 01:43)	RunNo: 147536	Prep	Date: 06/	2/17 14:00	Bate	chID 13368	
(Pro-	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	Prep	Date: 06/1	4/17 12:00	Bato	chID 13385	
	Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
1	Total Radium 228	44	1	39.3	Total Time	112	65.9 - 132	
adium 228 by G	a/Tech	Sample Type MS		Units	: pCi/L			
MS-444 (0	6/29/17 07:49)	RunNo: 147536	Prepl	Date: 06/1	2/17 14:00	Bato	thID 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 (0)	7/04/17 21:37)	RunNo: 147649	Prepl	Date: 06/1	4/17 12:00	Betc	hID 13385	
1000	Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
	Total Radium 228	42	1	39.1	2	104	50 - 139	
adium 228 by Ga	a/Tech	Sample Type MSD		Units	pCi/L			
MSD-444 (06/29/17 10:53)	RunNo: 147536	Prepl	Date: 06/1	2/17 14:00	Bato	hID 13368	
1	Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
	Total Radium 228	47	1	47	0.532	117	20	
MSD-445 (07/05/17 00:40)	RunNo: 147649	Prept	Date: 06/1	4/17 12:00	Batc	hID 13385	
	Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
	Total Radium 228	47	1	42	11.4	117	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

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



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

ANALYTICAL QC SUMMARY REPORT

CLIENT:

MVTL Inc

Date: 7/10/2017

Work Order:

S1706214

Report ID: S1706214001

Project: Otte

Ottertail Power Big Stone

Radium 226 in Water -Sample Type MBLK Units: pCi/L MB-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 Qual Radium 226 ND 0.2 MB-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 Qual Radium 226 ND 0.2 Radium 226 in Water -Sample Type LCS Units: pCi/L LCS-1761 (06/20/17 11:47) RunNo: 147123 PrepDate: 06/12/17 0:00 BatchID 13322 Analyte Result Spike Ref Samp %REC % Rec Limits Qual Radium 226 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 Spike Ref Samp %REC % Rec Limits Qual Radium 226 5.7 6.41 89.1 67.1 - 122 Radium 226 in Water -Sample Type LCSD Units: pCi/L LCSD-1761 (06/20/17 11:47) RunNo: 147123 PrepDate: 06/12/17 0:00 BatchID 13322 Analyte Result RL Conc %RPD %REC % RPD Limits Qual Radium 226 6.0 0.2 5.4 9.83 93.5 20 LCSD-1762 (06/21/17 10:48) PrepDate: 06/14/17 0:00 RunNo: 147141 BalchID 13329 Analyte Result RI Conc %RPD % RPD Limits Qual %REC Radium 226 6.0 0.2 57 5.31 93.9 20 Radium 226 in Water -Sample Type MS Units: pCi/L S1706157-004AMS (06/20/17 11:47) RunNo: 147123 PrepDete: 06/12/17 0:00 BatchID 13322 Analyte Result Spike Ref Samp %REC % Rec Limits Qual Radium 226 6.5 0.2 6.41 0.3 97.8 65 - 131 S1706214-002AMS (06/21/17 10:48) RunNo: 147141 PrepDate: 06/14/17 0:00 BatchID 13329 Analyte Result Spike Ref Samp %REC % Rec Limits Qual

Qualifiers:

B Analyte detected in the associated Method Blank

Radium 226

- G Analyzed at IML Giliette 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

12

1

12.8

ND

85.8

65 - 131

- 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 A Date 6 Jun 13

Project Otter Tail Power Company	Project Type:	Big Stone Plant CCR	Name of Samplers:	Ben	
Report Otter Tail Power Company	Carbon Copy:				mutt Stein
Attn: Paul Vukonich	Attn: Address:		Quote Number: Work Order Number:	21-	02/-1
Address P.O. Box 496 Fergus Falls, MN 56538-0496	Annual Contraction of the Contra		Lab Numbers:	01	0201
Phone: 218-739-8349					

	Sample Information										1	Bott	le Ty	pe					Analysis
Lab Number	Sample ID	Unique Station ID	Date	Time	Sample Type	Sample Location	1000 HINO3	Filtered York	1000 none	SOD HINGS	1.	500 H2SO4	Filler? Y or M.	1000 Amber no	1000 Amber	500 NaOH	Other, 150 Mg	Other 150 M.	Analysis Required
ARTICA	H2OX		6 June17	1006	GW	7	2	N	1	1	N			100					See Attached
de	НЗОХ	4), 12	1 -1	1131	GW		2	N	1	1	N		30				-		
M	H4OX	Idaa -		1203	GW		2	N	1	1	N			1,00		la,			
08	H-6			1240	GW		2	N	1	1	N								
	H-8			1325	GW		2	N	1	1	N		1,21	Ç ST		100			
(O)	H-9			1419	GW		2	N	1	1	N			-					
	Slag 1			-	GW		-2	N	-1-	1	N		100						
12	Slag 4			1118	GW		2	N	1	1	N								
213	Slag 5	1		1453	GW		2	N	1	1	N			1					
314	Slag 6	7	1	1222	GW		2	N	1	1	N	11	1	130					

Comments:

WORK ORDER #2

Samples Relino	uished By:	en well		Samples Received By	i a. Luc	der	
Date: 6 Tu	NU 17	Time: 1907	Temp: 37	165 Date: 6 Jun 17	Time:		Temp: O.30
Samples Relind	quished into:	Fridge Log in	Cart Oth	er:			40111111111
Samples Relind	quished 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

	Otter Tail P				Project T	/pe:	Big Stor	ne Pl	ant C	CR	Nam	ne of	Sam	pler	s:	Ben	4	MIF		
Attn: Address	Otter Tail P Paul Vukon P.O. Box 49 Fergus Fall 218-739-83	ich 96 s, MN 565			Carbon Co Attn: Address:	рру:					Wor	te No k Ord Num	der N	lumb				M	att.	stein
		sample In	form	ation									Bott	le Ty	/pe					Analysi
Lab Number	Sample ID	Unique Station ID	Date		Тіте	Sample Type	Sample Location	1000 HNO3	Fillered Yor M	1000 none	500 HNO3		500 H2SO4	Filler? Y or M	1000 Amber p.	1000 Amber	HOEN OO	Olher: 150 Haz	Other 150 No.	Analysis Required
14	Slag 7			47217		GW	1	2	N	1	1	N	-				-			See Attached
	Slag 8		170		350	GW		2	N	1	1	N								
	Slag 9				1515	GW		2	N	1	1	N								
_	Slag 9 Dee	р				GW		-2	14	1	1	N								
17	Slag 2B		15-	h	1539	GW		2	N	1	1	N								
																			=	
	/									- 1			40				1-4		- 1	F

Comments:

WORK ORDER #2

Samples Reline	ouished By: 16	50h 1	well)		Samples Received	By: A. Rua	W	
Date: 6 Tw			907	Temp: 877	Was Date: b. Jun 17			Temp:0.80
Samples Reline	quished into:	(Fridge)	Log in	Cart Oth	er:			
Samples Reline	quished By:	~			Samples Received	l By:		
Date:		Time:		Temp:	Date:	Time		Temp:
Delivery:	Samplers	Other:			Seal Number(s) - I	f 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

1

Minnesota Valley Testing Laboratories, Inc.

Groundwa	ater Assess	ment			Site:	Otte	er Tail	Power Co./ Big Stone
Sampling Pe	ersonnel:	4.10			Facility ID):		
	Ben	WOLF			Date: (o	Ture 1	7	
					Unique S	tation ID		
			_		Sample I	D:		Slag 4
Well Cond	ition							
Well Locked	?	(res) No			Protective	Posts? Yes)	No_
Well Labeled	1?	(es) No			State ID	Tag? Yes		1002
Casing Strai	ght?	(Yes) No			Grout Se	al Intact? Yes	01	(No)
Repairs Nec	essary:		7					
Well Inform	nation	E A Place						
Well Depth:		39,22			Well Cas	ing Elevation		MA
Constructed	Depth:	39.00	-			ter Elevation		19
Casing Diam		2"	-		Previous	Static:		_
	Before Purge:	17.34			Water Le	vel After San	ni –	J-11
Well Volume		3.57	Gallon	S	Measure	ment Method	: Flec	. WLI)Steel Tape
					1		_	
Sampling I	nformation				. 0			
Weather Cor		Temp: 7	3_	Wind:	LUL	Sky	: Su	iny
Sampling Me		Grundfos	Bladder			Grab Othe		
Dedicated E		Yes (No)			Pumping	Rate: 2	5	gpm
Well Purged		Yes (No)					033	(arp.) pm
Time Purged			1			Sampling /	118	(am// pm
Duplicate Sa		Yes No)ID: "	_		208.4		
Sample Appe	earance:	General:	loudy	Color		se: None		Odor: NOTE
			1			1000		
15		Specific	lemp	D. O.	Turbidity	Gallons	SE	
Time	pH	Cond.	°C	mg/L	NTU	Removed	Q#	Comments:
1048	6.33	2956	10,97	NA	NA	3.75	1	
		- 5 22					10	
1103	6.58	2955	11.14		1 1	7.50	3	4

Amount Water R

4

Gallons

11.25

Stabilized?
Comments:

Exceptions to Protocol:

(les)

No



Groundwater Assessmer		Site:	Otte	r Tail Po	ower Co./ Big Stor
Sampling Personn		Facility ID:			
Most Ster		Date: 6 Tu	n17		
		Unique Sta	tion ID:		
		Sample ID:		S	lag 5
Well Condition					
Well Locked? Yes No		Protective I	Posts? /Yes)	No
Well Labeled? Yes No		State ID Ta	q? Yes		No.
Casing Straight? Yes No		Grout Seal			(No)
Repairs Necessar		220000000000000000000000000000000000000			
Well Information					
Well Depth: 39.00		Well Casing	Elevation:	ile	17.30
Constructed Depth 38.80			r Elevation:	1183	5,73
Casing Diameter: 2"		Previous St	latic: 10-82	500010	382.49
Water Level Before Purge 21.57			After Sample		36.45
Well Volume: 2.84 Gallons		Measureme	ent Method:	Flec.	WILL Steel Tap
		1			
Sampling Information Weather Conditior Temp:	Wind:	SE8-11	Sky	Sur	11.
Sampling Method: Grundfos Bladder SS			Grab Other		1
Dedicated Equipm Yes (No)	i Disp. Danei	Pumping R			gpm
Well Purged Dry? (Yes) No		Time Pump		714	
Time Purged Dry? 1448		Time of Sar		153	am (pm
Duplicate Sample Yes (No) ID:		Sample EH			GIII X PIII
Sample Appearant General: Clear	Color: n		se: none		Odor: none
Carrier of the Carrie	00.01. 71	0700	12012		Cach From C
(12) Specific Temp	D.O.	Turbidity	Gallons	ISEQ	
Time pH Cond. OC	mg/L	NTU	Removed	#	Comments:
1448 7,09 863 12,46		NA	3	1	
	1			2	
				3	
1453 7.09 861 13.4	2			4	recherge
	1	1		5	
Stabilize Yes No	Amount V	Nater Remove	d: 3		Gallons
Comments:	-				



