

# 2021 Annual Groundwater Monitoring and Corrective Action Report

for Compliance with the Coal Combustion Residuals (CCR) Rule

Cherokee Station

Public Service Company of Colorado

January 31, 2022



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# **Table of Abbreviations and Acronyms**

Abbreviation	Definition
BTV	background threshold value
CCR	Coal Combustion Residuals
COI	constituent of interest
EPA	Environmental Protection Agency
LCS	Laboratory Control Samples
MS/MSD	Matrix Spike/Duplicate
PSCo	Public Service Company of Colorado
QC	quality control
RPD	relative percent difference
SOP	Standard Operating Procedure
SSI	statistically significant increase
SSL	statistically significant level
TDS	Total Dissolved Solids
TSS	Total Suspended Solids

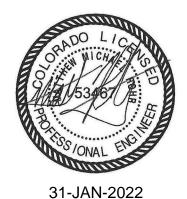


# Certification

#### 2021 Groundwater Monitoring Annual Report for Cherokee Station

I hereby certify to the best of my knowledge that this groundwater monitoring annual report is designed to meet the performance standard in 40 CFR Part 257 of the Federal Coal Combustion Residuals (CCR) Rule.

I am duly licensed Professional Engineer under the laws of the State of Colorado.



Matthew Rohr, PE Colorado PE License 0053467 License renewal date October 31, 2023



Summa	ary of 40 CFR Section § 257.90(e)(6) Groundwater Monitoring System Requ	uirements and Site-Specific Compliance a	t Cherokee Station
current status of gro	ection at the beginning of the annual report that provides an overview of the boundwater monitoring and corrective action programs for the CCR unit. At a minimum, the summary must specify all of the following:	(Closed) Ash Impoundments Multiunit Status	(Closed) Cooling Tower Retention Pond Status
§257.90(e)(6)(i)	At the start of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95.	Assessment Monitoring Program	Assessment Monitoring Program
§257.90(e)(6)(ii)	At the end of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95.	Assessment Monitoring Program	Assessment Monitoring Program
§257.90(e)(6)(iii)	If it was determined that there was a statistically significant increase over background for one or more constituents listed in appendix III to this part pursuant to § 257.94(e):	Yes	Yes
§257.90(e)(6)(iii)(A)	Identify those constituents listed in appendix III to this part and the names of the monitoring wells associated with such an increase.	MW-7 – boron, calcium, chloride, fluoride, sulfate, TDS  MW-9 – boron, calcium, chloride, fluoride, sulfate, TDS  MW-10 - boron, calcium, chloride, fluoride, pH, sulfate, TDS	MW-15 - chloride, sulfate, TDS     MW-16 –sulfate and TDS
§257.90(e)(6)(iii)(B)	Provide the date when the assessment monitoring program was initiated for the CCR unit.	March 7, 2018	July 22-23, 2019
§257.90(e)(6)(iv)	If it was determined that there was a statistically significant level above the groundwater protection standard for one or more constituents listed in appendix IV to this part pursuant to § 257.95(g) include all of the following:	No	No
§257.90(e)(6)(iv) (A)	Identify those constituents listed in appendix IV to this part and the names of the monitoring wells associated with such an increase.	N/A	N/A
§257.90(e)(6)(iv) (B)	Provide the date when the assessment of corrective measures was initiated for the CCR unit.	N/A	N/A
§257.90(e)(6)(iv)(C)	Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit.	N/A	N/A
§257.90(e)(6)(iv)(D)	Provide the date when the assessment of corrective measures was completed for the CCR unit.	N/A	N/A
§257.90(e)(6)(v)	Whether a remedy was selected pursuant to § 257.97 during the current annual reporting period, and if so, the date of remedy selection.	N/A	N/A
§257.90(e)(6)(vi)	(vi) Whether remedial activities were initiated or are ongoing pursuant to § 257.98 during the current annual reporting period.	N/A	N/A



# 1.0 Introduction

The U.S. Environmental Protection Agency's (EPA's) final Coal Combustion Residuals (CCR) Rule establishes a comprehensive set of requirements for the management and disposal of CCR (or coal ash) in landfills and surface impoundments by electric utilities. Cherokee Station, located in Denver, Colorado (**Figure 1**), is owned and operated by Public Service Company of Colorado (PSCo), an Xcel Energy Company. Cherokee Station has four CCR units subject to the CCR Rule: the former West, Center, and East ash impoundments, and the former incised Cooling Tower Retention Pond (CTRP) (**Figure 2**). The CTRP was categorized as inactive as of the October 2015 effective date of the CCR Rule and became subject to the groundwater monitoring requirements under the Direct Final Rule effective October 4, 2016 (Extension Rule). The CTRP was closed in 2017 and the three ash impoundments were closed in 2018; all were physically closed by removal of CCR, with ongoing groundwater monitoring.

In 2021, groundwater monitoring was conducted at Cherokee to collect assessment monitoring samples at the (closed) CCR Ash Impoundments and the CTRP as specified under Part 257.95. This Annual Groundwater Monitoring Report presents the sampling and analysis completed in 2021:

- The status of the groundwater monitoring program for the (closed) West, Center, and East ash impoundments at the end of 2021 is in assessment monitoring.
- ➤ The status of the groundwater monitoring program for the (closed) CTRP at the end of 2021 is in assessment monitoring.

# 2.0 Facility Description

Historically, Cherokee Station was a coal-fired, steam turbine electric generating station; the fuel source for the coal-fired units was sub-bituminous, low-sulfur coal supplied by several mines in western Colorado. Cherokee Station ceased burning coal in August 2017 and is now reconfigured to natural gas. During the active coal operations, the former West, Center, and East ash impoundments (described herein as ash impoundments) were used for temporary storage of bottom ash (**Figure 2**). The three ash impoundments are considered a single CCR unit for groundwater monitoring due to the proximities of the impoundments to each other and the configuration relative to the groundwater flow direction. Fly ash was handled dry and collected in on-site silos. Both bottom ash and fly ash were hauled off site to facilities permitted for either beneficial use or disposal. The ash impoundments were physically closed by removal of all CCR, which was completed in December 2018; completion of CCR removal was certified by a Professional Engineer.

The CTRP historically received overflow from Cooling Tower 4 and CCR (**Figure 2**). The CTRP ceased receiving CCR prior to the October 2015 effective date of the CCR Rule and therefore met the definition of an inactive impoundment. The CTRP became subject to the groundwater monitoring requirements under the Direct Final Rule effective October 4, 2016. The pond was



physically closed by removal of all CCR, which was completed in March 2017; completion of CCR removal was certified by a Professional Engineer.

The operation and monitoring of the CCR units are described further in the Cherokee Station Groundwater Monitoring System Certification (HDR, 2019).

# 2.1 Hydrogeology

The uppermost aquifer under Cherokee Station is the alluvial aquifer associated with the nearby South Platte River and is present across the site. Groundwater under the CCR facilities flows east, perpendicular to the South Platte River, where it ultimately discharges to the river (GeoTrans, Inc., 2009). In the area of the ash impoundments, the alluvial aquifer is between 8 and 38 feet thick, mostly sandy, and is underlain by the low permeability claystone deposits of the Denver Formation that inhibit vertical downward flow to the deeper, regional Arapahoe Aquifer (GeoTrans, Inc., 2009). The Denver Formation is over 70 feet thick in this area (CDH, 1993). Further hydrogeologic characterization of the site is provided in the Cherokee Station Groundwater Monitoring System Certification (HDR, 2019).

# 2.2 Monitoring Well Network

#### 2.2.1 West, Center, and East Ash Impoundments

The CCR Rule requires, at a minimum, one upgradient and three downgradient monitoring wells per CCR unit to be completed in the uppermost aquifer. Section 257.9 of the Rule states that the operator: "...may install a multiunit groundwater monitoring system instead of separate groundwater monitoring systems for each CCR unit." In addition, the CCR Rule states that downgradient monitoring wells should be installed to: "accurately represent the quality of groundwater passing the waste boundary of the CCR unit. The downgradient monitoring system must be installed at the waste boundary that ensures detection of groundwater contamination in the uppermost aguifer." The flow of groundwater under the CCR impoundments is eastward, perpendicular to the length of the impoundments. Five wells were sited in 2015 for CCR compliance for a multiunit monitoring network of all three impoundments, two hydraulically upgradient monitoring wells (MW-7 and MW-13) and three downgradient monitoring wells (MW-8, MW-9, and MW-10) (Figure 2). The MW-7 well location on the west side of the former West Impoundment is hydraulically upgradient of the impoundments (GeoTrans, Inc., 2009); however, the monitoring performed to date has identified that the ponds may have influenced well MW-7; therefore, the MW-7 well is not representative of background water. Monitoring well MW-13 is located upgradient of the CCR impoundments and serves as the background monitoring well for the former West, Center, and East ash impoundments (Figure 2). No monitoring wells were installed or abandoned in 2021 for the former ash impoundments.

The three ash impoundments were closed in December 2018 by removal of all CCR after first dewatering the impoundments. The CCR was removed from each impoundment, exposing the native shale bedrock and native sands above the bedrock. Minor amounts of groundwater were observed on top of the native subgrade. During this time, three of the four monitoring wells adjacent to the impoundments were intermittently dry. These observations indicate that the



water in the former ash impoundments was causing some groundwater mounding beneath the ponds and controlling water levels in the monitoring wells surrounding the ponds.

No wells were installed or abandoned in 2021.

#### 2.2.2 Cooling Tower Retention Pond

In 2018 four wells (MW-14, MW-15, MW-16, MW-17) were installed around the perimeter of the (closed) CTRP for CCR compliance (**Figure 2**). The groundwater flow direction beneath the pond is to the east. Monitoring wells MW-15, MW-16, and MW-17 were located along the perimeter of the east side of the pond to serve as downgradient wells at the waste boundary (**Figure 2**). MW-17 was observed to be damaged during the October 2021 sampling event. The well casing was repaired and HDR returned to collect a sample on December 8, 2021.

No wells were installed or abandoned in 2021; however well MW-17 surface casing above ground was damaged and repaired, requiring a new elevation survey. The well installation report will be updated in 2022 to reflect the new survey data.



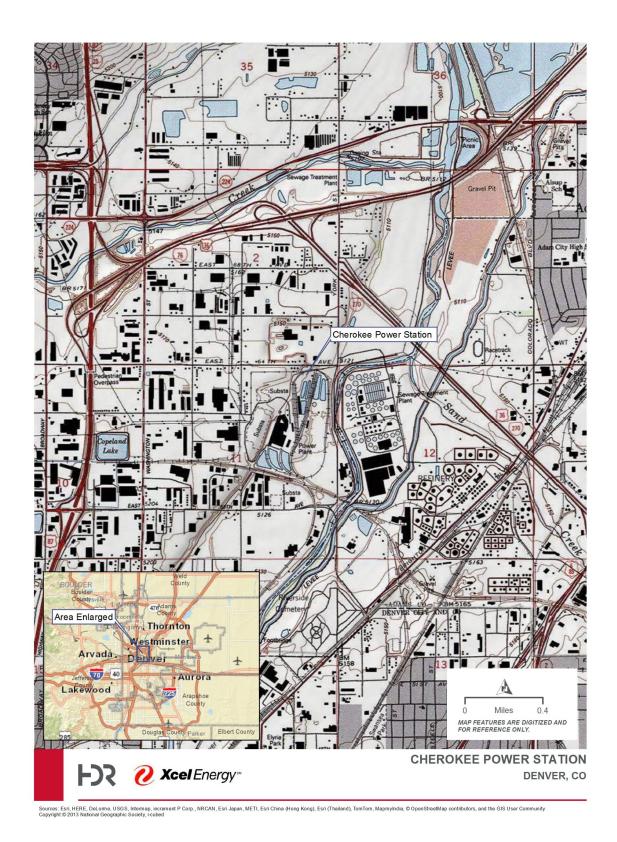


Figure 1. Vicinity map for Cherokee Station.



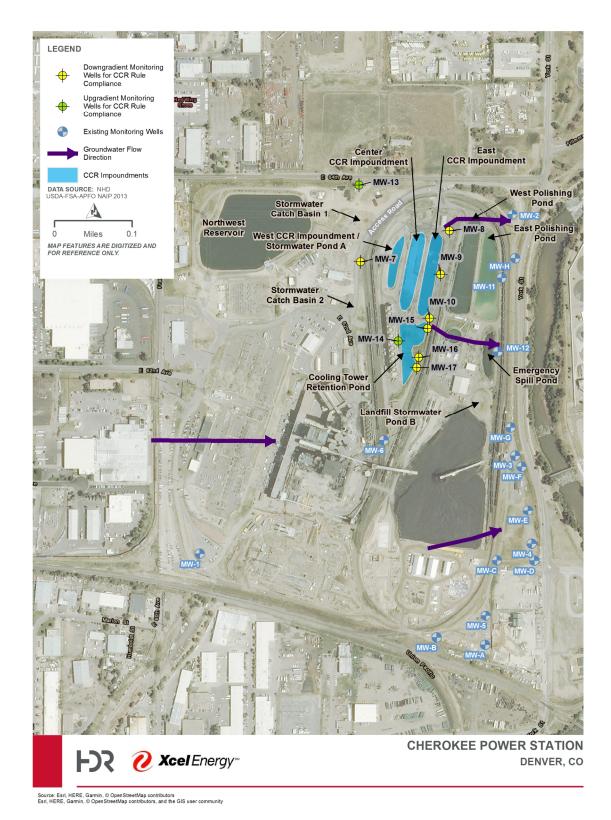


Figure 2. Cherokee Station – CCR unit and monitoring well location map.