New	Ulm.	MN	56073

Sampling Personnel:					Site:	U	ner la	il Power Co./ Big Stone
	0				Facility I	D:		
Ber	wolf				Date: (g	June 17		
					Unique	Station ID:		
		-			Sample	1D:		Slag 6
Well Condition	0						_	
Well Locked?	Yes No				Protecti	ve Posts? (Ye	es	No
Well Labeled?	No No				State ID			No
Casing Straight?	(es No					eal Intact? Ye	es	NO)
Repairs Necessary:		-						
Well Information	27.00							
Well Depth:	37.50				Well Ca	sing Elevation:		NA
Constructed Depth:	37.30				Static W	ater Elevation:		
Casing Diameter:	2"				Previous	s Static:		
Nater Level Before Pur	ge: 23.	39			Water L	evel After Sam	F _	30-89
	30	Gallons			Measure	ement Method:	Elec.	
	*				1		-	
Sampling Information Weather Conditions: Sampling Method: Dedicated Equipment:		Bladder SS/T	Wind Disp. E		Whale Pumping	Grab Ot	her:	abm
Well Purged Dry?	(Yes) No	-						4
Fime Purged Dry?	1217	-					207	am / om
Ouplicate Sample?	Yes (No)	In-				EH: 199,8	227	an / pm
Sample Appearance:		Cloudy	Color	Ta		nase: Nonc		Odor: None
ampio rippodianos.	Contrain	Civunj	00,01			inco. No 10		0401170070
10	Specific	Temp	D. O.		Turbidity	Gallons	SEQ	
ime pH	Cond.	°С	mg/L		NTU	Removed	#	Comments:
1217 7.20	1273	12.35	N	4	NA	2.5	1	
	11 -12 - 6 - 11				1111		2	
							3	/ -
	of Berth	1		11.0			4	
1222 7.15	1392	12.41	1		+	2.8	5	Dechurge
	(No)		Amou	int Wa	ter Rem	ove: 2.5		Gallons
Comments:								
		100	100	- 0				
		4	Xa	oal	2 0	charge		



Ground	lwater A	ssessmen	E .		Site:	Otte	r T	ail Power Co./ Big Stone
Sampling	Personne	1:			Facility ID:			
	Ben				Date: fo	142017		
	Silver		-		Unique Sta			
					Sample ID			Slag 7
Well Co	ndition	~						
Well Loci	ced?	(Yes) No			Protective	Posts? Yes)	No
Well Lab	eled?	Yes No			State ID Ta	ag? Yes		(No)
Casing S	traight?	Yes No			Grout Sea	Intact? Yes		(No)
	lecessary:	0			7777			7757
Well Inf	ormation							
Well Dep		49.04			Well Casir	g Elevation:		MT
	ed Depth:	48.70	-			er Elevation:		
Casing D		2"	-		Previous S			
		Purge: 13-3	38			el After Samp	ılc	29-77
Well Volu		82	Gallons			ent Method:		ec. WL Steel Tape
		-			ī			
Samplin	g Inform	ation			,			
	Conditions		73 -	Wind:	1111	Sky	(CETTY
Sampling		Grundfos	Pladder SS/T	Disp. Bailer	Whale	Grab Olher		with
	Equipmen		graduor our t	Diop. Danc.	Pumping F		_	gpm
Well Purg		Yes No	-		Time Pum		130	
	ged Dry?	1164_	-		Time of Sa		15	
	Sample?		ID:	-		1: 203.0		7 5111
		: General: S		Color T				Odor: None
ouripio i	ppourario	, ochora. 3	ing jus	9 00.01.		. WO 1-		Oddi. Wo No
-	1			T	1		Is	
24			1		1		S	
~7		Specific	Temp	D. O.	Turbidity	Gallons	Q	
Time	рН	Cond.	°C	mg/L	NTU	Removed	#	Comments:
1154	7.04	1622	9.95	NA	NA	6	1	GOTTING TO
110-1	1.07	10000	1.10	1	1		2	
				1			3	
							4	
1164	7.04	1635	10.00	1	1 +	6	5	Recharge
Stabilized		(NO)	110.00	Amount V	Vater Remove			Gallons
Commer						- 4	_	- S-37-2 17-



Groundwater Assessment	Site: Otter Tail Power Co./ Big Stone				
Sampling Personnel:	Facility ID:				
Ben Wolf	Date: 6 June 17				
	Unique Station IC				
	Sample ID: Slag 8				
Well Condition					
Well Locked? Yes No	Protective Posts? (es) No				
Well Labeled? (es) No	State ID Tag? Yes				
Casing Straight? Yes	Grout Seal Intact Yes No				
Repairs Necessary: Well hert					
Well Information					
Well Depth: 52.25	Well Casing Elevation:				
Constructed Depth: 52.09	Static Water Elevation:				
Casing Diameter: 2"	Previous Static:				
Water Level Before Purge: 16.73	Water Level After Samp 28, 39				
Well Volume: 5.79 Gallons	Measurement Method: Elec. With Steel Tape				
The state of the s					
Sampling Information	. 1				
Weather Conditions: Temp: 73 Wind:	Lifet Sky: Sunsy				
Sampling Method: Grundfos Bladder SS/T Disn Ba					
	ailer (Whale) Grab Other:				
Dedicated Equipmen Yes (No.)	ailer (Whale) Grab Other: Pumping Rate: , 25 gpm				
Dedicated Equipmen Yes (No.) Well Purged Dry? Yes (To.)	Pumping Rate: 25 gpm Time Pump Begs / 238 am / min				
Dedicated Equipmen Yes (No.) Well Purged Dry? Yes (No.) Time Purged Dry?	Pumping Rate: 35 gpm Time Pump Begs 1238 am / pm Time of Sampling 1350 am / pm				
Dedicated Equipmen Yes (No.) Well Purged Dry? Yes (No.) Time Purged Dry? — Duplicate Sample? Yes (No.) ID; —	Time of Sampling 1350 am / pm Sample EH: 147.0				
Dedicated Equipmen Yes (No.) Well Purged Dry? Yes (To.) Time Purged Dry? — Duplicate Sample? Yes (No.) ID; ——	Pumping Rate: 35 gpm Time Pump Begs 1238 am / pm Time of Sampling 1350 am / pm				
Dedicated Equipmen Yes (No) Well Purged Dry? Yes (No) Time Purged Dry? Duplicate Sample? Yes (No) ID: Sample Appearance: General: Color: Specific Temp D. O.	Time Pump Begs / 238 am / pm Time of Sampling / 350 am / pm Sample EH: 147.0 Phase: None Odor: None				
Dedicated Equipmen Yes (No.) Well Purged Dry? Yes (No.) Time Purged Dry? Duplicate Sample? Yes (No.) ID: Sample Appearance: General: Color:	Time Pump Begs 1238 am / pm Time of Sampling 1350 am / pm Sample EH: 147.0 Phase: None Odor: None				
Dedicated Equipmen Yes (No.) Well Purged Dry? Yes (Vo.) Time Purged Dry? Duplicate Sample? Yes (No.) ID: Sample Appearance: General: Color: Time 24 pH Specific Temp D. O. mg/L	Turbidity Gallons SEQ NTU Removed # Comments:				
Dedicated Equipmen Yes (No) Well Purged Dry? Yes (No) Time Purged Dry? Duplicate Sample? Yes (No) ID: Sample Appearance: General: Color: Time 24 pH Specific Temp D. O. mg/L 1302 6.97 1715 [1.76 NA)	Turbidity Gallons SEQ NTU Removed # Comments:				
Dedicated Equipmen Yes (No) Well Purged Dry? Yes (No) Time Purged Dry? Duplicate Sample? Yes (No) ID: Sample Appearance: General: Color: Time PH Cond. Comple No. 1302 (2.97 1415 11.76 NA) 1326 7.09 1408 11.77	Turbidity Gallons SEQ NTU Removed # Comments:				
Dedicated Equipmen Yes (No) Well Purged Dry? Yes (No) Time Purged Dry? Duplicate Sample? Yes (No) ID: Sample Appearance: General: Color: Time 24 pH Specific Temp D. O. Time 1302 6.97 1715 [1.76 NA)	Turbidity Gallons SEQ NTU Removed # Comments:				
Dedicated Equipmen Yes (No) Well Purged Dry? Yes (No) Time Purged Dry? Duplicate Sample? Yes (No) ID: Sample Appearance: General: Color: Color: Specific Time PH Cond. Commg/L 1302 (2.97 1415 11.76 NA) 1326 7.09 1408 11.77	Turbidity Gallons SEQ NTU Removed # Comments:				
Dedicated Equipmen Yes (No) Well Purged Dry? Yes (No) Time Purged Dry? Duplicate Sample? Yes (No) ID: Sample Appearance: General: Color: Time 14 pH Specific Temp D. O. mg/L 1302 6.97 1715 11.76 NP 1326 7.09 1408 11.77 1350 7.14 1411 11.85	Time Pump Begs 1238 am / pm Time of Sampling 1350 am / pm Sample EH: 147.0 Phase: None Odor: None Turbidity Gallons SEQ NTU Removed # Comments:				



Groundwater	Assessmen	t		Site:	Otte	r Ta	il Power Co./ Big Stone
Sampling Person	nel:			Facility ID			
	en Wolf			Date: (o	June 17		
				Unique St	ation ID:		
				Sample ID);	_	Slag 9
Well Condition	6						
Well Locked?	(Yes No			Protective	Posts? (es)	No
Well Labeled?	Yes No			State ID T	ag? Yes		No
Casing Straight?	(es) No				Intact? Yes	6	(No)
Repairs Necessa							
Well Information	on						
Well Depth:	51.25			Well Casin	ng Elevation:		AF
Constructed Dep		-			er Elevation:		71
Casing Diameter:		-		Previous S	and a series of the series of		4
Water Level Befo		72			el After Samp	ole .	23.08
Well Volume:	6.07	Gallons			ent Method:		ec. W Steel Tape
	-		_	1			-
Sampling Infor	rmation						
Weather Condition		73_	Wind: /	lu.	- Sky	8	uny
Sampling Method		Bladder SS/1		Whale	Grab Other		
Dedicated Equipr			/	Pumping F	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		gpm (5
Well Purged Dry?				Time Pum		00	am / (pm)
Time Purged Dry		_		Time of Sa		15	am / (m)
Duplicate Sample		ID:	-		1: 161.6		
Sample Appearar		Clear	Color:	/one Pha			Odor: None
						S	
25		Lacros I			1	E	
-0	Specific	Temp	D.O.	Turbidity	Gallons	Q	Mario A
		10-	mg/L	NTU	Removed	#	Comments:
Time pH	Cond.	°C	Ingia				
Time pH	Cond.	10.74	MA	NA	6.25	1	
Time pH 142-5 6.90	Cond. 9 2.998 77 23.8/	10.74		MA	12.50	2	
Time pH 142-5 6.90	Cond. 3 2.998 77 23.8/	10.74		MA		2	
Time pH 142-5 6.90	Cond. 9 2.998 77 23.8/	10.74		The state of the s	12.50	2 3 4	
Time pH 142-5 6.90	Cond. 9 2.998 77 23.8/	10.74	I I	Vater Remove	12.50	2	Gallons

Groundwater Assessmer			Site:		r Tai	Power Co./ Big Stone
Sampling Personne			Facility ID:			
Bes Wolf			Date: (p	Ture 17		
Matt Stein			Unique Sta	ation ID:		THE PROPERTY OF
			Sample ID	:		Slag 2B
Well Condition						
Well Locked? Yes No			Protective	Posts? (es)	No
Well Labeled? (es) No			State ID Ta	ag? Yes		(No)
Casing Straight? (es) No			Grout Sea	Intact? Yes		(No)
Repairs Necessary			-			-775
Well Information						
Well Depth: 40.94			Well Casin	g Elevation:		NA
Constructed Depth: 40.80				er Elevation:		
Casing Diameter: 2"			Previous S	static:		1
	1.52		Water Lev	el After Samp	IE,	39.54
	Gallons		Measurem	ent Method:	E	ec. WL)Steel Tape
		-	1			
Sampling Information						
Weather Conditions Temp:	ladder SS/	Wind: L	-6U Whale	Sky:		centy
Weather Conditions Temp: Sampling Method: Grundfos Barry B	adder SS/	1.4.117		Grab Other		cenny gpm
Weather Conditions Temp: Sampling Method: Grundfos Dedicated Equipms Yes	adder SS)	1.4.117	Whale	Grab Other		gpm
Weather Conditions Temp: Sampling Method: Grundfos Dedicated Equipme Yes Well Purged Dry? Yes No	adder SS/	1.4.117	Whale Pumping F	Grab Other Rate: , 25 p Began		gpm 7 am / (pm)
Weather Conditions Temp: Sampling Method: Grundfos Dedicated Equipms Yes Well Purged Dry? Vely No Fime Purged Dry? 1532	adder SS/	1.4.117	Whale Pumping F Time Pum	Grab Other Rate: , 25 p Began Impling: }	15	gpm 7 am / (pm)
Veather Conditions Temp: Sampling Method: Grundfos Dedicated Equipms Yes Vell Purged Dry? Vell Purged Dry? Ves Ves Ves Ves Ves Ves Ves Ves Ves Ve	ID: -	1.4.117	Whale Pumping F Time Pum Time of Sa Sample EF	Grab Other Rate: , 25 p Began Impling: i	15	gpm 7 am / (pm)
Dedicated Equipme Yes Well Purged Dry? Ves No Time Purged Dry? 1532	ID: -	Disp. Bailer	Whale Pumping F Time Pum Time of Sa Sample EF	Grab Other Rate: , 25 p Began Impling: 1 d: 23,6	157 53°	gpm 7 am / pm 3 am / pm
Weather Condition: Temp: Sampling Method: Grundfos Dedicated Equipme Yes Well Purged Dry? Duplicate Sample? Yes Sample Appearanc General: \$1.	Temp	Disp. Bailer	Whale Pumping F Time Pum Time of Sa Sample EF	Grab Other Rate: , 25 p Began Impling: i	15	gpm 7 am / pm 3 am / pm
Neather Conditions Temp: Sampling Method: Grundfos Dedicated Equipme Yes No Nell Purged Dry? Unplicate Sample? Yes Desample Appearanc General: \$1.	ID:	Color: Yell	Whale Pumping F Time Pum Time of Sa Sample EF Phan Turbidity NTU	Grab Other Rate: , 25 p Began Impling:) H: 23 6 se: 6 6	5 S S E Q	gpm 7 am / pm 8 am / pm Odor: Sulfutous
Veather Conditions Temp: Sampling Method: Grundfos Dedicated Equipms Yes Vell Purged Dry? Vell Purged Dry? Uplicate Sample? Yes Sample Appearanc General: \$1.	Temp	Color: Med	Whale Pumping F Time Pum Time of Sa Sample EF Phan Turbidity	Grab Other Rate: , 25 p Began impling:) H: 23 6 se: 100	5 5 5 5 6 4 1 2	gpm 7 am / pm 3 am / pm Odor: Suthetous Comments:
Veather Conditions Temp: Sampling Method: Grundfos Dedicated Equipms Yes Vell Purged Dry? Ves No Time Purged Dry? 153 Duplicate Sample? Yes (No) Sample Appearanc General: \$1.	Temp	Color: Yell	Whale Pumping F Time Pum Time of Sa Sample EF Phan Turbidity NTU	Grab Other Rate: , 25 p Began impling:) H: 23 6 se: 100	S E Q # 1 2 3	gpm 7 am / pm 8 am / pm Odor: Sulfutous
Neather Conditions Temp: Sampling Method: Grundfos Dedicated Equipme Yes No Time Purged Dry? (ve) No Time Purged Dry? 153 Duplicate Sample? Yes (No) Is Sample Appearanc General: \$1.	Temp	Color: Yell	Whale Pumping F Time Pum Time of Sa Sample EF Phan Turbidity NTU	Grab Other Rate: , 25 p Began impling:) H: 23 6 se: 100	S E Q # 1 2 3 4	gpm 7 am / pm 3 am / pm Odor: Sulfutous Comments:
Neather Conditions Temp: Sampling Method: Grundfos Dedicated Equipme Yes No Fime Purged Dry? Sample Appearanc General: \$1. Specific Fime pH Cond. 1533 7.79 1645	Temp	Color: Yell	Whale Pumping F Time Pum Time of Sa Sample EF Phan Turbidity NTU	Grab Other Rate: , 25 p Began impling:) H: 23 6 se: 100	S E Q # 1 2 3	gpm 7 am / pm 3 am / pm Odor: Suthetous Comments:

* Slow Recharge

Exceptions to Protocol:

4 12



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FINAL REPORT COMPLETION DATE: 2 | Au

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 Reviews

16 D eger/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 CCR

Sample Description: SLAG 4

Report Date: 16 Aug 2017 Lab Number: 17-A32932 Work Order #: 31-0334 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 11 Jul 2017 11:07 Sampled By: MVTL FIELD PERSONNEL Date Received: 11 Jul 2017 17:46

PO #: 48680

Temp at Receipt: 4.2C

	As Receiv	ved	Method RL	Method Reference	Date Anal	zed		Analyst
MS Water Digestions					17 J	11 1	7	JMS
Water Digestions					17 J	11 1	1	JMS
Radium 226	See Attac	ched			15 A	ig I	15:59	ABL
Radium 228	See Attac	ched		EPA M9320			15:59	ABL
pH, Field	6.30	units	1.00	I-1586-85	11 J	1 1	11:07	BMW
PH	* 6.9	units	1.0	SM 4500 H+ B-2000	12 J	1 1	10:25	AJM
Sulfate	1370 ~	mg/L	5.0	ASTM D516-07	18 J	1 17	8:59	MRW
Chloride	52.7	mg/L	3.0	SM 4500 C1 E	14 J	11 17	8:48	MRW
Mercury	0.008	ug/L	0.005	EPA 245.7	24 J	1 1	15:19	RMB
Solids, Total Dissolved	2590	mg/L	10	SM 2540 C-97	13 J	1 17	9:14	AJM
Calcium	369.0	mg/L	0.500	SW6010C	19 J	1 17	13:58	KAM
	- See nar	rative						
Lithium	0.189	mg/L	0.005	SW6010C	20 J	1 17	14:04	KAM
Barium	0.050	mg/L	0.005	SW6010C	19 J	1 17	13:58	KAM
Chromium	< 0.01	mg/L	0.01	SW6010C	19 J	1 17	13:58	KAM
Cobalt	< 0.005	mg/L	0.005	SW6010C	19 J	1 17	13:58	KAM
Boron	0.721	mg/L	0.100	SW6010C	19 J	1 17	13:58	KAM
Antimony	< 5 @^	ug/L	0.5	SW6020A	2 A	10 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
0.00	@See Narr							
Cadmium	< 0.5 @	ug/L	0.1	SW6020A	1 At	q 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 @	ug/L	0.1	SW6020A			13:07	RMV
Fluoride	0.410 #	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:

8 = Due to sample matrix

9 = Due to cample quantity

1 = Due to internal standard response

CERTIFICATION: NN LAB # 027-015-125

NT 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: SLAG 5

Report Date: 16 Aug 2017 Lab Number: 17-A32933 Work Order #: 31-0334 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 11 Jul 2017 14:33 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	Dat	e lyz	ed		Analyst
MS Water Digestions					17	Jul	17	-	JMS
Water Digestions					17	Jul	17		JMS
Radium 226	See Attac	hed			15	Aug	17	15:59	ABL
Radium 228	See Attac	hed		EPA M9320				15:59	ABL
pH, Field	7.04	units	1.00	1-1586-85				14:33	MS
Hq	* 7.1	units	1.0	SM 4500 H+ B-2000	12	Jul.	17	10:25	AJM
Sulfate	84.0	mg/L	5.0	ASTM D516-07	18	Jul	17	8:59	MRW
Chloride	8.9	mg/L	3.0	SM 4500 C1 E	14	Jul	17	8:48	MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7	24	Jul	17	16:02	RMB
Solids, Total Dissolved	487	mg/L	10	SM 2540 C-97	13	Jul	17	9:14	AJM
Calcium	110.0	mg/L	0.500	SW6010C	19	Jul	17	13:58	KAM
	See Narra								
Lithium	0.023	mq/L	0.005	SW6010C	20	Jul	17	14:04	KAM
Barium	0.148	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	mq/L	0.005	SW6010C	19	Ju1	17	13:58	KAM
Boron	0.512	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				20:10	RMV
Beryllium	< 0.1	ug/L	0.05	SW6020A				13:07	RMV
	@See Narr							20072	
Cadmium	0.24 @	ug/L	0.10	SW6020A	1	Aug	17	20:10	RMV
Lead	< 1 0	ug/L	0.5	SW6020A				13:07	RMV
Molybdenum	11.8 @	ug/L	0.50	SW6020A				20:10	RMV
Selenium	< 4 @^	ug/L	0.5	SW6020A				20:10	RMV
Thallium	< 0.2 @	ug/L	0.1	SW6020A				13:07	RMV
Fluoride	0.250 #	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