# 3.0 Monitoring

# 3.1 Frequency

#### 3.1.1 West, Center, and East Ash Impoundments

Assessment monitoring continued in 2021 for the former Ash Impoundments. An annual assessment monitoring event was completed on April 21-23, 2021 to sample all the monitoring wells around the impoundments for all Appendix III and IV constituents plus TSS (**Table 1**). Monitoring was performed at all of the certified monitoring network of wells (MW-7, MW-8, MW-9, MW-10, and MW-13); however, MW-8 and MW-9 were dry, thus samples were collected from MW-7, MW-10, and MW-13. **Table 2** provides the well identification, number of samples collected, dates samples were collected in 2021, and the respective assessment monitoring programs (per (257.90(e)(3))).

On October 19-20, 2021, semi-annual assessment monitoring was conducted at the former Ash Impoundments certified monitoring network wells. Samples were analyzed for all Appendix III and detected Appendix IV COIs plus TSS. Monitoring wells MW-8 and MW-9 were dry. Samples were collected from MW-10 and MW-13 (**Table 2**).

Table 1. Groundwater quality parameters.		
Appendix III Constituents for Detection Monitoring	Appendix IV Constituents for Assessment Monitoring	
Boron	Antimony	
Calcium	Arsenic	
Chloride	Barium	
Fluoride	Beryllium	
рН	Cadmium	
Sulfate	Chromium	
Total Dissolved Solids (TDS)	Cobalt	
Additional Parameters	Fluoride	
Total Suspended Solids (TSS)	Lead	
	Lithium	
	Mercury	
	Molybdenum	
	Selenium	
	Thallium	
	Radium 226 and 228 combined	



Table 2. Number and dates of groundwater samples collected in 2021 for each well and the required monitoring programs for the Cherokee Ash Ponds (257.90(e)(3))

Monitoring Well I.D.	Well Location	Dates Monitored	CCR Rule Monitoring Purpose
	Upgradient <sup>1</sup>	April 23, 2021	Annual Assessment Monitoring
MW-7		September 15, 2021	Re-Sample due to high TSS in Annual AM event
		October 19, 2021 <sup>2</sup>	Semi-annual Assessment Monitoring
MW-8	Downgradient	April 20, 2021*	Annual Assessment Monitoring
MVV-8	Downgradient	October 19, 2021*	Semi-annual Assessment Monitoring
MW-9	Downgradient	April 20, 2021*	Annual Assessment Monitoring
IVIVV-9		October 19, 2021*	Semi-annual Assessment Monitoring
MW-10	Downgradient  Upgradient /	April 22, 2021	Annual Assessment Monitoring
IWIVV-10		October 19, 2021	Semi-annual Assessment Monitoring
MW-13		April 21, 2021	Annual Assessment Monitoring
IVIVV-13	Background	October 20, 2021	Semi-annual Assessment Monitoring

<sup>&</sup>lt;sup>1</sup>Hydraulically upgradient though potentially influenced by impoundments

#### 3.1.2 Cooling Tower Retention Pond

The initial assessment monitoring event was completed July 22-23, 2019 to sample all of the CTRP certified monitoring network wells for Appendix IV constituents. On October 22, 2019, the first semi-annual assessment monitoring samples were collected from all wells in the CTRP well network.

<sup>&</sup>lt;sup>2</sup>Sampled first by another firm and there was inadequate volume remaining for HDR to sample. Well was still dry in December.

<sup>\*</sup>Well was monitored and found to be dry, no sample could be collected



Assessment monitoring continued in 2020 as described in the 2020 Annual Monitoring Report. In 2021, PSCo completed an annual assessment monitoring event from April 22-23, 2021 and a semi-annual event from October 19-20, 2021. **Table 3** provides the well identification, number of samples collected, dates samples were collected in 2021, and whether the sample was required by the annual or semi-annual assessment monitoring programs (per (257.90(e)(3))).

Table 3. Number and dates of groundwater samples collected in 2021 for each well and the required monitoring programs for the Cherokee (closed) Cooling Tower Retention Pond (257.90(e)(3))

(257.90(e)(3))				
Monitoring Well I.D.	Well Location	Dates Monitored	CCR Rule Monitoring Purpose	
	Upgradient / Background	June 10, 2021 <sup>1</sup>	Annual Assessment Monitoring	
MW-14		October 20, 2021	Semi-annual Assessment Monitoring	
	Downgradient	April 22, 2021	Annual Assessment Monitoring	
MW-15		September 14, 2021	Re-sample due to high TSS in Annual AM event	
		October 19, 2021	Semi-annual Assessment Monitoring	
MW-16	Downgradient  Downgradient	April 23, 2021	Annual Assessment Monitoring	
		October 19, 2021	Semi-annual Assessment Monitoring	
		April 23, 2021	Annual Assessment Monitoring	
		December 8, 2021 <sup>2</sup>	Semi-annual Assessment Monitoring	

<sup>&</sup>lt;sup>1</sup>Bailed dry during April 22-23 sampling event; allowed to recharge and sampled on June 10<sup>th</sup>

# 3.2 Water Levels and Sample Collection

Water levels were collected in each well prior to sample collection. Groundwater quality samples were collected in all monitoring wells unless wells were dry. Groundwater sample collection protocols follow the Groundwater Sample Collection Standard Operating Procedure (SOP) (HDR, 2016). The water samples were collected using a submersible Geotech SS Geosub

<sup>&</sup>lt;sup>2</sup>Well casing was damaged to the extent that sampling could not be done during the October 19-20<sup>th</sup> sampling event. Sampling was completed December 8<sup>th</sup> after the well casing was repaired.



pump, and the pump and hose were decontaminated between wells following protocols outlined in the Sampling SOP. Each well was purged until field parameters stabilized in accordance with the Sampling SOP. In accordance with the CCR Rule, groundwater samples were not field filtered. The field parameters of turbidity, pH, and temperature were measured using a YSI Professional Plus (or an equivalent) portable water quality instrument that was calibrated prior to use each day of sampling. The results of field measurements were recorded on a field data form, which is maintained as part of the field sampling records. For quality control (QC), one field duplicate sample and one field equipment blank sample was collected during each sample event. Water samples were delivered under Chain of Custody to TestAmerica in Denver, Colorado.

# 3.3 Analytical Testing

Groundwater samples were analyzed for the COIs shown in **Table 1**. The assessment monitoring samples were analyzed for Appendix III and Appendix IV COIs, plus TSS.

# 3.4 Data Validation and Data Management

Data validation and data management tasks were performed per the Data Management and Statistical Procedures Plan for Compliance with the Coal Combustion Residuals Rule (HDR, 2017). Data validation was conducted to eliminate data that did not meet validation criteria and designate a data qualifier for any data quality limitation discovered.

All samples and quality control (QC) were reviewed and evaluated, and no samples were rejected. Most QC analyses were within reportable limits; however, when QC was outside limit controls, samples were reported as estimated. Relative percent difference (RPD) results for field duplicate analyses were generally within the control limit criterion of 20% and qualified as estimated where necessary. Outliers were identified for TSS (one instance) and radiochemistry (two instances). Lab duplicate analyses were all within the control limit criterion. Laboratory Control Sample (LCS)/LCS duplicates recoveries and RPDs were all within control limits. Matrix Spike/Duplicate (MS/MSD) recoveries and RPDs were generally within control limits. Outliers were identified for RPD for mercury (one instance). Data analyses required minimal qualifications, and all data were usable, even when qualified.

# 4.0 Monitoring Results

#### 4.1 Water Levels and Groundwater Flow Direction

The water levels at monitoring wells were recorded during monitoring events. In both assessment monitoring events, wells MW-8 and MW-9 were dry. These observations indicate that the water in the former ash impoundments was causing some groundwater mounding beneath the ponds and controlling water levels in the monitoring wells surrounding the ponds. The monitoring wells are completed at the bottom of the alluvial aquifer, which is underlain by the low permeability claystone deposits of the Denver Formation. The Denver Formation is over 70 feet thick in this area and inhibits vertical downward flow to the deeper, regional Arapahoe Aquifer (CDH 1993; GeoTrans, Inc. 2009). Drilling wells deeper in the location of these dry



downgradient wells would result in wells completed in the claystone confining unit and no longer in the upper aquifer and is therefore not recommended.

The contour map in **Appendix A** reflects water level data from October 2021 and is consistent with the water level data from April 2021. Groundwater flow under the ash ponds is to the southeast. The water levels and contour map (**Appendix A**) confirm that monitoring well MW-13 is located upgradient of the ash ponds and remains appropriate to represent background water quality for the West, Center, and East ash impoundments. The MW-7 well location on the west side of the West Impoundment is hydraulically upgradient of the impoundments; however, the monitoring performed to date has identified that the ponds may have influenced water quality at well MW-7; therefore, the MW-7 well is not representative of background water.

During the October 2021 semi-annual assessment monitoring event, well MW-7 was sampled first by another firm for the PSCo CDPHE compliance groundwater monitoring program and there was inadequate volume remaining for HDR to take a sample. When HDR returned to sample MW-17 in December (see Note 2 of Table 3), MW-7 was checked and was still dry. After closure of the three ash impoundments, the combined footprint of the impoundments has been used for the construction of a large lined non-CCR waste impoundment. The lack of water in MW-7 during the latter half of 2021 coincides with the construction of the lined impoundment which further supports the earlier theory of MW-7 being potentially impacted by historical ash impoundment mounding.

The water levels and contour map (**Appendix A**) confirm that monitoring well MW-14 is located upgradient of the CTRP and remains appropriate to represent background water quality for the CTRP. Groundwater flow under the CTRP is to the east. Therefore, the selected downgradient wells are appropriately located to monitor the CCR impoundments.

# 4.2 Water Quality

#### 4.2.1 West, Center, and East Ash Impoundments

As stipulated in the CCR Rule, eight rounds of background groundwater sampling and detection monitoring were completed before October 17, 2017 for the former West, Center, and East ash impoundments. The background sampling was described in detail in the *Background Water Quality Statistical Certification* (HDR 2020). The first detection monitoring event was conducted on September 12-14, 2017. In the January 15, 2018 PSCo memorandum, *Determination of Statistically Significant Increases over Background per 257.93(h)(2)*, concentrations of Appendix III COIs from downgradient monitoring wells MW-7, MW-9, and MW-10 (MW-8 was dry) were compared against the BTVs and several COIs were shown to have SSIs over BTVs (upper prediction limit). These SSIs triggered the assessment monitoring program for the impoundments.

In accordance with CCR Rule 257.95(h), GPS were established for each detected Appendix IV COI and documented in the October 10, 2018 memorandum *Groundwater Protection Standards* and Determination of no SSIs per 257.95(g). For each detected COI, **Table 4** lists the EPA established MCL from 40 CFR 141.62 and 141.66, the BTV (upper tolerance level) for the Cherokee ash impoundments, and the GPS.



Table 4. Groundwater Protection Standards for Detected Appendix IV COIs for the Ash Impoundments 257.95(d)(3)				
Constituent	Unit	MCL	Background Value (UTL)	GPS
Antimony	mg/l	0.00600	0.000570	0.00600
Arsenic	mg/l	0.0100	0.00135	0.0100
Barium	mg/l	2.00	0.136	2.00
Cadmium	mg/l	0.00500	0.000310	0.00500
Chromium, Total	mg/l	0.100	0.0118	0.100
Cobalt	mg/l	0.00600	0.000970	0.00600
Fluoride	mg/l	4.00	1.20	4.00
Lead	mg/l	0.0150	0.00130	0.0150
Lithium	mg/l	0.0400	0.159	0.159
Mercury	mg/l	0.00200	0.0000270	0.00200
Molybdenum	mg/l	0.100	0.00473	0.100
Radium-226-228	pci/l	5.0^	1.23	5.0
Selenium	pci/l	0.0500	0.0109	0.0500

<sup>\*</sup>EPA adopted health-based value in place of MCL.

Closure of the former West, Center, and East ash impoundments was completed in December 2018 through removal of CCR per 257.102(e)(i). The CCR material has been removed from the former impoundments, and concentrations of CCR constituents are expected to decrease through natural attenuation. All groundwater monitoring at the impoundments occurring after December 2018 reflects new conditions (post-closure) after the CCR waste was removed. In 2021, PSCo continued to monitor groundwater in accordance with the assessment monitoring program and consistent with 257.93(e) to evaluate whether clean closure criteria in groundwater have been met. Assessment monitoring samples were collected and analyzed for all Appendix III and Appendix IV COIs in April and October 2021. Laboratory reports for the 2021 assessment monitoring events are provided in **Appendix B**.

After the April 2021 annual assessment monitoring event, in accordance with CCR Rule 257.95(e), downgradient well concentrations were compared against background values, and some concentrations were found to be above background values. In accordance with CCR Rule 257.95(f), detected Appendix IV COI concentrations in downgradient wells were compared against GPS and were found not to exceed GPS. Therefore, in accordance with CCR Rule 257.95(f), the CCR unit continued in assessment monitoring.

In response to high TSS levels in the April 2021 MW-7 groundwater sample, an additional sample was taken from MW-7 on September 15, 2021 to analyze for Appendix III and IV metals, dissolved metals, and TSS. No COIs were found to exceed GPS.

<sup>^</sup>Colorado Water Quality Regulation



After the October 2021 semi-annual assessment monitoring event and in accordance with CCR Rule 257.95(e), downgradient well concentrations were compared against background values, and some concentrations were found to be above background values. In accordance with CCR Rule 257.95(f), detected Appendix IV COI concentrations in downgradient wells were compared against GPS and selenium was found to be greater than the GPS for this event with a concentration of 0.078 mg/L in MW-10 and a GPS of 0.05 mg/L. Therefore, in accordance with CCR Rule 257.95(g), the downgradient well data from October 2021 was statistically evaluated to calculate lower confidence limits and compared to GPS. No concentrations were found to be at statistically significant levels (SSLs) above the GPS. Therefore, in accordance with CCR Rule 257.95(f), the CCR unit continues in assessment monitoring.

In 2022 PSCo will continue to sample and evaluate assessment monitoring data in accordance with CCR Rule 257.95.

#### 4.2.2 Cooling Tower Retention Pond

Removal of CCR and all areas affected by releases of CCR at the CTRP was completed in March 2017. The CCR material has been completely removed from the pond. Therefore, it is important to note that all groundwater monitoring occurring after March 2017 at the CTRP reflect post-CCR removal conditions.