* 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 Actreditation conform to the current TNI standards,
The reporting limit was elevated for any analyte requiring a dilution as coded below:

| 0 = Due to sample matrix | # Due to concentration of other analytes |
| - Due to sample quantity | + Due to Internal atandard response |
| - Due to sample quantity | CERTIFICATION: MN LAB | 027-015-125 | WI LAB | 999447680 | ND NICRO | 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: SLAG 6

Report Date: 16 Aug 2017 Lab Number: 17-A32934 Work Order #: 31-0334 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 11 Jul 2017 12:34 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 15:59	ABL
Radium 228	See Attac	ched		EPA M9320	15 Aug 17 15:59	ABL
pH, Field	7.05	units	1.00	I-1586-85	11 Jul 17 12:34	BMW
PH	* 7.2	units	1.0	SM 4500 H+ B-2000	12 Jul 17 12:30	AJM
Sulfate	250 @	mq/L	5.0	ASTM D516-07	18 Jul 17 8:59	MRW
Chloride	7.6	mq/L	3.0	SM 4500 C1 E	14 Jul 17 8:48	MRW
Mercury	0.012	ug/L	0.005	EPA 245.7	24 Jul 17 16:02	RMB
Solids, Total Dissolved	876	mg/L	10	SM 2540 C-97	13 Jul 17 9:14	AJM
Calcium	154.0	mg/L	0.500	SW6010C	19 Jul 17 13:58	KAM
	See Narra					
Lithium	0.112	mg/L	0.005	SW6010C	20 Jul 17 14:04	KAM
Barium	0.077	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	1.850	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	3,59 @	ug/L	0.50	SW6020A	1 Aug 17 20:10	RMV
Beryllium	0.20 @	ug/L	0.05	SW6020A	9 Aug 17 12:36	
Cadmium	0.28 @	ug/L	0.10	SW6020A	1 Aug 17 20:10	
ead	3.49 @	ug/L	0.50	SW6020A	2 Aug 17 13:07	RMV
folybdenum	6.85 @	ug/L	0.50	SW6020A	1 Aug 17 20:10	RMV
Selenium	5.15 @^	ug/L	0.50	SW6020A	1 Aug 17 20:10	RMV
Challium	< 0.2 @	ug/L	0.1	SW6020A	2 Aug 17 13:07	RMV
Fluoride	0.770 #	mg/L	0.020	EPA 300.0	12 Jul 17 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

" 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.

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

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

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND NW/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: SLAG 7

Report Date: 16 Aug 2017 Lab Number: 17-A32935 Work Order #: 31-0334 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 11 Jul 2017 12:12 Sampled By: MVTL FIELD PERSONNEL Date Received: 11 Jul 2017 17:46

PO #: 48680

Temp at Receipt: 4.2C

	As Receiv Result	red	Method RL	Method Reference	Date Analy:	zed	Analyst
MS Water Digestions					17 Jul	17	JMS
Water Digestions					17 Jul	17	JMS
Radium 226	See Attac	hed			15 Aug	17 15:59	ABL
Radium 228	See Attac	hed		EPA M9320	15 Aug	17 16:00	ABL
pH, Field	6.84	units	1.00	I-1586-85	11 Jul	17 12:12	BMW
PH	* 7.3	units	1.0	SM 4500 H+ B-2000	12 Jul	17 12:30	AJM
Sulfate	541 ~	mg/L	5.0	ASTM D516-07	18 Jul	17 8:59	MRW
Chloride	5.5	mg/L	3.0	SM 4500 C1 E	14 Jul	17 8:48	MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7	24 Jul	17 16:02	RMB
Solids, Total Dissolved	1200	mg/L	10	SM 2540 C-97	13 Jul	17 9:14	AJM
Calcium	229.0	mg/L	0.500	SW6010C	19 Jul	17 13:58	KAM
	- See nar	rative					
Lithium	0.081	mg/L	0.005	SW6010C	20 Jul	17 14:04	KAM
Barium	0.036	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	1.110	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 Auc	17 20:10	RMV
Beryllium	< 0.1	ug/L	0.05	SW6020A	2 Auc	17 13:07	RMV
	@See Narr	ative					
Cadmium	0.40 @	ug/L	0.10	SW6020A	1 Aug	17 20:10	RMV
Lead	1.34 @	ug/L	0.50	SW6020A		17 13:07	RMV
Molybdenum	4.65 @	ug/L	0.50	SW6020A	1 Aug	17 20:10	RMV
Selenium	< 4 @^	ug/L	0.5	SW6020A		17 20:10	RMV
Thallium	< 0.2 @	ug/L	0.1	SW6020A		17 13:07	RMV
Fluoride	0.600 #	mg/L	0.020	EPA 300.0		17 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:

8 = Due to sample matrix

9 = Due to concentration of other analytes

1 = Due to sample quantity

4 = Due to internal standard response

CERTIFICATION: NN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND NW/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: SLAG 8

Report Date: 16 Aug 2017 Lab Number: 17-A32936 Work Order #: 31-0334 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 11 Jul 2017 15:09

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 16:00	ABL
Radium 228	See Attac	hed		EPA M9320	15 Aug 17 16:00	ABL
pH, Field	6.96	units	1.00	I-1586-85	11 Jul 17 15:09	BMW
PH	* 7.2	units	1.0	SM 4500 H+ B-2000	12 Jul 17 12:30	AJM
Sulfate	264 @	mg/L	5.0	ASTM D516-07	18 Jul 17 8:59	MRW
Chloride	43.2	mg/L	3.0	SM 4500 C1 E	14 Jul 17 B:48	MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7	24 Jul 17 16:02	RMB
Solids, Total Dissolved	881	mg/L	10	SM 2540 C-97	13 Jul 17 9:14	AJM
Calcium	113.0	mg/L	0.500	SW6010C	19 Jul 17 14:40	KAM
Lithium	0.056	mg/L	0.005	SW6010C	20 Jul 17 14:32	KAM
Barium	0.045	mg/L	0.005	SW6010C	19 Jul 17 14:40	KAM
Chromium	< 0.01	mg/L	0.01	SW6010C	19 Jul 17 14:40	KAM
Cobalt	< 0.005	mg/L	0.005	SW6010C	19 Jul 17 14:40	KAM
Boron	0.485	mg/L	0.100	SW6010C	19 Jul 17 14:40	KAM
Antimony	< 2 @^	ug/L	0.5	SW6020A	2 Aug 17 13:07	RMV
Arsenic	< 1 8	ug/L	0.5	SW6020A	1 Aug 17 20:10	RMV
Beryllium	< 0.1	ug/L	0.05	SW6020A	2 Aug 17 13:07	RMV
	@See Narr					
Cadmium	< 0.2 @	ug/L	0.1	SW6020A	1 Aug 17 20:10	RMV
Lead	< 1 @	uq/L	0.5	SW6020A	2 Aug 17 13:07	RMV
Molybdenum	8.62 @	ug/L	0.50	SW6020A	1 Aug 17 20:10	RMV
Selenium	21.2 @^	ug/L	0.50	SW6020A	1 Aug 17 20:10	RMV
Thallium	< 0.2 0	ug/L	0.1	SW6020A	2 Aug 17 13:07	RMV
Fluoride	0.340 #	mg/L	0.020	EPA 300.0	13 Jul 17 10:50	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,

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:

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 WT LAB # 999447680 ND MICRO # 1013-M ND WH/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: SLAG 9

Report Date: 16 Aug 2017 Lab Number: 17-A32937 Work Order #: 31-0334 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 11 Jul 2017 13:55 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 16:00	ABL
Radium 228	See Attac	ched		EPA M9320	15 Aug 17 16:00	ABL
pH, Field	6.84	units	1.00	I-1586-85	11 Jul 17 13:55	BMW
pH	* 7.1	units	1.0	SM 4500 H+ B-2000	12 Jul 17 12:30	AJM
Sulfate	977 ~	mg/L	5.0	ASTM D516-07	18 Jul 17 9:17	MRW
Chloride	7.6	mg/L	3.0	SM 4500 Cl E	14 Jul 17 8:48	MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7	24 Jul 17 16:02	RMB
Solids, Total Dissolved	1800	mg/L	10	SM 2540 C-97	13 Jul 17 9:14	AJM
Calcium	345.0 ~	mg/L	0.500	SW6010C	19 Jul 17 14:40	KAM
Lithium	0,132	mg/L	0.005	SW6010C	20 Jul 17 14:32	KAM
Barium	0.027	mg/L	0.005	SW6010C	19 Jul 17 14:40	KAM
Chromium	< 0.01	mg/L	0.01	SW6010C	19 Jul 17 14:40	KAM
Cobalt	< 0.005	mg/L	0.005	SW6010C	19 Jul 17 14:40	KAM
Boron	0.222	mq/L	0.100	SW6010C	19 Jul 17 14:40	KAM
Antimony	< 5 @^	ug/L	0.5	SW6020A	2 Aug 17 13:07	RMV
Arsenic	< 2.5 @	uq/L	0.5	SW6020A	1 Aug 17 20:10	RMV
Beryllium	< 0.25	ug/L	0.05	SW6020A	2 Aug 17 13:07	RMV
	@See Narr	ative				
Cadmium	< 0.5 €	uq/L	0.1	SW6020A	1 Aug 17 20:10	RMV
Lead	< 2.5 @	ug/L	0.5	SW6020A	2 Aug 17 13:07	RMV
Molybdenum	9.24 @	ug/L	0.50	SW6020A	1 Aug 17 20:10	RMV
Selenium	< 2.5 0	ug/L	0.5	SW6020A	2 Aug 17 13:07	RMV
Thallium	< 0.5 @	ug/L	0.1	SW6020A	2 Aug 17 13:07	RMV
Fluoride	0.250 #	mg/L	0.020	EPA 300.0	13 Jul 17 10:50	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 sample quantity + = Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WM/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: SLAG 2B