The first detection monitoring event was conducted on February 11, 2019. Detection monitoring verification samples were also collected on April 9, May 7, and June 3, 2019. In the June 13, 2019 PSCo memorandum, *Determination of Statistically Significant Increases over Background per 257.93(h)(2)*, concentrations of Appendix III COIs from downgradient monitoring wells at the former CTRP were compared against the BTVs and several were shown to have SSIs over BTVs. These SSIs triggered the assessment monitoring program for the former CTRP.

In accordance with CCR Rule 257.95(h), GPS were established for each detected Appendix IV COI and documented in the June 13, 2019 memorandum *Groundwater Protection Standards* and Determination of no SSIs per 257.95(g). For each detected COI, **Table 5** lists the EPA established MCL from 40 CFR 141.62 and 141.66, the BTV (upper tolerance level) for the Cherokee CTRP, and the GPS.



Table 5. Groundwater Protection Standards for Detected Appendix IV COIs for the CTRP 257.95(d)(3)

Constituent	Unit	MCL	Background Value (UTL)	GPS
Antimony	mg/l	0.00600	0.00089	0.00600
Arsenic	mg/l	0.0100	0.0031	0.0100
Barium	mg/l	2.00	0.260	2.00
Cadmium	mg/l	0.00500	0.00048	0.00500
Chromium, Total	mg/l	0.100	0.0340	0.100
Cobalt	mg/l	0.00600	0.0110	0.0110
Fluoride	mg/l	4.00	4.08	4.08
Lead	mg/l	0.0150	0.0140	0.0150
Lithium	mg/l	0.0400	0.0940	0.0940
Molybdenum	mg/l	0.100	0.0720	0.100
Radium-226-228	pci/l	5.0^	1.34	5.0
Selenium	pci/l	0.0500	0.0110	0.0500
Thallium	mg/l	0.0020	0.000540	0.0020

<sup>\*</sup>EPA adopted health-based value in place of MCL.

Assessment monitoring was conducted in second half of 2019 and in 2020. Annual and semiannual assessment monitoring samples were collected from all of the former CTRP monitoring
wells (MW-14, MW-15, MW-16, and MW-17) in April and October of 2021. Samples were
analyzed for Appendix III and detected Appendix IV COIs plus TSS. Laboratory reports are
provided in **Appendix B**. Statistics were completed after each assessment monitoring sample
event. After the April 2021 assessment monitoring event, in accordance with CCR Rule
257.95(e), downgradient well concentrations were compared against background values, and
Appendix III COI concentrations were found to be above BTVs. Some detected Appendix IV
COI concentrations in downgradient wells were found to be above background values and were
also compared against GPS and selenium was found to be greater than the GPS for this event
at a selenium concentration of 0.066 mg/L in well MW-15 (GPS is 0.05 mg/L). Therefore, in
accordance with CCR Rule 257.95(g), the downgradient well data from April 2021 was
statistically evaluated to calculate lower confidence limits and compared to GPS. No
concentrations were found to be at statistically significant levels (SSLs) above the GPS.
Therefore, in accordance with 257.95(e-f), the CCR unit continued in assessment monitoring.

In response to high TSS levels in the April 2021 MW-15 groundwater sample, an additional sample was taken from MW-15 on September 14, 2021 to analyze for Appendix III and IV metals, dissolved metals, and TSS. Selenium concentrations were above the GPS but did not statistically exceed the GPS.

After the October 2021 assessment monitoring event, in accordance with CCR Rule 257.95(e), downgradient well concentrations were compared against background values, and some concentrations were found to be above background values. In accordance with CCR Rule 257.95(f), detected Appendix IV COI concentrations in downgradient wells were compared

<sup>^</sup>Colorado Water Quality Regulation



against GPS and selenium was found to be greater than the GPS for this event at a selenium concentration of 0.059 mg/L in well MW-15 and GPS of 0.05 mg/L. Therefore, in accordance with CCR Rule 257.95(g), the downgradient well data from October 2021 was statistically evaluated to calculate lower confidence limits and compared to GPS. No concentrations were found to be at statistically significant levels (SSLs) above the GPS. Therefore, in accordance with 257.95(g), the CCR unit continues in assessment monitoring.

# 5.0 Summary

The following observations are based on CCR Rule compliance monitoring data collected during the 2021 and prior sample events:

#### (Closed) West, Center, and East Ash Impoundments

- CCR waste was removed from the three ash impoundments by December 2018.
   Groundwater monitoring continues to evaluate the post-closure groundwater quality.
- The certified well network wells for the ash impoundments were sampled April 21-23, 2021 for annual assessment monitoring for Appendix III and IV COIs (MW-8 and MW-9 were dry). Concentrations of some Appendix III COIs remained above BTVs. No concentrations were observed above the GPS.
- The certified well network wells for the impoundments were sampled October 19-20, 2021 for semiannual assessment monitoring for Appendix III and detected IV COIs (MW-8, and MW-9 were dry). Concentrations of some Appendix III COIs remained above BTVs. Concentrations of selenium in MW-10 were observed above the GPS, but not a statistical exceedance.
- Cherokee Station Ash Impoundments status at the end of 2021 is assessment monitoring. Assessment monitoring will continue in 2022 while continuing to evaluate whether clean closure criteria in groundwater have been met.

#### (Closed) Cooling Tower Retention Pond

- CCR waste was removed from the CTRP by March 30, 2017. Groundwater monitoring continues to evaluate the post-closure groundwater quality.
- In 2020 the data from the October 2019 assessment monitoring event was statistically evaluated. Some concentrations were found to be above background values but were found not to exceed GPS.
- The certified well network for the CTRP was sampled April 22-23, 2021 for annual
  assessment monitoring for Appendix III and IV COIs. Concentrations of some Appendix
  III COIs exceeded BTVs and selenium concentration in MW-15 was observed above the
  GPS but not statistically exceeding the GPS.
- The certified well network for the CTRP was sampled October 19-20, 2021 for semiannual assessment monitoring for Appendix III and detected IV COIs (MW-8 and MW-9 were dry). Some concentrations were found to be above background values. Concentrations in downgradient wells were compared against GPS and only a slight GPS exceedance of selenium at MW-15 was observed. No concentrations were found to be at SSLs above the GPS.



 Cherokee Station CTRP status at the end of 2021 is in assessment monitoring; however, because the pond has been closed all monitoring reflects post-CCR removal.
 Assessment monitoring will continue to evaluate whether clean closure criteria in groundwater have been met.

# 6.0 References

CDH (Colorado Department of Health), 1993. Record of Decision ASARCO Globe Plant Site. Denver, Colorado. February 18, 1993.

GeoTrans, Inc., 2009. Letter to Christine Johnston, Xcel Energy. Groundwater/Surface-Ponds Data Evaluation, Cherokee Station, Denver, Colorado. March 2009.

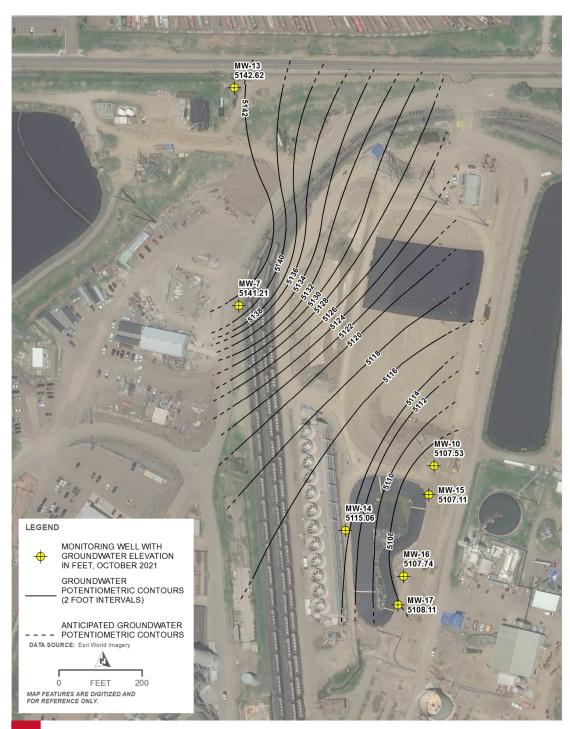
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Tetra Tech, 2013. Inventory and Preliminary Classification Report, Waste Impoundments, Cherokee Station, Denver, Colorado. March 29, 2013.

# Appendix A Potentiometric Surface Map





CHEROKEE POWER STATION
ADAMS COUNTY, CO

# Appendix B Laboratory Reports



# **Environment Testing America**

# **ANALYTICAL REPORT**

Eurofins TestAmerica, Denver 4955 Yarrow Street Arvada, CO 80002 Tel: (303)736-0100

Laboratory Job ID: 280-147818-1

Client Project/Site: Xcel Energy GW CCR Monitoring -

Cherokee

For:

HDR Inc 1670 Broadway Suite 3400 Denver, Colorado 80202

Attn: Molly Reeves

Authorized for release by: 5/19/2021 12:35:38 PM

Savielle Harrison

Danielle Harrington, Project Manager II (303)736-0176

Danielle.Harrington@Eurofinset.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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# **Definitions/Glossary**

Client: HDR Inc Job ID: 280-147818-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

#### **Qualifiers**

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not
	applicable.
F1	MS and/or MSD recovery exceeds control limits

MS and/or MSD recovery exceeds control limits.

Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

#### **General Chemistry**

Quaimer	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

#### **Glossary**

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)

LOQ Limit of Quantitation (DoD/DOE) MCL EPA recommended "Maximum Contaminant Level" MDA Minimum Detectable Activity (Radiochemistry) MDC Minimum Detectable Concentration (Radiochemistry)

MDL Method Detection Limit MLMinimum Level (Dioxin) MPN Most Probable Number MQL Method Quantitation Limit

NC Not Calculated

Not Detected at the reporting limit (or MDL or EDL if shown) ND

NEG Negative / Absent POS Positive / Present

PQL **Practical Quantitation Limit** 

**PRES** Presumptive QC **Quality Control** 

RER Relative Error Ratio (Radiochemistry)

RLReporting Limit or Requested Limit (Radiochemistry)

**RPD** Relative Percent Difference, a measure of the relative difference between two points

Toxicity Equivalent Factor (Dioxin) TEF Toxicity Equivalent Quotient (Dioxin) **TEQ** 

**TNTC** Too Numerous To Count

Eurofins TestAmerica, Denver

#### **Case Narrative**

Client: HDR Inc Job ID: 280-147818-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Job ID: 280-147818-1

Laboratory: Eurofins TestAmerica, Denver

Narrative

#### **CASE NARRATIVE**

**Client: HDR Inc** 

**Project: Xcel Energy GW CCR Monitoring - Cherokee** 

Report Number: 280-147818-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

#### **RECEIPT**

The samples were received on 4/23/2021. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 3.8° C, 4.8° C, 4.8° C and 5.0° C.

Please note, the chain of custody was marked for Dissolved metals for all samples. Per client, only sample MW-7 required dissolved metals and required lab filtration.

#### DISSOLVED METALS- Method 6010C/6020A/7470A

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### TOTAL RECOVERABLE METALS- Method 6010C/6020A/7470A

The accuracy and precision of the Calcium MS/MSD performed on a sample MW-15 could not be reliably evaluated, as the concentrations present in the parent sample were 4 times greater than the matrix spike concentration. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

MS/MSD analyses were performed on sample MW-13. The MS/MSD for Mercury method 7470A exhibited spike compound recoveries outside the QC limits. Method precision and accuracy have been verified by the acceptable LCS/LCSD analysis data; therefore, corrective action is deemed unnecessary.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### **GENERAL CHEMISTRY- VARIOUS**

Several samples required dilution prior to analysis for Method 9056A. The reporting limits have been adjusted accordingly.

The pH sample duplicate analysis data associated with QC batch 280-534411 exhibited RPD data outside the QC limits. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

The Total Dissolved Solids (TDS) sample duplicate analysis data associated with QC batch 280-534339 exhibited RPD data outside the QC limits. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

Laboratory generated MS/MSD analysis data have been provided. The MS/MSD for Fluoride method 9056A exhibited spike compound

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#### **Case Narrative**

Client: HDR Inc Job ID: 280-147818-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Job ID: 280-147818-1 (Continued)

**Laboratory: Eurofins TestAmerica, Denver (Continued)** 

recoveries outside the QC limits. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

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# **Detection Summary**

Client: HDR Inc Job ID: 280-147818-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

# **Client Sample ID: MW-13**

# Lab Sample ID: 280-147818-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.49		0.10	0.023	mg/L	1	_	6010C	Total
									Recoverable
Barium	0.076		0.0050	0.0022	mg/L	1		6020A	Total
									Recoverable
Beryllium	0.00032	J	0.0010	0.00031	mg/L	1		6020A	Total
									Recoverable
Calcium	120		1.0	0.58	mg/L	1		6020A	Total
									Recoverable
Chromium	0.0012	J	0.0020	0.00098	mg/L	1		6020A	Total
0.1.11	0.0000		0.0040	0.00040	4			00004	Recoverable
Cobalt	0.00062	J	0.0010	0.00019	mg/L	1		6020A	Total
l ithi:	0.020		0.0000	0.0017				60004	Recoverable
Lithium	0.038		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0030	1	0.010	0.0011	ma/l	1		6020A	Total
Molybuenum	0.0030	J	0.010	0.0011	mg/L	'		0020A	Recoverable
Selenium	0.0032	J	0.0050	0.00089	ma/l	1		6020A	Total
Colonian	0.0002	Ü	0.0000	0.00000	g/L			002071	Recoverable
Thallium	0.00026		0.0010	0.00020	ma/L	1		6020A	Total
					3				Recoverable
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.5	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	170		3.0		mg/L	1		9056A	Total/NA
Fluoride	1.3		0.50		mg/L	1		9056A	Total/NA
Sulfate	170		50		mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	890		20		mg/L			SM 2540C	Total/NA
` '					-	-			
Total Suspended Solids	7.6		4.0	1.1	mg/L	1		SM 2540D	Total/NA