Report Date: 16 Aug 2017 Lab Number: 17-A32938 Work Order #: 31-0334 Account #: 006106

Sample Matrix: GROUNDWATER Date Sampled: 11 Jul 2017 11:37 Sampled By: MVTL FIELD PERSONNEL Date Received: 11 Jul 2017 17:46

PO #: 48680

Temp at Receipt: 4.2C

	As Receiv Result	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 16:00	ABL
Radium 228	See Attac	hed		EPA M9320	15 Aug 17 16:00	ABL
pH, Field	7.09	units	1.00	1-1586-85	11 Jul 17 11:37	BMW
pH	* 7.3	units	1.0	SM 4500 H+ B-2000	12 Jul 17 12:30	AJM
Sulfate	804 ~	mg/L	5.0	ASTM D516-07	18 Jul 17 9:17	MRW
Chloride	33.3	mg/L	3.0	SM 4500 C1 E	14 Jul 17 8:48	MRW
Mercury	< 0.005	ug/L	0.005	EPA 245.7	24 Jul 17 16:02	RMB
Solids, Total Dissolved	1530	mg/L	10	SM 2540 C-97	13 Jul 17 9:14	AJM
Calcium	258.0 ~	mg/L	0.500	SW6010C	19 Jul 17 14:40	KAM
Lithium	0.064	mg/L	0.005	SW6010C	20 Jul 17 14:32	KAM
Barium	0.102	mg/L	0.005	SW601QC	19 Jul 17 14:40	KAM
Chromium	< 0.01	mg/L	0.01	SW6010C	19 Jul 17 14:40	KAM
Cobalt	0.008	mg/L	0.005	SW6010C	19 Jul 17 14:40	KAM
Boron	3.580	mg/L	0.100	SW6010C	19 Jul 17 14:40	KAM
Antimony	< 5 @	ug/L	0.5	SW6020A	2 Aug 17 13:07	RMV
Arsenic	1.60 @	ug/L	0.50	SW6020A	1 Aug 17 20:10	RMV
Beryllium	< 0.25	ug/L	0.05	SW6020A	2 Aug 17 13:07	RMV
	@See Narr	ative				
Cadmium	0.25 @	ug/L	0.10	SW6020A	1 Aug 17 20:10	RMV
Lead	< 2.5 @	ug/L	0.5	SW6020A	2 Aug 17 13:07	RMV
Molybdenum	5.29 @	ug/L	0.50	SW6020A	1 Aug 17 20:10	RMV
Selenium	< 4 @^	ug/L	0.5	SW6020A	1 Aug 17 20:10	RMV
Thallium	< 0.5 @	ug/L	0.1	SW6020A	2 Aug 17 13:07	RMV
Fluoride	< 0.2 #	mg/L	0.02	EPA 300.0	13 Jul 17 10:50	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 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 smalyte 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-H ND WW/DN # 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.

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Quality Control Report

ab IDs: 17-A32926 to 17-A32938 Project: BIG STONE PLANT CCR Work Order: 201731-0334

ab IDs: 17-A32926 to 17-A	32938	Pr	oject: BIC	STON	E PLANT CCI	3	Work	Order: 2	01731-03	34							
\nalyte	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/ Dap 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	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	2.50 2.50 2.50	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	
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	1 2 2 2
Chloride mg/L	-			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	
Chromium mg/L	1.000	101	85-115	1.00 1.00	17Ä32935q 17Ä32945q	< 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	1
Cobalt mg/L	1.000	102	85-115	1.00 1.00	17A32935q 17A32945q	< 0.005 < 0.005		92 96	75-125 75-125		0.944 0.962	94 96	2.2 0.3	10 10	96 100 100	90-110 90-110 90-110	
Fluoride mg/L	1			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	

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-A32926 to 17-A32938

Lab IDs: 17-A32926 to 17-A32938 Project: BIG STONE PLANT CCR Work Order: 201731-0334

Analyte	LCS: Spike Amt	LCS Rec %	0.00	- Street	eMatrix 1997 Spike ID	Matrix	Matrix Spike Result		Matrix		MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	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	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	10 10	99 100	90-110 90-110	< 0.5 < 0.5
pH units	3	:				:	5	•		7.1 7.1	7.1 7.1		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	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				\1:-	5	2	-	878 645	876 649	Ž	0.2 0.6	8 8	100 88	85-115 85-115	< 10
Sulfate mg/L		* * * * *	1	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	8350 816	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
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	The second second	5.54 5.38	111 108	2.9 1.1	10 10	105 104	90-110 90-110	

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:

S1707202

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



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:

Ottertail Power Big Stone

Lab ID: ClientSample ID: S1707202-007 SLAG-4-A32932

COC:

wo#31-0334

Date Reported 8/15/2017

Report ID

S1707202001

WorkOrder:

S1707202

CollectionDate: 7/11/2017 11:07:00 AM 7/14/2017 11:21:00 AM

DateReceived: FieldSampler:

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionucildes - Total							
Radium 226	1.4	pCVL		1	SM 7500 Ra-B	08/11/2017 1610	MB
Radium 226 Precision (±)	0,2	pCi/L			SM 7500 Ra-B	08/11/2017 1610	MB
Radium 228	ND	pCi/L		2	Ga-Tech	08/12/2017 1424	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	08/12/2017 1424	MB

These results apply only to the samples tested.

Qualiflers:

Analyle 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

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 7 of 13



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:

S1707202-008 ClientSample ID: SLAG-5-A32933

COC:

wo#31-0334

Date Reported

8/15/2017

Report ID

S1707202001

WorkOrder:

S1707202

CollectionDate: 7/11/2017 2:33:00 PM

DateReceived: 7/14/2017 11:21:00 AM FieldSampler:

Matrix:

Water

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total					pri Barba		
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 1727	MB
Radium 228 Precision (±)	NA	pCI/L			Ga-Tech	08/12/2017 1727	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 Ollutions

Matrix Effect

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 8 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:

51707202-009 SLAG-6-A32934

COC:

wo#31-0334

Date Reported

8/15/2017

Report ID

\$1707202001

S1707202

WorkOrder:

CollectionDate: 7/11/2017 12:34:00 PM

DateReceived: 7/14/2017 11:21:00 AM

FleldSampler:

Matrix:

Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total						T 49 7 9 - 1	
Radium 226	ND	pCI/L		1	SM 7500 Ra-B	08/11/2017 1610	ME
Radium 226 Precision (±)	NA	pCi/L			SM 7500 Ra-B	08/11/2017 1610	M
Radium 228	ND	pCi/L		2	Ga-Tech	08/12/2017 2030	ME
Radium 228 Precision (±)	NA	pCI/L			Ga-Tech	08/12/2017 2030	M

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

Calculated Value

Analyzed at IML Gillette laboratory

Analyte delected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

0 Outside the Range of Dilutions

Matrix Effect

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 9 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: S1707202-010 SLAG-7-A32935

COC:

wo#31-0334

Date Reported

8/15/2017

Report ID

S1707202001

WorkOrder:

S1707202

CollectionDate: 7/11/2017 12:12:00 PM

DateReceived: 7/14/2017 11:21:00 AM

FieldSampler:

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuciides - Total							
Redium 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 2333	MB
Radium 228 Precision (±)	NA	pCI/L			Ga-Tech	08/12/2017 2333	MB

These results apply only to the samples tested.

Qualifiers:

В Analyte detected in the associated Method Blank

Value above quantitation range

Holding times for preparation or analysis exceeded H

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 quantilation 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 10 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:

S1707202-011 SLAG-8-A32936

COC:

wo#31-0334

Date Reported

8/15/2017

Report ID

\$1707202001

WorkOrder:

S1707202

CollectionDate: 7/11/2017 3:09:00 PM

DateReceived: 7/14/2017 11:21:00 AM

FleidSampler:

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 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	08/13/2017 236	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	08/13/2017 236	MB

These results apply only to the samples tested.

Qualifiers:

Analyte delected 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 delected 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 11 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:

Otterfail Power Big Stone

Lab ID: ClientSample ID:

S1707202-012 SLAG-9-A32937

COC:

wo#31-0334

Date Reported

8/15/2017

Report ID

S1707202001

WorkOrder:

S1707202

CollectionDate: 7/11/2017 1:55:00 PM

DateReceived: 7/14/2017 11:21:00 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	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	08/13/2017 539	MB
Radium 228 Precision (±)	NA	pCI/L			Ga-Tech	08/13/2017 539	MB

These results apply only to the samples tested.

Qualiflers:

Analyte detected in the associated Method Blank

E Value above quantitation range

Holding times for preparation or analysis exceeded H

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: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 12 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:

\$1707202-013 SLAG2B-A32938

COC:

wa#31-0334

Date Reported

8/15/2017

Report ID

S1707202001

WorkOrder:

S1707202

CollectionDate: 7/11/2017 11:37:00 AM

DateReceived: 7/14/2017 11:21:00 AM

FieldSampler:

Matrix:

Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuciides - 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	08/13/2017 842	MB
Radium 228 Precision (±)	NA	pCi/L			Ga-Tech	08/13/2017 842	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range E

Holding limes for preparation or analysis exceeded H

Analyzed by another laboratory

Not Detected at the Reporting Limit NO

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 13 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:

Ottertail Power Big Stone

Radium 228 by Ga/Tec	h	Sample Type	MBLK		Units	s: pCi/L			
MB-452 (08/10/1		- 4	RunNo: 148962 Result	Prepi		19/17 12:00		chID 13543	Ous
	Analyte			-7.4-	Spike	Ref Samp	%REU	% Rec Limits	Qua
Radium 228 by Ga/Tec	Total Radium 228	Sample Type	LCS	1	Units	: pCl/L			
LCS-452 (08/11/			RunNo: 148962	Prepl		9/17 12:00	Bate	chID 13543	
1200 330 400 20	Analyte		Result	RL		Ref Samp		% Rec Limits	Qua
	Total Radium 228		33	1	39.5	77-515	83.8	65.9 - 132	
Radium 228 by Ga/Tecl	1	Sample Type	MS		Units	: pCi/L			
MS-452 (08/11/1		F	RunNo: 148962	1000	color to day	9/17 12:00	100	thID 13543	
	Analyte		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
	Total Radium 228		44	1	39.5	ND	111	50 - 139	
Radium 228 by Ga/Tech		Sample Type	MSD		Units	: pCi/L			
MSD-452 (08/11/	17 10:55)	F	tunNo: 148962	Prept	Date: 07/1	9/17 12:00	Bato	hID 13543	
	Analyte		Result	RL	Conc	%RPD	%REC	% RPD Limits	Qua
	Total Radium 228		42	1	44	4.14	106	20	
Radium 226 in Water -		Sample Type	MBLK	7	Units	pCi/L			
MB-1778 (08/11/1	17 11:29)	R	unNo: 148977	PrepD	ate: 07/3	1/17 0:00	Bato	hID 13532	
	Analyte		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
- 101/E	Radium 226		ND	0.2	19				
tadium 226 in Water -		Sample Type	LCS		Units:	pCI/L			
LCS-1778 (08/11/	17 11:29)	R	unNo: 148977	PrepD	ate: 07/3	1/17 0:00	Batc	hID 13532	
Maria	Analyte		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
	Radium 226		5.8	0.2	6.41		90.6	67.1 - 122	
tadium 226 in Water -		Sample Type	MS		Units:	pCi/L		1	
MS-1778 (08/11/1	7 11:29)	R	unNo: 148977	PrepD	ate: 07/3	1/17 0:00	Batc	hID 13532	
1 - 3	Analyte		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
11277	Radium 226		5.8	0.2	6.41	ND	89.5	65 - 131	
adlum 226 in Water -	The state of the s	Sample Type	MSD		Units:	pCi/L			
MSD-1778 (08/11/	(17 11:29)	R	unNo: 148977	PrepD	ate: 07/31	1/17 0:00	Batcl	nID 13532	
111111111111111111111111111111111111111	Analyte		Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
	Radium 226		6.2	0.2	5.8	7.76	96.7	20	

Qualifiers:

- 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



Inter-Mountain Labs

Sheridan, WY and Gillette, WY

GHAIN OF CUSTODY RECORD - #	Page of
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	-MOUNTAIN LABS			This is a legal documen	t; any misrepri										11 0 0 000	
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MVT		200	and the Man	Otterfail Power Big Stone		100.00							- 10 %	Garage .	The state of the s	
	Address	right was a stage of the	eren er	Contact Name	ent description	Constitute of the		ANA	LYSE	SIF	ARA	MET	ERS			
1126	North Front St Ulm, Mn 56073	w d	- 1	Tim Portner Email tportner@mytl.com	esta Malies	1. 1. 1. 1. N	228	13	1.5	A Total				100		
	Address	h. 19		Phone 507-276-8089	Maria Maria	OF NOT	7			4.00						
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	9	1		V 35 3			E	P 142			1.14		3.	1.54	REMA	RKS
2	LAB ID	DATE	TIME	SAMPLE	VIII	# of	Radium	1				2 1				
ITEM	(Lab Use Only)	SAME	PLED	IDENTIFICATION	Matrix	Containers	2	F. 11	200	les they	EAS 100	1 2F	2. 13	N. O.		
1	51767202-001	F101611	1116	H20X - A32926	WT	2	x									
2	-000		1149	H30X - A 32927	WT	2	×									
3	-003		1209	H40X - A 3 2928	WT	2	x									
4	-004		1237	H-6 - A32929	WT	2	x									
5	-005		1317	H-8 - A32930	WT	2	x									
6	-au6	1	1403		WT	2	x	alt i						ī		
7				Slag-1 No Sample	WT	2	x	dI.								
8	FC0-		1107	Slag-4 A 32932	WT	2	x									
9	-08		1433	Slag-5 A 32933	WT	2	x									
10	P00-		1234	Slag-6 A32934	WT	2	x									
11	-016		1212	Slag-7 A32935	WT	2	×									
12	-011		1509	Slag-8 A32936	WT	2	×									
13.		-									/					
14	And over on the last						-			/						
	LAB COMMENTS		Relin	nquished By (Signature/Printed)	DATE	TIME		200	Receive	By (S	ignatur	e/Printe	ed)		DATE	TIME
	- 4			炒 數 3	17,40	No.	7	XV.	200	200	2	90	1/		414/17	11/10
	por,		1.14	Stant -	3	KIT I	1								, ,	
1	3,5°C					1/2										
	Control of the Control of the Control	100			En 2 - 10		1									
	SHIPPING INFO	AND DESCRIPTION	X CODES	TURN AROUND TIMES Check desired service		OMPLIAN				/ N			AD	DITIC	ONAL REMARK	S
	UPS FedEx	Wate		Standard turnaround		ance Moni m (SDWA.			PAR	/ N	-					
10.00	USPS	Solid		RUSH - 5 Working Days	PWSIE	/ Permit #	1 3	agentages	100	PA CAL						
0	Hand Carried	Filte	r FT	URGENT - < 2 Working Days	Chlorin	ated?			Y	TN						
0	Other	Othe	r OT	Rush & Urgent Surcharges will be applied	Sample	e Disposal:	Lat	0	Cllen	10 m						



Inter-Mountain Labs

Sheridan, WY and Gillette, WY

- CHAIN OF CUSTODY RECORD	Page	of
All shaded fields must be completed.	1 10000	,
This is a legal document; any misrepresentation may be construed as fraud.	#WEE	•

Client	Name			Project Identification	any misrepre	Sampler (S				enticity	1	_		Telephone #	
VIVI	entered an article and			Otterfail Power Big Stone	100	of hand sold at an east.	Ferral A		5, 7,64		-			retepriorie #	- 4
	Address			Contact Name				NALYS	ES / F	ARA	MET	ERS			
New	North Front St Ulm, Mn 56073 Address			Tim Portner Email tportner@mvtl.com Phone 507-276-8089 Purchase Order #	Quote#		226 + 228						1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
ITEM	LAB ID (Lab Use Only)	DATE	TIME	SAMPLE IDENTIFICATION	Matrix	# of Containers	Radium							REMA	ARKS
1.	The second secon	F100611	1255	Slag 9 - A 32937	WT	2	x								
2	West -	1	-	Slag 9 Deep - No Sample	WT	2	x				-				
3	-013		1137	Slag 2B - A 32938	WT	2	x								
4			N. 100	MYTL WO# 31-0334			x	1				-			
5	HAND BEINEN						x							1	
6					1	/	x							/	
7						/	x							/	
8					1		x						1		
9			/		/		x					1	1		
10	Sin	/		/			x					/			
11	and the control of	/					x				/				
12							x			1					
13	/						x			/					
14				1	115.5	1-3	x		1/	1	-				
	LAB COMMENTS	S	Reli	nquished By (Signature/Printed)	DATE	TIME		Receive	d By (S	ignatur	e/Printe	र्च)		DATE	TIME
				1/45	17 / 14 m	25	12	in 1	500	lofe	Ed 1			4/14/17	11:21
	~ 2°C -					J					0				
6	35°C			e julius et e		1	6								
. 0					9	S. Carrie								FITT	
000	SHIPPING INFO UPS FedEx USPS Hand Carried Other	MATRIX Water Soil Solid Filter Othe	SL SD FT	TURN AROUND TIMES Check desired service Standard turnaround RUSH - 5 Working Days URGENT - < 2 Working Days Rush & Urgent Surcharges will be applied	Program PWSID Chlorina	MPLIANG Ince Monit In (SDWA, I Permit # Inted? Disposal:	toring ? NPDES)) Y	/ N	100		AE	DITIC	ONAL REMARK	S

Minnesota Valley Testing Laboratories

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

1400

1433

110

GW

GW

GW

GW

GW

Field Service Chain of Custody Record

		exact on all doc	HITHER	1	
Ву	ax	Date	12	الماتيك	17
	pag	jes 1-	17		

	Project Otter Tail Power Company Project Type: Big Stone Plate Report Otter Tail Power Company Carbon Copy:						ant C	CR	Nam	ne of	San	pler	s: [Ben	No	ıf,	mat	tstein	
Attn: Address	Paul Vuko P.O. Box	onich 496 alls, MN 565		Attn: Address:	1		Quote Number: Work Order Number: 3 -0334 Lab Numbers:												
2 1101101		Sample In	formation								1	3ott	e Ty	ре					Analysis
Lab Number	Sample ID	Unique Station ID	Date	Тіте	Sample Type	Sample Location	1000 HNO3	Fillered York	1000 none	Sao HNO3		500 H2SO4	Filler? Y or M		1000 Amber	500 NaOH	Other: 150 Hage	Other 150 Mg	Analysis Required
A32926	H2OX		11 July 17	1116	GW		2	N	1	1	N	~					74		See Attached
	НЗОХ			1149	GW		2	N	1	1	N			30				1	
28	H4OX			1209	GW		2	N	1	1	N						-	-	
	H-6			1237	GW		2	N	1	1	N	-							
	H-8			1317	GW		2	N	1	1	N	0			1			1	

2 N

2

2 N

1 N

33 Slag 5 39 Slag 6 Comments:

3\ H-9

32 Slag 4

Slag 1

WORK ORDER #2

	D	PA			0 0		
Samples Relino	uished By: 3	en we		Samples Received By	: Ut All	de	
Date: Jul	417	Time: 1746	Temp:, 27	76 Date: 12 140 13	Time	: 900	Temp: 4.21
Samples Relinc	uished into:	Fridge Log in	Cart Oth	er:			
Samples Relind	quished 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 Phone: 800 782 3557

Samples Relinquished By:

Time:

Ice

Samplers Other:

Ambient

Date:

Delivery:

Transport:

New Ulm, MN 56003 Fax: 507 359 2890

Field Service Chain of Custody Record

	Otter Tail P				Project T		Big Stor	ne Pl	ant C	CR	Nam	e of	Sam	pler	s: [len	W	olf.	Ma	itt Stein
Attn:	Otter Tail P Paul Vukor P.O. Box 4	nich	pany		Carbon Copy: Attn: Address:					Quo	te Nu	ımbe	r.			7.0		110	11 STE, 7	
	Fergus Fall 218-739-83	ls, MN 565	38-04	96									bers		-					
		Sample In	Information Bottle Type											Analy						
Lab Number	Sample ID	Unique Station ID	Date		Time	Sample Type	Sample	1000 HIVO3	Fillered York	1000 none	500 HNO3	Filter Y or A.	500 H2SO4	FILLER? Y OF M	1000 Amber	1000 Amber	HOEN OOS	Other: 150 Has	Other 150 No.	Analysis Required
35	Slag 7		11 74	1/17	12/2	GW		2	N	1	1	N							- 5	See Attached
	Slag 8				1509	GW		2	N	1	1	N		1		har n				
3 +	Slag 9 Dee	•	1		1355	GW	-	2	N	1	1	N		-						
38	Slag 2B	,	1		1 37	GW		2	N	1	1	N								
Comme	nts:						1	_								_				
	WORK OF				Da									1	,	V.				
	s Relinquish	ned By:		Me	54)	T-					eived		1.6	AU	de					T- 17 -
Date: 11	JIAIY	7	Time	2: 17	40	1 em	2 PMINE	Juat	e: //	111	. 1.1.	+			l Im	e: 4	IM			Temp: 4.2

Samples Received By:

Seal Number(s) - If Used

Time:

No

Yes

Temp:

Date:

Seals Intact?