# **Client Sample ID: MW-15**

# Lab Sample ID: 280-147818-2

Analyte	Result Qualifier	RL	MDL	Unit	Dil Fac	D Method	Prep Type
Boron	3.4	0.10	0.023	mg/L	1	6010C	Total
							Recoverable
Antimony	0.0016 J	0.0020	0.00057	mg/L	1	6020A	Total
							Recoverable
Arsenic	0.0027 J	0.0050	0.00075	mg/L	1	6020A	Total
,							Recoverable
Barium	0.031	0.0050	0.0022	mg/L	1	6020A	Total
0.1.	170	4.0	0.50	,,		00004	Recoverable
Calcium	170	1.0	0.58	mg/L	1	6020A	Total
Characteristics	0.0054	0.0000	0.00000	/I	4	COOO A	Recoverable
Chromium	0.0054	0.0020	0.00098	mg/L	1	6020A	Total
Cobalt	0.0097	0.0010	0.00019	ma/l	1	6020A	Recoverable Total
Copail	0.0097	0.0010	0.00019	mg/L	ı	0020A	Recoverable
Lithium	0.081	0.0080	0.0017	ma/l	1	6020A	Total
Littiuiii	0.001	0.0000	0.0017	mg/L	į	0020A	Recoverable
Molybdenum	0.084	0.010	0.0011	ma/l	1	6020A	Total
Welybacham	0.004	0.010	0.0011	mg/L		002071	Recoverable
Selenium	0.066	0.0050	0.00089	ma/L	1	6020A	Total
				9. =			Recoverable
pH adj. to 25 deg C	7.7 HF	0.1	0.1	SU	1	9040B	Total/NA
Temperature	20.7 HF	1.0	1.0	Degrees C	1	9040B	Total/NA
Chloride	260	60		mg/L	20	9056A	Total/NA
Fluoride	2.6	0.50		mg/L	1	9056A	Total/NA
Sulfate	430	100		mg/L	20	9056A	Total/NA

This Detection Summary does not include radiochemical test results.

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# **Detection Summary**

Client: HDR Inc Job ID: 280-147818-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

# **Client Sample ID: MW-15 (Continued)**

# Lab Sample ID: 280-147818-2

Analyte	Result Qualifier	RL	MDL Unit	Dil Fac D Method	Prep Type
Total Dissolved Solids (TDS)	1500	40	19 mg/L	1 SM 2540C	Total/NA

# **Client Sample ID: MW-10**

# Lab Sample ID: 280-147818-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	3.8		0.10	0.023		1	_	6010C	Total
26.6	0.0		00	0.020	g/=	•		33.33	Recoverable
Antimony	0.00079	J	0.0020	0.00057	mg/L	1		6020A	Total
·					Ū				Recoverable
Arsenic	0.0015	J	0.0050	0.00075	mg/L	1		6020A	Total
									Recoverable
Barium	0.056		0.0050	0.0022	mg/L	1		6020A	Total
									Recoverable
Beryllium	0.00093	J	0.0010	0.00031	mg/L	1		6020A	Total
									Recoverable
Cadmium	0.00025	J	0.0010	0.00020	mg/L	1		6020A	Total
0.1.5									Recoverable
Calcium	260		1.0	0.58	mg/L	1		6020A	Total
Chromium	0.0094		0.0020	0.00098	ma/l	1		6020A	Recoverable Total
Silioilliaili	0.0094		0.0020	0.00090	mg/L			0020A	Recoverable
Cobalt	0.0047		0.0010	0.00019	ma/l	1		6020A	Total
Copair	0.0017		0.0010	0.00010	g/.L			002071	Recoverable
Lithium	0.087		0.0080	0.0017	mg/L	1		6020A	Total
					Ü				Recoverable
Molybdenum	0.066		0.010	0.0011	mg/L	1		6020A	Total
									Recoverable
Selenium	0.029		0.0050	0.00089	mg/L	1		6020A	Total
									Recoverable
Thallium	0.00038	J	0.0010	0.00020	mg/L	1		6020A	Total
									Recoverable
pH adj. to 25 deg C	7.9		0.1		SU	1		9040B	Total/NA
Temperature	19.8	HF	1.0		Degrees C	1		9040B	Total/NA
Chloride	350		60		mg/L	20		9056A	Total/NA
Fluoride	2.2		0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	830		100	21	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	2100		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	1.2	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

# Client Sample ID: MW-10-FD

# Lab Sample ID: 280-147818-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	3.7		0.10	0.023	mg/L		_	6010C	Total
									Recoverable
Antimony	0.00065	J	0.0020	0.00057	mg/L	1		6020A	Total
									Recoverable
Arsenic	0.0024	J	0.0050	0.00075	mg/L	1		6020A	Total
									Recoverable
Barium	0.062		0.0050	0.0022	mg/L	1		6020A	Total
									Recoverable
Beryllium	0.00031	J	0.0010	0.00031	mg/L	1		6020A	Total
									Recoverable
Cadmium	0.00026	J	0.0010	0.00020	mg/L	1		6020A	Total
									Recoverable
Calcium	260		1.0	0.58	mg/L	1		6020A	Total
									Recoverable

This Detection Summary does not include radiochemical test results.

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5/19/2021

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Client: HDR Inc Job ID: 280-147818-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

# Client Sample ID: MW-10-FD (Continued)

# Lab Sample ID: 280-147818-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.0098		0.0020	0.00098	mg/L	1	_	6020A	Total
									Recoverable
Cobalt	0.0050		0.0010	0.00019	mg/L	1		6020A	Total
									Recoverable
Lithium	0.092		0.0080	0.0017	mg/L	1		6020A	Total
									Recoverable
Molybdenum	0.067		0.010	0.0011	mg/L	1		6020A	Total
									Recoverable
Selenium	0.030		0.0050	0.00089	mg/L	1		6020A	Total
									Recoverable
pH adj. to 25 deg C	8.0	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.4	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	370		30	10	mg/L	10		9056A	Total/NA
Fluoride	2.3		0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	880		50	10	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	2100		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	13		4.0	1.1	mg/L	1		SM 2540D	Total/NA

# Client Sample ID: MW-10-EB

# Lab Sample ID: 280-147818-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Beryllium	0.00051	J	0.0010	0.00031	mg/L	1	_	6020A	Total
									Recoverable
pH adj. to 25 deg C	8.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	18.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Total Dissolved Solids (TDS)	5.0	J	10	4.7	mg/L	1		SM 2540C	Total/NA

# **Client Sample ID: MW-17**

# Lab Sample ID: 280-147818-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D Meth	od	Prep Type
Boron	0.52		0.10	0.023	mg/L	1	6010	C	Total
									Recoverable
Arsenic	0.0033	J	0.0050	0.00075	mg/L	1	6020	Α	Total
									Recoverable
Barium	0.051		0.0050	0.0022	mg/L	1	6020	Α	Total
									Recoverable
Beryllium	0.00036	J	0.0010	0.00031	mg/L	1	6020	Α	Total
								_	Recoverable
Cadmium	0.0013		0.0010	0.00020	mg/L	1	6020	Α	Total
0.11.5	0.4		4.0	0.50			0000		Recoverable
Calcium	94		1.0	0.58	mg/L	1	6020	A	Total
Cobalt	0.00028		0.0010	0.00019	ma/l		6020		Recoverable
Copail	0.00026	J	0.0010	0.00019	mg/L	1	0020	A	Total Recoverable
Lithium	0.030		0.0080	0.0017	ma/l	1	6020	Λ	Total
Littlani	0.000		0.0000	0.0017	mg/L	ı	0020		Recoverable
Molybdenum	0.0064	Л	0.010	0.0011	ma/l	1	6020	Α	Total
,2 40	0.000		0.0.0	0.00	9, =	•	0020		Recoverable
Selenium	0.0052		0.0050	0.00089	mg/L	1	6020	Α	Total
					Ü				Recoverable
pH adj. to 25 deg C	6.7	HF	0.1	0.1	SU	1	9040	В	Total/NA
Temperature	19.4	HF	1.0	1.0	Degrees C	1	9040	В	Total/NA
Chloride	120		3.0	1.0	mg/L	1	9056	A	Total/NA
Fluoride	1.7		0.50	0.17	mg/L	1	9056	iΑ	Total/NA
Sulfate	240		50		mg/L	10	9056		Total/NA
Total Dissolved Solids (TDS)	790		10		mg/L			2540C	Total/NA

This Detection Summary does not include radiochemical test results.

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# **Detection Summary**

Client: HDR Inc Job ID: 280-147818-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

# Client Sample ID: MW-17 (Continued)

# Lab Sample ID: 280-147818-6

Analyte	Result Qualifier	RL	MDL Unit	Dil Fac D Method	Prep Type
Total Suspended Solids	2.8 J	4.0	1.1 mg/L	1 SM 2540D	Total/NA

# Client Sample ID: MW-16 Lab Sample ID: 280-147818-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.33		0.10	0.023	mg/L	1	_	6010C	Total
					-				Recoverable
Arsenic	0.0023	J	0.0050	0.00075	mg/L	1		6020A	Total
									Recoverable
Barium	0.043		0.0050	0.0022	mg/L	1		6020A	Total
									Recoverable
Calcium	77		1.0	0.58	mg/L	1		6020A	Total
									Recoverable
Cobalt	0.00033	J	0.0010	0.00019	mg/L	1		6020A	Total
									Recoverable
Lithium	0.038		0.0080	0.0017	mg/L	1		6020A	Total
									Recoverable
Molybdenum	0.013		0.010	0.0011	mg/L	1		6020A	Total
									Recoverable
Selenium	0.0029	J	0.0050	0.00089	mg/L	1		6020A	Total
									Recoverable
pH adj. to 25 deg C	7.3		0.1		SU			9040B	Total/NA
Temperature	20.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	150		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	1.9		0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	160		100	21	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	700		20		mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	3.2	Л	4.0		mg/L	1		SM 2540D	Total/NA

# **Client Sample ID: MW-7**

# Lab Sample ID: 280-147818-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D Me	thod	Prep Type
Boron	1.0		0.10	0.023	mg/L	1	60	10C	Total
									Recoverable
Boron	990		100	23	ug/L	1	60	10C	Dissolved
Antimony	0.00093	J	0.0020	0.00057	mg/L	1	60:	20A	Total
									Recoverable
Arsenic	0.0079		0.0050	0.00075	mg/L	1	60:	20A	Total
									Recoverable
Barium	0.097		0.0050	0.0022	mg/L	1	60:	20A	Total
									Recoverable
Beryllium	0.0017		0.0010	0.00031	mg/L	1	60:	20A	Total
									Recoverable
Cadmium	0.00032	J	0.0010	0.00020	mg/L	1	60	20A	Total
									Recoverable
Calcium	70		1.0	0.58	mg/L	1	60:	20A	Total
									Recoverable
Chromium	0.024		0.0020	0.00098	mg/L	1	60:	20A	Total
									Recoverable
Cobalt	0.0066		0.0010	0.00019	mg/L	1	60:	20A	Total
									Recoverable
Lead	0.019		0.0010	0.00045	mg/L	1	60:	20A	Total
									Recoverable
Lithium	0.042		0.0080	0.0017	mg/L	1	60:	20A	Total
									Recoverable
Molybdenum	0.025		0.010	0.0011	mg/L	1	60	20A	Total
									Recoverable

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Denver

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# **Detection Summary**

Client: HDR Inc Job ID: 280-147818-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

# Client Sample ID: MW-7 (Continued)

# Lab Sample ID: 280-147818-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D Method	Prep Type
Selenium	0.014		0.0050	0.00089	mg/L	1	6020A	Total
								Recoverable
Thallium	0.00039	J	0.0010	0.00020	mg/L	1	6020A	Total
								Recoverable
Antimony	0.74	J	2.0	0.57	ug/L	1	6020A	Dissolved
Arsenic	4.2	J	5.0	0.75	ug/L	1	6020A	Dissolved
Barium	14		5.0	2.2	ug/L	1	6020A	Dissolved
Calcium	56000		1000	580	ug/L	1	6020A	Dissolved
Chromium	3.4		2.0	0.98	ug/L	1	6020A	Dissolved
Lithium	25		8.0	1.7	ug/L	1	6020A	Dissolved
Molybdenum	31		5.0	1.1	ug/L	1	6020A	Dissolved
Selenium	13		5.0	0.89	ug/L	1	6020A	Dissolved
Mercury	0.25		0.20	0.13	ug/L	1	7470A	Total/NA
pH adj. to 25 deg C	7.3	HF	0.1	0.1	SU	1	9040B	Total/NA
Temperature	20.2	HF	1.0	1.0	Degrees C	1	9040B	Total/NA
Chloride	110		3.0	1.0	mg/L	1	9056A	Total/NA
Fluoride	2.3		0.50	0.17	mg/L	1	9056A	Total/NA
Sulfate	210		50	10	mg/L	10	9056A	Total/NA
Total Dissolved Solids (TDS)	750		20	9.4	mg/L	1	SM 2540C	Total/NA
Total Suspended Solids	420		20	5.5	mg/L	1	SM 2540D	Total/NA

This Detection Summary does not include radiochemical test results.