Temp:

Other:

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 Asset	ssment			Site:	Ott	er Tail	Power Co./ Big Stone
Sampling Personnel: D		-		Facility ID):		
12	sen wol	+		Date:	JULY 17		
				Unique S	tation ID		
		=		Sample I	D:		Slag 4
Well Condition	G			Vision in the	C	7	20
Well Locked?	(Yes No				e Posts Yes		No
Well Labeled?	Yes No			State ID			(No)
Casing Straight?	Res No			Grout Se	al Intact? Yes	3	MO
Repairs Necessary:							0
Well Information				V. 15			Gu
Well Depth:	39.22			Well Cas	ing Elevation	1:	NA
Constructed Depth:	39.00			22 23 22 23 11 11	ater Elevation	1:	
Casing Diameter:	2"	2		Previous			T
Water Level Before Purg					vel After Sar		2.77
Well Volume:	1.29	Gallon	3	Measure	ment Method	: Elec	. WII Steel Tape
				A.		-	
Sampling Information	n						T 100 0
Weather Conditions:	Temp: 8	1	Wind:	LAV	Sky	: 4	oudy
Sampling Method:	Grundfos	Bladder	Disp. B	& Whale	Grab Othe	_	
Dedicated Equipment:	Yes (No	9		Pumping	Rate: 1	5	gpm
Well Purged Dry?	Yes No	7		Time Pur		025	
Time Purged Dry?				Time of S		10	7
Duplicate Sample?	Yes No	71D:		Sample E	185.7		the contrate the company of the
Sample Appearance:	General: (loudy	Color	Ton Pha	se: Light	Sed.	Odor: None
					-	77	
. 14	Specific	Temp	D. O.	Turbidity	Gallons	SE	
Time pH	Cond.	°C		NTU	Removed	Q#	Comments:
1034 6.22	3147 319K	10.88	NA	MA	3.5	1	CAR EN SECTION
1053 6.26	3198	10.81	4		7.0	2	
1107 6.30	3192	1996	1		10.5	3	
						4	
			100			5	
Stabilized? (Yes)	No		Amou	nt Water F	10,5		Gallons
Comments:							

-	27 44	70 77 3	
Mana	Ulm.	RANI	EGC
NEW	UIIII.	IVIIV	DOL

Groundwar	er Assessm	er		Site:	Otte	r Tail Po	wer Co./ Big Sto
Sampling Pers	onn			Facility ID:	The second second		
	natt Stor			Date: 11	CLI		
	nor Just	<u> </u>		Unique Sta			
		-		Sample ID:		SI	ag 5
		-		Odinpie ib.		- Oi	ago
Well Condition	on				_		
Well Locked?	(Yes No			Protective I	Posts? Yes	>	No
Well Labeled?	(Yes No			State ID Ta	g? Yes		CLOVO
Casing Straight	t? (Yes No	=		Grout Seal		4	(No)
Repairs Neces				-			
Well Informa	tion			EU. 176.7		P. C.	- 1
Well Depth:	39.00				g Elevation:	110	7.50
Constructed De	eptr 38.80			Static Water	er Elevation:	108	7.30
Casing Diamet	ег: 2"			Previous S	tatic: 1185	73	
Water Level Be		17.74		Water Leve	el After Sample	:	36.10
Well Volume:	2,84	Gallons		Measureme	ent Method:	Elec.	WIN Steel To
TION VOIGINIO.							
TON VOIGING.				N.			
	ormation			1			
Sampling Inf		88	Wind: 5	7 7	Skv	Sun	
Sampling Inf Weather Condi	tior Temp:	SS/T	Wind: 5	_		Sun	
Sampling Inf Weather Condi Sampling Meth	tior Temp: 'od: Grundfos	Bladder SS/T	Wind: S	Whale	Grab Other		-/
Sampling Inf Weather Condi Sampling Meth Dedicated Equi	tior Temp: 'od: Grundfos	Bladder SS/T		Whale Pumping R	Grab Other		gpm
Sampling Inf Weather Condi Sampling Meth Dedicated Equi Well Purged Dr	tior Temp: od: Grundfos ipm Yes (No y? (Res) No	Bladder SS/T		Pumping R Time Pump	Grab Other ate: O		gpm Hi) am/ø
Sampling Inf Weather Condi Sampling Meth Dedicated Equi Well Purged Dr Time Purged D	tior Temp: od: Grundfos ipm Yes No y? (es) No ny? (12 9			Pumping R Time Pump Time of Sa	Grab Other ate: Obd S Began: mpling:	9. 1º	gpm
Sampling Inf Weather Condi Sampling Meth Dedicated Equi Well Purged Do Time Purged Do Duplicate Sam	tior Temp: od: Grundfos ipm Yes (No ry? (Ps) No ry? (Ps) (No pole: Yes (No)		Disp. Bailer	Pumping R Time Pump Time of Sa Sample EH	Grab Other ate: Obo S Began: mpling:	9. 1º	gpm 417 am/g 33 am/p
Sampling Inf Weather Condi Sampling Meth Dedicated Equi Well Purged Do Time Purged Do Duplicate Sam	tior Temp: od: Grundfos ipm Yes (No ry? (Ps) No ry? (Ps) (No pole: Yes (No)		Disp. Bailer	Pumping R Time Pump Time of Sa	Grab Other ate: Obo So Began: mpling:	9. 1º	gpm Hi) am/ø
Sampling Inf Weather Condi Sampling Meth Dedicated Equi Well Purged Dr Time Purged D Duplicate Samp Sample Appear	tior Temp: od: Grundfos ipm Yes (No ry? (No ry))))))))))))))))))))))))))		Disp. Bailer Color: n	Whale Pumping R Time Pump Time of Sa Sample EH	Grab Other ate: Ood Spegan: mpling: : 68.0 se: none	9 - 14	gpm 417 am/g 33 am/p
Sampling Inf Weather Condi Sampling Meth Dedicated Equi Well Purged Dr Time Purged D Duplicate Samp Sample Appear	tior Temp: od: Grundfos ipm Yes (No ry? (No ry? (No ry? (No ry? (No ry? (No ran General: C) Specific	ID:	Disp. Bailer Color: n	Whale Pumping R Time Pump Time of Sa Sample EH Pha	Grab Other ate: Ook So Began: mpling: E & C & C & C & C & C & C & C & C & C &	SEQ	gpm 417 am / 6 33 am 6
Sampling Inf Weather Condi Sampling Meth Dedicated Equi Well Purged Dr Time Purged D Duplicate Sample Sample Appear	tior Temp: od: Grundfos ipm Yes (No ry? (Ps) No ry? (Ps) No ry? (Ps) No ry? (Ps) No ran General: C Specific Cond.	ID:	Color: n	Whale Pumping R Time Pump Time of Sa Sample EH Phase Phase Turbidity NTU	Grab Other ate: Ood S Began: mpling: : 6 % (se: none Gallons Removed	SEQ #	gpm 417 am/g 33 am/p
Sampling Inf Weather Condi Sampling Meth Dedicated Equi Well Purged Dr Time Purged D Duplicate Sample Sample Appear	tior Temp: od: Grundfos ipm Yes (No y? (es) No ny? (12 9 ple; Yes (No ran General: C Specific Cond.	ID:	Disp. Bailer Color: n	Whale Pumping R Time Pump Time of Sa Sample EH Pha	Grab Other ate: Ook So Began: mpling: E & C & C & C & C & C & C & C & C & C &	SEQ #	gpm 417 am / p 33 am p Odor: vev
Sampling Inf Weather Condi Sampling Meth Dedicated Equi Well Purged Dr Time Purged D Duplicate Sample Sample Appear	tior Temp: od: Grundfos ipm Yes (No y? (es) No ny? (12 9 ple; Yes (No ran General: C Specific Cond.	ID:	Color: n	Whale Pumping R Time Pump Time of Sa Sample EH Phase Phase Turbidity NTU	Grab Other ate: Ood S Began: mpling: : 6 % (se: none Gallons Removed	SEQ # 1 2	gpm 33 am (0
Sampling Inf Weather Condi Sampling Meth Dedicated Equi Well Purged Dr Time Purged D Duplicate Sample Appear	tior Temp: od: Grundfos ipm Yes (No y? (es) No ny? (12 9 ple; Yes (No ran General: C Specific Cond.	ID:	Color: n	Whale Pumping R Time Pump Time of Sa Sample EH Phase Phase Turbidity NTU	Grab Other ate: Ood S Began: mpling: : 6 % (se: none Gallons Removed	SEQ # 1 2 3	gpm 417 am / p 33 am p Odor: vev
Sampling Inf Weather Condi Sampling Meth Dedicated Equi Well Purged Dr Time Purged D Duplicate Sample Appear 12 Time pH 1429 7.2	tior Temp: od: Grundfos ipm Yes (No y? (es) No ny? (12 9 ple; Yes (No ran General: C Specific Cond.	ID:	Color: n	Whale Pumping R Time Pump Time of Sa Sample EH Phase Phase Turbidity NTU	Grab Other ate: Ood S Began: mpling: : 6 % (se: none Gallons Removed	SEQ # 1 2 3 4	gpm 417 am / 6 33 am 6 Odor: vev
Sampling Inf Weather Condi Sampling Meth Dedicated Equi Well Purged Dr Time Purged D Duplicate Sample Appear	tior Temp: od: Grundfos ipm Yes (No y? (es) No ny? (12 9 ple; Yes (No ran General: C Specific Cond.	ID:	Color: n	Whale Pumping R Time Pump Time of Sa Sample EH Phase Phase Turbidity NTU	Grab Other ate: Cooks Began: mpling: : 6 % (Gallons Removed 3	SEQ # 1 2 3	gpm 417 am / p 33 am p Odor: vev