# **Method Summary**

Client: HDR Inc Job ID: 280-147818-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL CAN
9040B	рН	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL DEN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN
7470A	Preparation, Mercury	SW846	TAL CAN
FILTRATION	Sample Filtration	None	TAL CAN

#### **Protocol References:**

None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

#### **Laboratory References:**

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396 TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

# **Sample Summary**

Client: HDR Inc Job ID: 280-147818-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
280-147818-1	MW-13	Water	04/21/21 13:25	04/23/21 14:35	
280-147818-2	MW-15	Water	04/22/21 09:30	04/23/21 14:35	
280-147818-3	MW-10	Water	04/22/21 12:10	04/23/21 14:35	
280-147818-4	MW-10-FD	Water	04/22/21 12:10	04/23/21 14:35	
280-147818-5	MW-10-EB	Water	04/22/21 13:00	04/23/21 14:35	
280-147818-6	MW-17	Water	04/23/21 10:10	04/23/21 14:35	
280-147818-7	MW-16	Water	04/23/21 11:40	04/23/21 14:35	
280-147818-8	MW-7	Water	04/23/21 13:35	04/23/21 14:35	

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Client: HDR Inc Job ID: 280-147818-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

**Client Sample ID: MW-7** Date Collected: 04/23/21 13:35

Analyte

Boron

Date Received: 04/23/21 14:35

Method: 6010C - Met	als (ICP)	) - Total I	Recoverable
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Client Sample ID: MW-13 Date Collected: 04/21/21 13:25							Lab Samı	ole ID: 280-14 Matrix	
Date Received: 04/23/21 14:35	Daault	Ovelities	D.	MDI	1114	_	Dunnanad	A a l a d	D:: F-
Analyte		Qualifier		MDL		D	Prepared	Analyzed	Dil Fa
Boron	0.49		0.10	0.023	mg/L		04/28/21 14:00	04/29/21 18:50	
Client Sample ID: MW-15							Lab Samı	ole ID: 280-14	7818-
Date Collected: 04/22/21 09:30								Matrix	
Date Received: 04/23/21 14:35									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Boron	3.4		0.10	0.023	mg/L		04/28/21 14:00	04/29/21 19:19	
Client Sample ID: MW-10							Lah Sami	ole ID: 280-14	17818.
Date Collected: 04/22/21 12:10							Lub Guin	Matrix	
Date Received: 04/23/21 14:35								Macrix	· · · · · · ·
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Boron	3.8		0.10	0.023	mg/L		04/28/21 14:00	04/29/21 19:23	
Client Sample ID: MW-10-FD							Lah Sami	ole ID: 280-14	17818.
Date Collected: 04/22/21 12:10							Lub Guini	Matrix	
Date Received: 04/23/21 14:35								Matrix	· ·
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Boron	3.7		0.10	0.023	mg/L		04/28/21 14:00		
Client Sample ID: MW-10-EB							Lah Sami	ole ID: 280-14	17818.
Date Collected: 04/22/21 13:00							Lub Guin	Matrix	
Date Received: 04/23/21 14:35								Macrix	· · · · ·
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil F
Boron	ND		0.10	0.023	mg/L		04/28/21 14:00	04/29/21 19:32	
Client Sample ID: MW-17							Lah Sami	ole ID: 280-14	17818
Date Collected: 04/23/21 10:10								Matrix	
Date Received: 04/23/21 14:35								inder 124	
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil F
Boron	0.52		0.10	0.023	mg/L		04/28/21 14:00	04/29/21 19:37	
Client Sample ID: MW-16							Lab Samı	ole ID: 280-14	7818
Date Collected: 04/23/21 11:40								Matrix	
Date Received: 04/23/21 14:35									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil F
Boron	0.33		0.10	0.023	mg/L		04/28/21 14:00	04/29/21 19:41	
Client Sample ID: MW-7							Lab Samı	ole ID: 280-14	7818
Date Collected: 04/23/21 13:35								Matrix	
Date Received: 04/23/21 14:35									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Boron	1.0		0.10	0.023	ma/L		04/28/21 14:00	04/29/21 19:54	

Eurofins TestAmerica, Denver

Analyzed

Lab Sample ID: 280-147818-8

Prepared

**Matrix: Water** 

Dil Fac

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RL

100

MDL Unit

23 ug/L

Result Qualifier

Client: HDR Inc Job ID: 280-147818-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

#### Method: 6020A - Metals (ICP/MS) - Total Recoverable

**Client Sample ID: MW-13** Lab Sample ID: 280-147818-1 Date Collected: 04/21/21 13:25 **Matrix: Water** 

Date Received: 04/23/21 14:35

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		04/28/21 14:00	04/30/21 21:57	1
Arsenic	ND		0.0050	0.00075	mg/L		04/28/21 14:00	04/30/21 21:57	1
Barium	0.076		0.0050	0.0022	mg/L		04/28/21 14:00	04/30/21 21:57	1
Beryllium	0.00032	J	0.0010	0.00031	mg/L		04/28/21 14:00	04/30/21 21:57	1
Cadmium	ND		0.0010	0.00020	mg/L		04/28/21 14:00	04/30/21 21:57	1
Calcium	120		1.0	0.58	mg/L		04/28/21 14:00	04/30/21 21:57	1
Chromium	0.0012	J	0.0020	0.00098	mg/L		04/28/21 14:00	04/30/21 21:57	1
Cobalt	0.00062	J	0.0010	0.00019	mg/L		04/28/21 14:00	04/30/21 21:57	1
Lead	ND		0.0010	0.00045	mg/L		04/28/21 14:00	04/30/21 21:57	1
Lithium	0.038		0.0080	0.0017	mg/L		04/28/21 14:00	04/30/21 21:57	1
Molybdenum	0.0030	J	0.010	0.0011	mg/L		04/28/21 14:00	04/30/21 21:57	1
Selenium	0.0032	J	0.0050	0.00089	mg/L		04/28/21 14:00	04/30/21 21:57	1
Thallium	0.00026	J	0.0010	0.00020	mg/L		04/28/21 14:00	04/30/21 21:57	1

Lab Sample ID: 280-147818-2 **Client Sample ID: MW-15** Date Collected: 04/22/21 09:30 **Matrix: Water** 

Date Received: 04/23/21 14:35

Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac 0.0016 J 0.0020 0.00057 mg/L 04/28/21 14:00 04/30/21 21:59 **Antimony** 0.0050 0.00075 mg/L 04/28/21 14:00 04/30/21 21:59 **Arsenic** 0.0027 0.031 0.0050 0.0022 mg/L 04/28/21 14:00 04/30/21 21:59 **Barium** 0.00031 mg/L Beryllium ND 0.0010 04/28/21 14:00 04/30/21 21:59 Cadmium ND 0.0010 0.00020 mg/L 04/28/21 14:00 04/30/21 21:59 **Calcium** 170 1.0 0.58 mg/L 04/28/21 14:00 04/30/21 21:59 0.00098 mg/L **Chromium** 0.0054 0.0020 04/28/21 14:00 04/30/21 21:59 0.00019 mg/L Cobalt 0.0097 0.0010 04/28/21 14:00 04/30/21 21:59 Lead 0.0010 0.00045 mg/L 04/28/21 14:00 04/30/21 21:59 ND 0.0017 mg/L 04/28/21 14:00 04/30/21 21:59 Lithium 0.081 0.0080 Molybdenum 0.084 0.010 0.0011 mg/L 04/28/21 14:00 04/30/21 21:59 **Selenium** 0.066 0.0050 0.00089 mg/L 04/28/21 14:00 04/30/21 21:59 Thallium 0.0010 0.00020 mg/L ND 04/28/21 14:00 04/30/21 21:59

Lab Sample ID: 280-147818-3 Client Sample ID: MW-10 Date Collected: 04/22/21 12:10 **Matrix: Water** 

Date Received: 04/23/2 Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.00079	J	0.0020	0.00057	mg/L		04/28/21 14:00	04/30/21 22:17	1
Arsenic	0.0015	J	0.0050	0.00075	mg/L		04/28/21 14:00	04/30/21 22:17	1
Barium	0.056		0.0050	0.0022	mg/L		04/28/21 14:00	04/30/21 22:17	1
Beryllium	0.00093	J	0.0010	0.00031	mg/L		04/28/21 14:00	04/30/21 22:17	1
Cadmium	0.00025	J	0.0010	0.00020	mg/L		04/28/21 14:00	04/30/21 22:17	1
Calcium	260		1.0	0.58	mg/L		04/28/21 14:00	04/30/21 22:17	1
Chromium	0.0094		0.0020	0.00098	mg/L		04/28/21 14:00	04/30/21 22:17	1
Cobalt	0.0047		0.0010	0.00019	mg/L		04/28/21 14:00	04/30/21 22:17	1
Lead	ND		0.0010	0.00045	mg/L		04/28/21 14:00	04/30/21 22:17	1
Lithium	0.087		0.0080	0.0017	mg/L		04/28/21 14:00	04/30/21 22:17	1
Molybdenum	0.066		0.010	0.0011	mg/L		04/28/21 14:00	04/30/21 22:17	1
Selenium	0.029		0.0050	0.00089	mg/L		04/28/21 14:00	04/30/21 22:17	1
Thallium	0.00038	J	0.0010	0.00020	mg/L		04/28/21 14:00	04/30/21 22:17	1

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Client: HDR Inc Job ID: 280-147818-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

## Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: MW-10-FD Lab Sample ID: 280-147818-4 Date Collected: 04/22/21 12:10 **Matrix: Water** 

Date Received: 04/23/21 14:35

Date Neceived. 04/25/2	.1 14.55								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.00065	J	0.0020	0.00057	mg/L		04/28/21 14:00	04/30/21 22:19	1
Arsenic	0.0024	J	0.0050	0.00075	mg/L		04/28/21 14:00	04/30/21 22:19	1
Barium	0.062		0.0050	0.0022	mg/L		04/28/21 14:00	04/30/21 22:19	1
Beryllium	0.00031	J	0.0010	0.00031	mg/L		04/28/21 14:00	04/30/21 22:19	1
Cadmium	0.00026	J	0.0010	0.00020	mg/L		04/28/21 14:00	04/30/21 22:19	1
Calcium	260		1.0	0.58	mg/L		04/28/21 14:00	04/30/21 22:19	1
Chromium	0.0098		0.0020	0.00098	mg/L		04/28/21 14:00	04/30/21 22:19	1
Cobalt	0.0050		0.0010	0.00019	mg/L		04/28/21 14:00	04/30/21 22:19	1
Lead	ND		0.0010	0.00045	mg/L		04/28/21 14:00	04/30/21 22:19	1
Lithium	0.092		0.0080	0.0017	mg/L		04/28/21 14:00	04/30/21 22:19	1
Molybdenum	0.067		0.010	0.0011	mg/L		04/28/21 14:00	04/30/21 22:19	1
Selenium	0.030		0.0050	0.00089	mg/L		04/28/21 14:00	04/30/21 22:19	1
Thallium	ND		0.0010	0.00020	mg/L		04/28/21 14:00	04/30/21 22:19	1

Client Sample ID: MW-10-EB Lab Sample ID: 280-147818-5 Date Collected: 04/22/21 13:00 **Matrix: Water** 

:35							
Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
ND ND	0.0020	0.00057	mg/L		04/28/21 14:00	04/30/21 22:22	1
ND	0.0050	0.00075	mg/L		04/28/21 14:00	04/30/21 22:22	1
ND	0.0050	0.0022	mg/L		04/28/21 14:00	04/30/21 22:22	1
0.00051 J	0.0010	0.00031	mg/L		04/28/21 14:00	04/30/21 22:22	1
ND	0.0010	0.00020	mg/L		04/28/21 14:00	04/30/21 22:22	1
ND	1.0	0.58	mg/L		04/28/21 14:00	04/30/21 22:22	1
ND	0.0020	0.00098	mg/L		04/28/21 14:00	04/30/21 22:22	1
ND	0.0010	0.00019	mg/L		04/28/21 14:00	04/30/21 22:22	1
ND	0.0010	0.00045	mg/L		04/28/21 14:00	04/30/21 22:22	1
ND	0.0080	0.0017	mg/L		04/28/21 14:00	04/30/21 22:22	1
ND	0.010	0.0011	mg/L		04/28/21 14:00	04/30/21 22:22	1
ND	0.0050	0.00089	mg/L		04/28/21 14:00	04/30/21 22:22	1
ND	0.0010	0.00020	mg/L		04/28/21 14:00	04/30/21 22:22	1
	Result Qualifier  ND  ND  ND  O.00051 J  ND  ND  ND  ND  ND  ND  ND  ND  ND  N	Result         Qualifier         RL           ND         0.0020           ND         0.0050           ND         0.0050           0.00051         J         0.0010           ND         0.0010           ND         0.0020           ND         0.0010           ND         0.0010           ND         0.0080           ND         0.010           ND         0.010           ND         0.0050	Result         Qualifier         RL         MDL           ND         0.0020         0.00057           ND         0.0050         0.00022           ND         0.0050         0.0022           0.00051         J         0.0010         0.00031           ND         0.0010         0.00020           ND         0.0020         0.0098           ND         0.0010         0.00019           ND         0.0010         0.00045           ND         0.0080         0.0017           ND         0.010         0.0011           ND         0.0010         0.0011           ND         0.0010         0.0011           ND         0.0010         0.0011           ND         0.0010         0.0011	Result         Qualifier         RL         MDL         Unit           ND         0.0020         0.00057         mg/L           ND         0.0050         0.00075         mg/L           ND         0.0050         0.0022         mg/L           0.00051         J         0.0010         0.00031         mg/L           ND         0.0010         0.00020         mg/L           ND         0.0020         0.00098         mg/L           ND         0.0010         0.00019         mg/L           ND         0.0010         0.00045         mg/L           ND         0.010         0.0011         mg/L           ND         0.010         0.0011         mg/L           ND         0.010         0.0011         mg/L           ND         0.010         0.0011         mg/L	Result         Qualifier         RL         MDL         Unit         D           ND         0.0020         0.00057         mg/L         mg/L           ND         0.0050         0.0075         mg/L           ND         0.0050         0.0022         mg/L           ND         0.0010         0.00031         mg/L           ND         0.0010         0.00020         mg/L           ND         0.0020         0.00098         mg/L           ND         0.0010         0.00019         mg/L           ND         0.0080         0.0017         mg/L           ND         0.010         0.0011         mg/L           ND         0.010         0.0011         mg/L           ND         0.0080         0.0017         mg/L           ND         0.0010         0.0011         mg/L           ND         0.0010         0.00011         mg/L	Result         Qualifier         RL         MDL mg/L         Unit         D         Prepared           ND         0.0020         0.00057         mg/L         04/28/21 14:00         04/28/21 14:00           ND         0.0050         0.0022         mg/L         04/28/21 14:00           ND         0.0010         0.00031         mg/L         04/28/21 14:00           ND         0.0010         0.00020         mg/L         04/28/21 14:00           ND         1.0         0.58         mg/L         04/28/21 14:00           ND         0.0020         0.00098         mg/L         04/28/21 14:00           ND         0.0010         0.00019         mg/L         04/28/21 14:00           ND         0.0010         0.00045         mg/L         04/28/21 14:00           ND         0.0080         0.0017         mg/L         04/28/21 14:00           ND         0.0080         0.0017         mg/L         04/28/21 14:00           ND         0.0010         0.0011         mg/L         04/28/21 14:00           ND         0.0080         0.0017         mg/L         04/28/21 14:00           ND         0.0010         0.0011         mg/L         04/28/21 14:00     <	Result         Qualifier         RL         MDL         Unit         D         Prepared         Analyzed           ND         0.0020         0.00057         mg/L         04/28/21 14:00         04/30/21 22:22           ND         0.0050         0.0075         mg/L         04/28/21 14:00         04/30/21 22:22           ND         0.0050         0.0022         mg/L         04/28/21 14:00         04/30/21 22:22           0.00051         J         0.0010         0.00031         mg/L         04/28/21 14:00         04/30/21 22:22           ND         0.0010         0.00020         mg/L         04/28/21 14:00         04/30/21 22:22           ND         1.0         0.58         mg/L         04/28/21 14:00         04/30/21 22:22           ND         0.0020         0.00098         mg/L         04/28/21 14:00         04/30/21 22:22           ND         0.0010         0.00019         mg/L         04/28/21 14:00         04/30/21 22:22           ND         0.0010         0.00045         mg/L         04/28/21 14:00         04/30/21 22:22           ND         0.0010         0.0017         mg/L         04/28/21 14:00         04/30/21 22:22           ND         0.0080         0.0017

**Client Sample ID: MW-17** Lab Sample ID: 280-147818-6 Date Collected: 04/23/21 10:10 **Matrix: Water** 

Date Received: 04/23/21 14:35

MDL 0.00057 0.00075	mg/L	<u>D</u>	Prepared 04/28/21 14:00	Analyzed	Dil Fac
	U		04/28/21 14:00	04/20/21 22:24	
0.00075				04/30/21 22.24	1
	mg/L		04/28/21 14:00	04/30/21 22:24	1
0.0022	mg/L		04/28/21 14:00	04/30/21 22:24	1
0.00031	mg/L		04/28/21 14:00	04/30/21 22:24	1
0.00020	mg/L		04/28/21 14:00	04/30/21 22:24	1
0.58	mg/L		04/28/21 14:00	04/30/21 22:24	1
0.00098	mg/L		04/28/21 14:00	04/30/21 22:24	1
0.00019	mg/L		04/28/21 14:00	04/30/21 22:24	1
0.00045	mg/L		04/28/21 14:00	04/30/21 22:24	1
0.0017	mg/L		04/28/21 14:00	04/30/21 22:24	1
0.0011	mg/L		04/28/21 14:00	04/30/21 22:24	1
0.00089	mg/L		04/28/21 14:00	04/30/21 22:24	1
0.00020	mg/L		04/28/21 14:00	04/30/21 22:24	1
	0.0022 0.00031 0.00020 0.58 0.00098 0.00019 0.00045 0.0017 0.0011	0.00075 mg/L 0.00022 mg/L 0.00031 mg/L 0.00020 mg/L 0.58 mg/L 0.00098 mg/L 0.00019 mg/L 0.00045 mg/L 0.0017 mg/L 0.0011 mg/L 0.00019 mg/L 0.00089 mg/L	0.0022 mg/L 0.00031 mg/L 0.00020 mg/L 0.58 mg/L 0.00098 mg/L 0.00019 mg/L 0.00045 mg/L 0.0017 mg/L 0.0011 mg/L 0.00089 mg/L	0.0022 mg/L 04/28/21 14:00 0.00031 mg/L 04/28/21 14:00 0.00020 mg/L 04/28/21 14:00 0.58 mg/L 04/28/21 14:00 0.00098 mg/L 04/28/21 14:00 0.00019 mg/L 04/28/21 14:00 0.00045 mg/L 04/28/21 14:00 0.0017 mg/L 04/28/21 14:00 0.0011 mg/L 04/28/21 14:00 0.00189 mg/L 04/28/21 14:00	0.0022         mg/L         04/28/21 14:00         04/30/21 22:24           0.00031         mg/L         04/28/21 14:00         04/30/21 22:24           0.00020         mg/L         04/28/21 14:00         04/30/21 22:24           0.58         mg/L         04/28/21 14:00         04/30/21 22:24           0.00098         mg/L         04/28/21 14:00         04/30/21 22:24           0.00019         mg/L         04/28/21 14:00         04/30/21 22:24           0.00045         mg/L         04/28/21 14:00         04/30/21 22:24           0.0017         mg/L         04/28/21 14:00         04/30/21 22:24           0.0011         mg/L         04/28/21 14:00         04/30/21 22:24           0.00089         mg/L         04/28/21 14:00         04/30/21 22:24

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Client: HDR Inc Job ID: 280-147818-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

## Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: MW-16

Lab Sample ID: 280-147818-7

Date Collected: 04/23/21 11:40

Matrix: Water

Date Received: 04/23/21 14:35

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		04/28/21 14:00	04/30/21 22:27	1
Arsenic	0.0023	J	0.0050	0.00075	mg/L		04/28/21 14:00	04/30/21 22:27	1
Barium	0.043		0.0050	0.0022	mg/L		04/28/21 14:00	04/30/21 22:27	1
Beryllium	ND		0.0010	0.00031	mg/L		04/28/21 14:00	04/30/21 22:27	1
Cadmium	ND		0.0010	0.00020	mg/L		04/28/21 14:00	04/30/21 22:27	1
Calcium	77		1.0	0.58	mg/L		04/28/21 14:00	04/30/21 22:27	1
Chromium	ND		0.0020	0.00098	mg/L		04/28/21 14:00	04/30/21 22:27	1
Cobalt	0.00033	J	0.0010	0.00019	mg/L		04/28/21 14:00	04/30/21 22:27	1
Lead	ND		0.0010	0.00045	mg/L		04/28/21 14:00	04/30/21 22:27	1
Lithium	0.038		0.0080	0.0017	mg/L		04/28/21 14:00	04/30/21 22:27	1
Molybdenum	0.013		0.010	0.0011	mg/L		04/28/21 14:00	04/30/21 22:27	1
Selenium	0.0029	J	0.0050	0.00089	mg/L		04/28/21 14:00	04/30/21 22:27	1
Thallium	ND		0.0010	0.00020	mg/L		04/28/21 14:00	04/30/21 22:27	1

Client Sample ID: MW-7

Date Collected: 04/23/21 13:35

Lab Sample ID: 280-147818-8

Matrix: Water

Date Received: 04/23/21 14:35 Analyte Result Qualifier RL **MDL** Unit D Prepared Analyzed Dil Fac 0.00093 0.0020 0.00057 mg/L 04/28/21 14:00 04/30/21 22:29 **Antimony** 0.00075 mg/L 0.0050 04/30/21 22:29 **Arsenic** 0.0079 04/28/21 14:00 0.0050 0.0022 mg/L 04/28/21 14:00 04/30/21 22:29 **Barium** 0.097 Beryllium 0.0017 0.0010 0.00031 mg/L 04/28/21 14:00 04/30/21 22:29 **Cadmium** 0.00032 J 0.0010 0.00020 mg/L 04/28/21 14:00 04/30/21 22:29 **Calcium 70** 1.0 0.58 mg/L 04/28/21 14:00 04/30/21 22:29 Chromium 0.024 0.0020 0.00098 mg/L 04/28/21 14:00 04/30/21 22:29 0.00019 mg/L 04/28/21 14:00 04/30/21 22:29 0.0010 Cobalt 0.0066 0.0010 0.00045 mg/L 04/28/21 14:00 04/30/21 22:29 Lead 0.019 04/28/21 14:00 04/30/21 22:29 Lithium 0.042 0.0080 0.0017 mg/L Molybdenum 0.025 0.010 0.0011 mg/L 04/28/21 14:00 04/30/21 22:29 04/28/21 14:00 04/30/21 22:29 **Selenium** 0.0050 0.00089 mg/L 0.014 0.00039 J **Thallium** 0.0010 0.00020 mg/L 04/28/21 14:00 04/30/21 22:29

Method: 6020A - Metals (ICP/MS) - Dissolved

Client Sample ID: MW-7 Lab Sample ID: 280-147818-8

Date Collected: 04/23/21 13:35

Date Received: 04/23/21 14:35 Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac 0.74 J **Antimony** 2.0 0.57 ug/L 04/28/21 14:00 04/30/21 22:59 0.75 ug/L 04/28/21 14:00 04/30/21 22:59 **Arsenic** 4.2 J 5.0 **Barium** 14 5.0 2.2 ug/L 04/28/21 14:00 04/30/21 22:59 04/28/21 14:00 04/30/21 22:59 Beryllium ND 1.0 0.31 ug/L ND Cadmium 1.0 0.20 ug/L 04/28/21 14:00 04/30/21 22:59 **Calcium** 56000 1000 580 ug/L 04/28/21 14:00 04/30/21 22:59 04/28/21 14:00 04/30/21 22:59 Chromium 3.4 2.0 0.98 ug/L 04/28/21 14:00 04/30/21 22:59 Cobalt ND 1.0 0.19 ug/L Lead ND 1.0 0.45 ug/L 04/28/21 14:00 04/30/21 22:59 Lithium 25 8.0 1.7 ug/L 04/28/21 14:00 04/30/21 22:59 Molybdenum 31 5.0 1.1 ug/L 04/28/21 14:00 04/30/21 22:59 Selenium 5.0 04/28/21 14:00 04/30/21 22:59 0.89 ug/L 13

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5/19/2021

**Matrix: Water** 

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*A A* 

12

13

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Client: HDR Inc Job ID: 280-147818-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Client Sample ID: MW-7							Lab Sam	ole ID: 280-14	
Date Collected: 04/23/21 13:35 Date Received: 04/23/21 14:35								Matrix	: Water
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thallium	ND		1.0		ug/L		04/28/21 14:00		1
Method: 7470A - Mercury (C	VAA)								
Client Sample ID: MW-13							Lab Sam	ole ID: 280-14	47818-1
Date Collected: 04/21/21 13:25									: Water
Date Received: 04/23/21 14:35									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	F1 -	0.20	0.13	ug/L		05/03/21 14:00	05/05/21 10:55	1
Client Sample ID: MW-15							Lab Sami	ole ID: 280-14	47818-2
Date Collected: 04/22/21 09:30									: Water
Date Received: 04/23/21 14:35									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	<u> </u>	0.20	0.13	ug/L		04/28/21 14:00		1
Client Sample ID: MW-10							Lab Sami	ole ID: 280-14	47818-3
Date Collected: 04/22/21 12:10									: Water
Date Received: 04/23/21 14:35									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		04/28/21 14:00	04/30/21 17:44	1
Client Sample ID: MW-10-FD							Lab Sami	ole ID: 280-14	47818-4
Date Collected: 04/22/21 12:10									: Water
Date Received: 04/23/21 14:35									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		04/28/21 14:00	04/30/21 17:51	1
Client Sample ID: MW-10-EB							Lab Sam	ole ID: 280-14	47818-5
Date Collected: 04/22/21 13:00									: Water
Date Received: 04/23/21 14:35									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		04/28/21 14:00	04/30/21 17:53	1
Client Sample ID: MW-17							Lab Sami	ole ID: 280-14	47818-6
D ( 0 II									144

Analyte	Result Qualifier	RL	MDL Unit	D Prepared	Analyzed	Dil Fac
Mercury	ND	0.20	0.13 ug/L	04/28/21 14:00	04/30/21 17:55	1
_						

**Client Sample ID: MW-16** Lab Sample ID: 280-147818-7 Date Collected: 04/23/21 11:40 **Matrix: Water** 

Date Received: 04/23/21 14:35

Date Collected: 04/23/21 10:10

Date Received: 04/23/21 14:35

Date Received. 04/23/21 14.35									
Analyte	Result (	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		04/28/21 14:00	04/30/21 17:57	1

Client Sample ID: MW-7	Lab Sample ID: 280-147818-8
Date Collected: 04/23/21 13:35	Matrix: Water

Date Received: 04/23/21 14:35

Analyte	Result Qualifier	RL	MDL Unit	D Prepared	Analyzed	Dil Fac
Mercury	0.25	0.20	0.13 ug/L	04/28/21 14:00	04/30/21 17:59	1

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**Matrix: Water** 

Client: HDR Inc Job ID: 280-147818-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: 7470A - Mercury (CVAA) - Dissolved

Client Sample ID: MW-7 Lab Sample ID: 280-147818-8

Date Collected: 04/23/21 13:35 **Matrix: Water** 

Date Received: 04/23/21 14:35

Analyte RL **MDL** Unit Prepared Dil Fac Result Qualifier Analyzed Mercury ND 0.20 0.13 ug/L 04/28/21 14:00 04/30/21 18:01

General Chemistry

**Client Sample ID: MW-13** Lab Sample ID: 280-147818-1 Date Collected: 04/21/21 13:25 **Matrix: Water** 

Date Received: 04/23/21 14:35

Date Received: 04/20/21 14:00	•								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU			04/28/21 18:29	1
Temperature	19.5	HF	1.0	1.0	Degrees C			04/28/21 18:29	1
Chloride	170		3.0	1.0	mg/L			05/17/21 15:27	1
Fluoride	1.3		0.50	0.17	mg/L			05/17/21 15:27	1
Sulfate	170		50	10	mg/L			05/17/21 15:41	10
Total Dissolved Solids (TDS)	890		20	9.4	mg/L			04/28/21 16:02	1
Total Suspended Solids	7.6		4.0	1.1	mg/L			04/28/21 15:23	1