Groundwater	Assessmen	t		Site:	0	tter Ta	il Power Co./ Big Stone
Sampling Person	nel:			Facility ID			
	Ben Wo	14			July 1	7	
	UC I			Unique St	ation ID:	_	
		_		Sample II			Slag 6
				Oampie II		_	Olay 0
Well Condition	0					_	
Well Locked?	(Yes No			Protective	Posts?	es)	No
Well Labeled?	(Yes No)		State ID T		es	(No)
Casing Straight?	(Yes) No			Grout Sea		es	(No)
Repairs Necessa							
Well Information							
Well Depth:	37.5	0		Well Casi	ng Elevation:		NA
Constructed Dept	h: 37.30			Static Wa	ter Elevation:		1
Casing Diameter:				Previous S	Static:		-
Water Level Befo	re Purge: 33	1960		Water Lev	el After Sam	p /	31-08
Well Volume:	2.21	Gallons					WLI Steel Tape
				1		1	
Sampling Infor	mation						
Weather Conditio		83	Wind: L	AU	SI	ky: C	Loudy
Sampling Method	: Grundfos	Bladder SS	T Disp. Bailer	Whale	Grab Ot	her:	1
Dedicated Equipr				Pumping !	Rate: , >	-5	gpm 6
Well Purged Dry?				Time Pum		1220	
Time Purged Dry				Time of S		123	4 am / pm)
Duplicate Sample			-	Sample E			
Sample Appearar			Color: T		se: Nore		Odor: None
	2013130	SALVIAN I			., 0		1.010
a	Specific	Temp	D.O.	Turbidity	Gallons	SEQ	· ·
Time pH	Cond.	°C	mg/L	NTU	Removed	#	Comments:
1229 7.1	1427	12.32	NA	N/A	2.25	1	
					1	2	C
						3	
						4	
1234 7.0	95 1433	12.71	1	1	-	5	Recharge
Stabilized Yes	(No)		Amount V	Vater Remov	e 2.2	5	Gallons
Comments:							

Groundwater As	sessmen	t		Site:	Otte	r Ta	ail Power Co./ Big Stone	
Sampling Personnel:				Facility ID:				
Bei	1 Wolf	2		Date: 11 July 17				
N/C	1 11	_		Unique Sta	ation ID:			
		_		Sample ID			Slag 7	
W-11 O 1141						_		
Well Condition Well Locked?	Ves No			Protective	Posts? (Fes)	No	
Well Labeled?	1	State ID To			ONO .			
Casing Straight?	(es No	7			Intact? Yes		NO	
Repairs Necessary:		7						
Well Information	1/0	1						
Well Depth:	49.01	i		Well Casin	g Elevation:		NA	
Constructed Depth:	48.70	Call		Static Wat	er Elevation:			
Casing Diameter:	2"			Previous Static:				
Vater Level Before F	urge: 15	.74		Water Lev	el After Samp		38.94	
Vell Volume:	543	Gallons		Measurem	ent Method:	É	ec. W. Steel Tape	
				1				
Sampling Informa	tion	-						
Veather Conditions:		3	Wind:	LLV	Sky	1	loudy	
Sampling Method:	Grundfos	Bladder SS/T		Whale	Grab Other		1	
Dedicated Equipment			ш. ор. — ш. о.	Pumping F		_	gpm _	
Vell Purged Dry?	(Yes) No	_		Time Pump Began 1/45 (am)/ pm				
ime Purged Dry?	1207			Time of Sa		2/2		
Ouplicate Sample?	Yes (No)	ID: -	_	Sample EH: 93.5				
Sample Appearance:			Color: T	Cen Pha	se: wore	,	Odor: NO7~	
		4.0.0	1		V.O. 10			
22						S		
~~		Toma		L		E		
	Specific	Temp	D. O.	Turbidity	Gallons	Q	200.00.00	
ime pH	Cond.	°C	mg/L	NTU	Removed	#	Comments:	
1207 6.80	1738	10.30	NA	NA	5.5	1		
and the property of			1			2		
10.0	1777	1			f)	3	7	
1212 6.84	1779	10.97			-	4	Decharge	
			1			5	~	
tabilized Yes (No)		1000	Vater Remove	d: 5.5	10	Gallons	

Minnesota Valley Testing Laboratories, Inc.

New Ulm, MN 56073

507 354 8517

	vater A	ssessme	nt		Site:	Otter	Tail P	ower Co./ Big Stone
Sampling F	ersonnel				Facility ID:			
		Ben W	71£		Date: 11.	Tuly 17		
					Unique Sta			
			3		Sample ID			Slag 8
Well Con	dition							
Well Locke	d?	(Yes) No			Protective	Posts Yes		No
Well Label	ed?	YES No	Z .		State ID Ta			(NO)
Casing Stra	aight?	Yes No	Œ.		Grout Seal	Intact (res)		No ("Taly i)
Repairs Ne	cessary:	Well o	nd arout	Keal Exe	d but	COSIN SH	11 6	WK 62
Well Info	rmation							
Well Depth		5225	5		Well Casin	g Elevation:		NA
Constructe		52.09				er Elevation:		
Casing Dia		2"			Previous S			+
Water Leve		Purge: 17	87		Water Lev	el After Sam	12	and a
Well Volum		5.61	Gallons			ent Method:		Will Steel Tape
					1		-	
Sampling Weather C	onditions:	Temp:	34	Wind: L	4		cho	rudy
Sampling N		Grundfos	Bladder SS/	Disp. Bailer	Whale	Grab Other:		7.1
Dedicated	Equipmer		2,75		Pumping R			gpm
	d Dry?	Yes (No)			Time Pum	Bega 14	00	am / fun
Well Purge			_				27.7	
Well Purge Time Purge		-	Ī.,		Time of Sa	mpline / F	04	am / 6m
Well Purge Time Purge Duplicate S	ample?	Yes (No)			Time of Sa Sample El-	mpline F	109	
Well Purge Time Purge Duplicate S	ample?	Yes (No)	ID:	Color: N	Time of Sa Sample El-	mpline / F	09	am / fom) Odor: wane
Well Purge Time Purge Duplicate S Sample Ap	ample?	Yes (No): General:	clear		Time of Sa Sample El-	mpline F d: 139.7 se: None	09	
Well Purge Time Purge Duplicate S Sample Ap	Sample? pearance	Yes (No): General:	Temp	D. O.	Time of Sa Sample El-	mpline 1 h: 139,7 se: None Gallons	SEQ	Odor: wone
Well Purge Time Purge Duplicate S Sample Ap Time	eample? pearance	Yes (No): General: Specific Cond.	lemp oC	D. O. mg/L	Time of Sa Sample El-	Gallons Removed	SEQ#	
Well Purge Time Purge Duplicate S Sample Ap Time	pH	Yes (No): General: Specific Cond.	lemp oc 11.50	D. O.	Time of Sa Sample El-	Gallons Removed	SEQ #	Odor: wone
Well Purge Time Purge Duplicate S Sample Ap Time	pH 7.07	Yes (No): General: Specific Cond. 1504	Clear OC 11.50	D. O. mg/L	Time of Sa Sample El-	Gallons Removed 5.75	SEQ #	Odor: wone
Well Purge Time Purge Duplicate S Sample Ap Time	pH	Yes (No): General: Specific Cond.	lemp oc 11.50	D. O. mg/L	Time of Sa Sample El-	Gallons Removed	SEQ # 1 2	Odor: wone
Well Purge Time Purge Duplicate S Sample Ap Time	pH 7.07	Yes (No): General: Specific Cond. 1504	Clear OC 11.50	D. O. mg/L	Time of Sa Sample El-	Gallons Removed 5.75	SEQ # 1 2 3 4	Odor: wone
Well Purge Time Purge Duplicate S Sample Ap Time	pH 7.07 7.04	Yes (No): General: Specific Cond. 1504	Clear OC 11.50	D. O. mg/L	Time of Sa Sample El-	Gallons Removed 5.75 11.5	SEQ # 1 2 3 4 5	Odor: wone

-use whale pump

New	I Ilma	1414	ERI	72
INEW	UIIII	. IVIIV	OOL	113

Site: Otter Tail Power Co./ Big Stone Facility ID:			
Date: // 50/4 17			
Unique Station ID:			
Sample ID: Slag 9			
Protective Posts? Yes No			
State ID Tag? Yes No			
Grout Seal Intact? Yes N6)			
Well Casing Elevation:			
Static Water Elevation:			
Previous Static:			
Water Level After Sample 23-27			
Measurement Method: Elec. W Steel Tape			
id: Lev sky: Cloudy			
Bailer Whale Grab Other:			
Pumping Rate: , 25 gpm			
Time Pump Began 1243 am / pm2			
Time of Sampling: /355 am / pm			
Sample EH: 102.8			
or: NOTO Phase: NOTO Odor: NOTO			
7070			
I S			
E			
D. Turbidity Gallons Q			
L NTU Removed # Comments:			
/A NA 6 1			
1 12 2			
18 3			
5			
ount Water Removed: R Galions			
o.			

Mount	1 IIm	RANE	ECU.
New	Oith.	MIM	DOU

Groundwater A	ssessme	19		Site:		r Ta	I Power Co./ Big Stone	
Sampling Personn€		è		Facility ID: Date: July ID				
190	7 WOH	+						
				Unique Sta	ation ID:			
		_		Sample ID	:		Slag 2B	
M-11 O 124						_		
Well Condition Well Locked?	Yes (No	7		Protective	Posts? (Pes)	1	No	
	No No	-		State ID Ta		-	100	
	(es) No	-			Intact? Yes		(No)	
Repairs Necessary	COS THE			5.52.550	Tillager 100			
Well Information								
Well Depth:	40.94			Well Casin	g Elevation:		MI	
Constructed Depth:	40.80				er Elevation:			
Casing Diameter:	2"	2.10		Previous Static: Water Level After Sample Measurement Method: Elec. WI Steel Tape				
Water Level Before		.98						
Well Volume: ;	3.58	Gallons						
				1				
Weather Conditions Sampling Method: 0	Grundfos	Blander SS/	Wind: Disp. Baller	Whale	Sky: Grab Other		loudy	
Dedicated Equipme		_		Pumping F		_	gpm	
Well Purged Dry?	1132	_		Time Pum		-	(am)/ pm	
Time Purged Dry?		ID:	22.	Time of Sa		21	(am) pm	
Duplicate Sample? \ Sample Appearanc (clear	Color: A		1: -R5.4 se: NOX		Odor: al al	
Sample Appearance	Selleral.	Licar	COIOI.	ione Fila	se. NOR	_	Odor: cherical	
	Specific Cond.	Temp °C	D. O. mg/L	Turbidity NTU	Gallons Removed	SEQ#	Comments:	
						1	Comments.	
1132 6.99	2048	11.31	MA	NA	3.75	2		
1137 7.09	2107	11.71				3	Recharge	
11311	4191	11111		1		4	RECITION	
		-			-			
						15		
	No)		Amount W	later Remove	d: 3.75	5	Gallons	