**Client Sample ID: MW-15** Lab Sample ID: 280-147818-2 **Matrix: Water** 

Date Collected: 04/22/21 09:30

Date Received: 04/23/21 14:35 Analyte Result Qualifier RL **MDL** Unit D Prepared Analyzed Dil Fac 0.1 SU pH adj. to 25 deg C 7.7 HF 0.1 04/28/21 18:45 **Temperature** 20.7 HF 1.0 Degrees C 1.0 04/28/21 18:45 1 Chloride 260 60 20 mg/L 05/17/21 16:11 20 **Fluoride** 0.50 0.17 mg/L 05/17/21 15:56 2.6 1 **Sulfate** 430 100 21 mg/L 05/17/21 16:11 20 1500 40 19 mg/L 04/29/21 12:11 **Total Dissolved Solids (TDS)** 

**Client Sample ID: MW-10** Lab Sample ID: 280-147818-3 Date Collected: 04/22/21 12:10 **Matrix: Water** 

4.0

1.1 mg/L

ND

Date Received: 04/23/21 14:35

**Total Suspended Solids** 

Date Received, 04/20/21 14.00	•								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.9	HF	0.1	0.1	SU			04/28/21 18:49	1
Temperature	19.8	HF	1.0	1.0	Degrees C			04/28/21 18:49	1
Chloride	350		60	20	mg/L			05/17/21 18:11	20
Fluoride	2.2		0.50	0.17	mg/L			05/17/21 17:56	1
Sulfate	830		100	21	mg/L			05/17/21 18:11	20
Total Dissolved Solids (TDS)	2100		20	9.4	mg/L			04/29/21 12:11	1
Total Suspended Solids	1.2	J	4.0	1.1	mg/L			04/28/21 15:23	1

Client Sample ID: MW-10-FD Lab Sample ID: 280-147818-4 Date Collected: 04/22/21 12:10 **Matrix: Water** 

Date Received: 04/23/24 14:35

Date Received: 04/23/21 14:35									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.0	HF	0.1	0.1	SU			04/28/21 18:52	1
Temperature	19.4	HF	1.0	1.0	Degrees C			04/28/21 18:52	1
Chloride	370		30	10	mg/L			05/17/21 18:41	10
Fluoride	2.3		0.50	0.17	mg/L			05/17/21 18:26	1
Sulfate	880		50	10	mg/L			05/17/21 18:41	10
Total Dissolved Solids (TDS)	2100		20	9.4	mg/L			04/29/21 12:11	1
Total Suspended Solids	13		4.0	1.1	mg/L			04/28/21 15:23	1

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04/28/21 15:23

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Client: HDR Inc Job ID: 280-147818-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

**General Chemistry** 

Client Sample ID: MW-10-EB Lab Sample ID: 280-147818-5 Date Collected: 04/22/21 13:00 **Matrix: Water** 

Date Received: 04/23/21 14:35

Date Neceived, 04/25/21 14.50	,								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.6	HF	0.1	0.1	SU			04/29/21 21:16	1
Temperature	18.6	HF	1.0	1.0	Degrees C			04/29/21 21:16	1
Chloride	ND		3.0	1.0	mg/L			05/17/21 18:55	1
Fluoride	ND		0.50	0.17	mg/L			05/17/21 18:55	1
Sulfate	ND		5.0	1.0	mg/L			05/17/21 18:55	1
Total Dissolved Solids (TDS)	5.0	J	10	4.7	mg/L			04/29/21 12:11	1
Total Suspended Solids	ND		4.0	1.1	mg/L			04/27/21 16:32	1

**Client Sample ID: MW-17** Lab Sample ID: 280-147818-6 **Matrix: Water** 

Date Collected: 04/23/21 10:10

Date Received: 04/23/21 14:39	<b>ס</b>								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	6.7	HF	0.1	0.1	SU			04/28/21 19:03	1
Temperature	19.4	HF	1.0	1.0	Degrees C			04/28/21 19:03	1
Chloride	120		3.0	1.0	mg/L			05/17/21 21:04	1
Fluoride	1.7		0.50	0.17	mg/L			05/17/21 21:04	1
Sulfate	240		50	10	mg/L			05/17/21 21:19	10
Total Dissolved Solids (TDS)	790		10	4.7	mg/L			04/29/21 12:11	1
Total Suspended Solids	2.8	J	4.0	1.1	mg/L			04/27/21 16:32	1

**Client Sample ID: MW-16** Lab Sample ID: 280-147818-7 Date Collected: 04/23/21 11:40 **Matrix: Water** 

Date Received: 04/23/21 14:35	•								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.3	HF	0.1	0.1	SU			04/28/21 19:07	1
Temperature	20.0	HF	1.0	1.0	Degrees C			04/28/21 19:07	1
Chloride	150		3.0	1.0	mg/L			05/17/21 21:34	1
Fluoride	1.9		0.50	0.17	mg/L			05/17/21 21:34	1
Sulfate	160		100	21	mg/L			05/17/21 21:49	20
Total Dissolved Solids (TDS)	700		20	9.4	mg/L			04/29/21 12:11	1
Total Suspended Solids	3.2	J	4.0	1.1	mg/L			04/27/21 16:32	1

**Client Sample ID: MW-7** Lab Sample ID: 280-147818-8 Date Collected: 04/23/21 13:35 **Matrix: Water** 

Date Received: 04/23/21 14:35

Butc 1(CCC1/CG: 04/20/21 14:00	•								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.3	HF	0.1	0.1	SU			04/28/21 19:11	1
Temperature	20.2	HF	1.0	1.0	Degrees C			04/28/21 19:11	1
Chloride	110		3.0	1.0	mg/L			05/17/21 22:04	1
Fluoride	2.3		0.50	0.17	mg/L			05/17/21 22:04	1
Sulfate	210		50	10	mg/L			05/17/21 22:19	10
Total Dissolved Solids (TDS)	750		20	9.4	mg/L			04/29/21 12:11	1
Total Suspended Solids	420		20	5.5	mg/L			04/27/21 16:32	1

Eurofins TestAmerica, Denver

Client: HDR Inc Job ID: 280-147818-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-483223/1-A

**Matrix: Water** 

Analyte

Analyte

Boron

Boron

Boron

Analysis Batch: 483541

Client Sample ID: Method Blank **Prep Type: Total Recoverable** Prep Batch: 483223

MB MB Result Qualifier RL **MDL** Unit D Analyzed Dil Fac Prepared 0.10 04/28/21 14:00 04/29/21 18:41 ND 0.023 mg/L

Lab Sample ID: LCS 240-483223/2-A

**Matrix: Water** 

Analysis Batch: 483541

Lab Sample ID: 280-147818-1 MS

Sample Sample

Sample Sample

0.49

Result Qualifier

Spike Added 1.00

Spike

Added

1.00

Spike

Added

1.00

LCS LCS 1.09

MS MS

MSD MSD

1.57

Result Qualifier

1.55

Result Qualifier

Result Qualifier

Unit D %Rec mg/L

Unit

mg/L

Unit

mg/L

80 - 120 109

%Rec

%Rec

108

Client Sample ID: MW-13

**Matrix: Water** 

Analysis Batch: 483541

Analyte

Result Qualifier Boron 0.49

Lab Sample ID: 280-147818-1 MSD **Matrix: Water** 

Analysis Batch: 483541

Analyte

Method: 6020A - Metals (ICP/MS) Lab Sample ID: MB 240-483223/1-A

**Matrix: Water Analysis Batch: 483693** 

**Client Sample ID: Lab Control Sample Prep Type: Total Recoverable** 

**Prep Batch: 483223** 

%Rec. Limits

**Prep Type: Total Recoverable** Prep Batch: 483223

%Rec. Limits

75 - 125 106

Client Sample ID: MW-13 **Prep Type: Total Recoverable** 

Prep Batch: 483223 %Rec. **RPD** 

Limits **RPD** Limit 75 - 125 20

Client Sample ID: Method Blank **Prep Type: Total Recoverable** Prep Batch: 483223

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		04/28/21 14:00	04/30/21 21:52	1
Arsenic	ND		0.0050	0.00075	mg/L		04/28/21 14:00	04/30/21 21:52	1
Barium	ND		0.0050	0.0022	mg/L		04/28/21 14:00	04/30/21 21:52	1
Beryllium	ND		0.0010	0.00031	mg/L		04/28/21 14:00	04/30/21 21:52	1
Cadmium	ND		0.0010	0.00020	mg/L		04/28/21 14:00	04/30/21 21:52	1
Calcium	ND		1.0	0.58	mg/L		04/28/21 14:00	04/30/21 21:52	1
Chromium	ND		0.0020	0.00098	mg/L		04/28/21 14:00	04/30/21 21:52	1
Cobalt	ND		0.0010	0.00019	mg/L		04/28/21 14:00	04/30/21 21:52	1
Lead	ND		0.0010	0.00045	mg/L		04/28/21 14:00	04/30/21 21:52	1
Lithium	ND		0.0080	0.0017	mg/L		04/28/21 14:00	04/30/21 21:52	1
Molybdenum	ND		0.010	0.0011	mg/L		04/28/21 14:00	04/30/21 21:52	1
Selenium	ND		0.0050	0.00089	mg/L		04/28/21 14:00	04/30/21 21:52	1
Thallium	ND		0.0010	0.00020	mg/L		04/28/21 14:00	04/30/21 21:52	1

Lab Sample ID: LCS 240-483223/3-A

**Matrix: Water** 

Analyte

Antimony

**Analysis Batch: 483693** 

Spike Added 0.100

LCS LCS Result Qualifier

0.104

Unit mg/L

%Rec 104 Prep Batch: 483223 %Rec. Limits

**Prep Type: Total Recoverable** 

**Client Sample ID: Lab Control Sample** 

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Client: HDR Inc Job ID: 280-147818-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

# Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 240-483223/3-A

**Matrix: Water** 

Analysis Batch: 483693

**Client Sample ID: Lab Control Sample Prep Type: Total Recoverable** 

**Prep Batch: 483223** 

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Arsenic	1.00	0.971		mg/L		97	80 - 120	
Barium	1.00	1.02		mg/L		102	80 - 120	
Beryllium	0.500	0.490		mg/L		98	80 - 120	
Cadmium	0.500	0.503		mg/L		101	80 - 120	
Calcium	25.0	25.6		mg/L		103	80 - 120	
Chromium	0.500	0.524		mg/L		105	80 - 120	
Cobalt	0.500	0.505		mg/L		101	80 - 120	
Lead	0.500	0.536		mg/L		107	80 - 120	
Lithium	0.500	0.494		mg/L		99	80 - 120	
Molybdenum	0.500	0.499		mg/L		100	80 - 120	
Selenium	1.00	0.949		mg/L		95	80 - 120	
Thallium	1.00	1.06		mg/L		106	80 - 120	

Lab Sample ID: 280-147818-2 MS

**Matrix: Water** 

Analysis Batch: 483693

**Client Sample ID: MW-15 Prep Type: Total Recoverable** 

**Prep Batch: 483223** 

Allalysis Datell. 400000									riep Daten. 40322
	Sample	Sample	Spike	MS	MS				%Rec.
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits
Antimony	0.0016	J	0.100	0.110		mg/L		109	75 - 125
Arsenic	0.0027	J	1.00	1.00		mg/L		100	75 - 125
Barium	0.031		1.00	1.03		mg/L		100	75 - 125
Beryllium	ND		0.500	0.506		mg/L		101	75 - 125
Cadmium	ND		0.500	0.495		mg/L		99	75 - 125
Calcium	170		25.0	188	4	mg/L		88	75 - 125
Chromium	0.0054		0.500	0.506		mg/L		100	75 - 125
Cobalt	0.0097		0.500	0.524		mg/L		103	75 - 125
Lead	ND		0.500	0.516		mg/L		103	75 - 125
Lithium	0.081		0.500	0.589		mg/L		102	75 - 125
Molybdenum	0.084		0.500	0.596		mg/L		102	75 - 125
Selenium	0.066		1.00	0.998		mg/L		93	75 - 125
Thallium	ND		1.00	1.02		mg/L		102	75 - 125
_									

Lab Sample ID: 280-147818-2 MSD

**Matrix: Water** 

**Client Sample ID: MW-15 Prep Type: Total Recoverable** 

Analysis Batch: 483693									Prep Ba	itch: 48	33223
	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Antimony	0.0016	J	0.100	0.110		mg/L		109	75 - 125	0	20
Arsenic	0.0027	J	1.00	1.05		mg/L		104	75 - 125	5	20
Barium	0.031		1.00	1.09		mg/L		106	75 - 125	6	20
Beryllium	ND		0.500	0.516		mg/L		103	75 - 125	2	20
Cadmium	ND		0.500	0.516		mg/L		103	75 - 125	4	20
Calcium	170		25.0	191	4	mg/L		97	75 - 125	1	20
Chromium	0.0054		0.500	0.538		mg/L		106	75 - 125	6	20
Cobalt	0.0097		0.500	0.549		mg/L		108	75 - 125	5	20
Lead	ND		0.500	0.545		mg/L		109	75 - 125	5	20
Lithium	0.081		0.500	0.588		mg/L		101	75 - 125	0	20
Molybdenum	0.084		0.500	0.623		mg/L		108	75 - 125	4	20
Selenium	0.066		1.00	1.04		mg/L		98	75 - 125	4	20

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Client: HDR Inc Job ID: 280-147818-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: 280-147818-2 MSD Client Sample ID: MW-15 **Matrix: Water Prep Type: Total Recoverable Analysis Batch: 483693 Prep Batch: 483223** MSD MSD %Rec. **RPD** Sample Sample Spike Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits **RPD** Limit Thallium ND 1 00 1 07 mg/L 107 75 - 125 20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 240-483224/1-A

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 483586

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 483224

MB MB

Analyte Result Qualifier RL MDL Unit D Prepared Analyzed Dil Fac

Mercury ND 0.20 0.13 ug/L 04/28/21 14:00 04/30/21 17:32

Lab Sample ID: LCS 240-483224/2-A

Client Sample ID: Lab Control Sample

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 483586

Spike LCS LCS %Rec.

Analyte Added Result Qualifier Unit D %Rec Limits

 Analyte
 Added Mercury
 Result Qualifier
 Unit Ug/L
 D %Rec Dimits
 Limits

 Mercury
 5.00
 5.21
 ug/L
 104
 80 - 120

Lab Sample ID: MB 240-483752/1-A Client Sample ID: Method Blank

Matrix: Water Prep Type: Total/NA
Analysis Batch: 484229 Prep Batch: 483752

MB MB

Analyte Poult Qualifier PL MDI Unit D Propaged Analyzed Dil For

 Analyte
 Result Mercury
 Qualifier ND
 RL 0.20
 MDL unit ug/L
 D 05/03/21 14:00
 Analyzed 05/05/21 10:03
 Dil Fac 05/03/21 10:03

Lab Sample ID: LCS 240-483752/2-A

Matrix: Water

Analysis Batch: 484229

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 483752

LCS LCS Spike %Rec. Added Analyte Result Qualifier Unit D %Rec Limits Mercury 5.00 5.65 ug/L 113 80 - 120

Lab Sample ID: 280-147818-1 MS

Matrix: Water

Analysis Batch: 484229

Client Sample ID: MW-13

Prep Type: Total/NA

Prep Batch: 483752

MS MS %Rec. Sample Sample Spike Analyte Result Qualifier Added Result Qualifier Unit D %Rec Limits ND F1 Mercury 1.00 1.21 F1 ug/L 121 80 - 120

Lab Sample ID: 280-147818-1 MSD

Matrix: Water

Analysis Batch: 484229

Sample Sample Spike MSD MSD

Client Sample ID: MW-13
Prep Type: Total/NA
Prep Batch: 483752
RPD

Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits **RPD** Limit Mercury ND F1 1.00 1.15 80 - 120 20 ug/L 115 5

3

4

6

8

10

12

13

14

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Client: HDR Inc Job ID: 280-147818-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: 9040B - pH

Lab Sample ID: LCS 280-534278/4

**Matrix: Water** 

**Analysis Batch: 534278** 

Spike LCS LCS %Rec. Analyte Added Result Qualifier Limits Unit D %Rec SU pH adj. to 25 deg C 7.00 7.1 101 99 - 101

Lab Sample ID: LCS 280-534411/4

**Matrix: Water** 

Analysis Batch: 534411

Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit D %Rec Limits pH adj. to 25 deg C 7.00 SU 101 7.1 99 - 101

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-536397/6

**Matrix: Water** 

**Analysis Batch: 536397** 

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	1.0	mg/L			05/17/21 13:35	1
Fluoride	ND		0.50	0.17	mg/L			05/17/21 13:35	1
Sulfate	ND		5.0	1.0	mg/L			05/17/21 13:35	1

Lab Sample ID: LCS 280-536397/4

**Matrix: Water** 

**Analysis Batch: 536397** 

•	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chloride	 100	98.5		mg/L		99	90 - 110	
Fluoride	5.00	4.94		mg/L		99	90 - 110	
Sulfate	100	99.9		mg/L		100	90 - 110	

Lab Sample ID: LCSD 280-536397/5

**Matrix: Water** 

**Analysis Batch: 536397** 

, , , , , , , , , , , , , , , , , , , ,	Sp	ke LCSE	LCSD			%Rec.		RPD	
Analyte	Add	ed Resul	t Qualifier U	nit D	%Rec	Limits	RPD	Limit	
Chloride		00 98.6	5 <u> </u>	ng/L	99	90 - 110	0	10	
Fluoride	5	00 4.99	9 m	ng/L	100	90 - 110	1	10	
Sulfate		00 99.9	) m	na/L	100	90 - 110	0	10	

Lab Sample ID: MRL 280-536397/3

**Matrix: Water** 

Analysis Ratch: 536307

Analysis balch: 536397								
	Spike	MRL	MRL				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chloride	5.00	4.11		mg/L		82	50 - 150	
Fluoride	0.500	0.539		mg/L		108	50 - 150	
Sulfate	5.00	4.52	J	mg/L		90	50 - 150	

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**Client Sample ID: Lab Control Sample** 

**Client Sample ID: Lab Control Sample** 

**Client Sample ID: Method Blank** 

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

**Prep Type: Total/NA** 

**Prep Type: Total/NA** 

Prep Type: Total/NA

**Client Sample ID: Lab Control Sample Dup** 

Prep Type: Total/NA

**Client Sample ID: Lab Control Sample** Prep Type: Total/NA

Job ID: 280-147818-1

Prep Type: Total/NA

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-534218/1 Client Sample ID: Method Blank

**Matrix: Water** 

Client: HDR Inc

Analysis Batch: 534218

MB MB

Result Qualifier RL **MDL** Unit Analyzed Dil Fac Analyte Prepared 10 04/28/21 16:02 Total Dissolved Solids (TDS) ND 4.7 mg/L

Lab Sample ID: LCS 280-534218/2 Client Sample ID: Lab Control Sample **Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 534218** 

Spike LCS LCS %Rec. Added Result Qualifier D %Rec Limits Analyte Unit 501 Total Dissolved Solids (TDS) 441 mg/L 88 88 - 114

Lab Sample ID: LCSD 280-534218/3 Client Sample ID: Lab Control Sample Dup Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 534218** 

Spike LCSD LCSD %Rec. **RPD** Added Result Qualifier Limits RPD Analyte Unit %Rec Limit Total Dissolved Solids (TDS) 501 501 100 88 - 114 mg/L

Lab Sample ID: MB 280-534339/1 Client Sample ID: Method Blank **Matrix: Water Prep Type: Total/NA** 

**Analysis Batch: 534339** 

MB MB

Analyte Result Qualifier RL MDL Unit Prepared Analyzed Dil Fac 4.7 mg/L Total Dissolved Solids (TDS) 10 04/29/21 12:11 ND

Lab Sample ID: LCS 280-534339/2 **Client Sample ID: Lab Control Sample** Prep Type: Total/NA

**Matrix: Water** 

Analysis Batch: 534339

LCS LCS Spike %Rec. Added Analyte Result Qualifier Unit %Rec Limits Total Dissolved Solids (TDS) 501 488 98 mg/L 88 - 114

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 280-534086/1 Client Sample ID: Method Blank Prep Type: Total/NA

**Matrix: Water** 

Analysis Batch: 534086

MR MR **MDL** Unit Analyte Result Qualifier RL Prepared Analyzed Dil Fac 1.1 mg/L 4.0 **Total Suspended Solids** ND 04/27/21 16:32

Lab Sample ID: LCS 280-534086/2 Client Sample ID: Lab Control Sample **Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 534086** 

LCS LCS Spike %Rec. Added Result Qualifier Unit %Rec Limits 100 **Total Suspended Solids** 81.2 mg/L 81 79 - 114

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# **QC Sample Results**

Client: HDR Inc Job ID: 280-147818-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: SM 2540D - Solids, Total Suspended (TSS) (Continued)

Lab Sample ID: MB 280-534215/1 Client Sample ID: Method Blank

**Matrix: Water** 

**Analysis Batch: 534215** 

MB MB

Result Qualifier RL **MDL** Unit Analyzed Dil Fac Analyte **Prepared** 4.0 1.1 mg/L 04/28/21 15:23 **Total Suspended Solids** ND

Lab Sample ID: LCS 280-534215/2 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

Analysis Batch: 534215

Spike LCS LCS %Rec. Analyte Added Result Qualifier D %Rec Limits Unit 100 98.0 **Total Suspended Solids** mg/L 98 79 - 114

Lab Sample ID: LCSD 280-534215/3 Client Sample ID: Lab Control Sample Dup **Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 534215** 

Spike LCSD LCSD %Rec. RPD Added Result Qualifier Limits RPD Limit Analyte Unit %Rec Total Suspended Solids 100 109 109 79 - 114 mg/L

Lab Sample ID: 280-147818-4 DU Client Sample ID: MW-10-FD **Prep Type: Total/NA** 

**Matrix: Water** 

**Analysis Batch: 534215** 

DU DU **RPD** Sample Sample Analyte Result Qualifier Result Qualifier Unit **RPD** Limit Total Suspended Solids 12.8 13 mg/L 10

Prep Type: Total/NA

# **QC Association Summary**

Client: HDR Inc Job ID: 280-147818-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

#### **Metals**

Filtration Batch: 483221

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-147818-8	MW-7	Dissolved	Water	FILTRATION	

#### **Prep Batch: 483223**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-147818-1	MW-13	Total Recoverable	Water	3005A	
280-147818-2	MW-15	Total Recoverable	Water	3005A	
280-147818-3	MW-10	Total Recoverable	Water	3005A	
280-147818-4	MW-10-FD	Total Recoverable	Water	3005A	
280-147818-5	MW-10-EB	Total Recoverable	Water	3005A	
280-147818-6	MW-17	Total Recoverable	Water	3005A	
280-147818-7	MW-16	Total Recoverable	Water	3005A	
280-147818-8	MW-7	Dissolved	Water	3005A	48322
280-147818-8	MW-7	Total Recoverable	Water	3005A	
MB 240-483223/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-483223/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-483223/3-A	Lab Control Sample	Total Recoverable	Water	3005A	
280-147818-1 MS	MW-13	Total Recoverable	Water	3005A	
280-147818-1 MSD	MW-13	Total Recoverable	Water	3005A	
280-147818-2 MS	MW-15	Total Recoverable	Water	3005A	
280-147818-2 MSD	MW-15	Total Recoverable	Water	3005A	

#### **Prep Batch: 483224**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-147818-2	MW-15	Total/NA	Water	7470A	<del></del>
280-147818-3	MW-10	Total/NA	Water	7470A	
280-147818-4	MW-10-FD	Total/NA	Water	7470A	
280-147818-5	MW-10-EB	Total/NA	Water	7470A	
280-147818-6	MW-17	Total/NA	Water	7470A	
280-147818-7	MW-16	Total/NA	Water	7470A	
280-147818-8	MW-7	Dissolved	Water	7470A	483221
280-147818-8	MW-7	Total/NA	Water	7470A	
MB 240-483224/1-A	Method Blank	Total/NA	Water	7470A	
LCS 240-483224/2-A	Lab Control Sample	Total/NA	Water	7470A	

#### Analysis Batch: 483541

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-147818-1	MW-13	Total Recoverable	Water	6010C	483223
280-147818-2	MW-15	Total Recoverable	Water	6010C	483223
280-147818-3	MW-10	Total Recoverable	Water	6010C	483223
280-147818-4	MW-10-FD	Total Recoverable	Water	6010C	483223
280-147818-5	MW-10-EB	Total Recoverable	Water	6010C	483223
280-147818-6	MW-17	Total Recoverable	Water	6010C	483223
280-147818-7	MW-16	Total Recoverable	Water	6010C	483223
280-147818-8	MW-7	Dissolved	Water	6010C	483223
280-147818-8	MW-7	Total Recoverable	Water	6010C	483223
MB 240-483223/1-A	Method Blank	Total Recoverable	Water	6010C	483223
LCS 240-483223/2-A	Lab Control Sample	Total Recoverable	Water	6010C	483223
280-147818-1 MS	MW-13	Total Recoverable	Water	6010C	483223
280-147818-1 MSD	MW-13	Total Recoverable	Water	6010C	483223

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Client: HDR Inc Job ID: 280-147818-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

#### **Metals**

#### Analysis Batch: 483586

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-147818-2	MW-15	Total/NA	Water	7470A	483224
280-147818-3	MW-10	Total/NA	Water	7470A	483224
280-147818-4	MW-10-FD	Total/NA	Water	7470A	483224
280-147818-5	MW-10-EB	Total/NA	Water	7470A	483224
280-147818-6	MW-17	Total/NA	Water	7470A	483224
280-147818-7	MW-16	Total/NA	Water	7470A	483224
280-147818-8	MW-7	Dissolved	Water	7470A	483224
280-147818-8	MW-7	Total/NA	Water	7470A	483224
MB 240-483224/1-A	Method Blank	Total/NA	Water	7470A	483224
LCS 240-483224/2-A	Lab Control Sample	Total/NA	Water	7470A	483224

#### **Analysis Batch: 483693**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-147818-1	MW-13	Total Recoverable	Water	6020A	483223
280-147818-2	MW-15	Total Recoverable	Water	6020A	483223
280-147818-3	MW-10	Total Recoverable	Water	6020A	483223
280-147818-4	MW-10-FD	Total Recoverable	Water	6020A	483223
280-147818-5	MW-10-EB	Total Recoverable	Water	6020A	483223
280-147818-6	MW-17	Total Recoverable	Water	6020A	483223
280-147818-7	MW-16	Total Recoverable	Water	6020A	483223
280-147818-8	MW-7	Dissolved	Water	6020A	483223
280-147818-8	MW-7	Total Recoverable	Water	6020A	483223
MB 240-483223/1-A	Method Blank	Total Recoverable	Water	6020A	483223
LCS 240-483223/3-A	Lab Control Sample	Total Recoverable	Water	6020A	483223
280-147818-2 MS	MW-15	Total Recoverable	Water	6020A	483223
280-147818-2 MSD	MW-15	Total Recoverable	Water	6020A	483223

#### **Prep Batch: 483752**

Lab Sample ID 280-147818-1	Client Sample ID MW-13	Prep Type Total/NA	Matrix Water	Method 7470A	Prep Batch
MB 240-483752/1-A	Method Blank	Total/NA	Water	7470A	
LCS 240-483752/2-A	Lab Control Sample	Total/NA	Water	7470A	
280-147818-1 MS	MW-13	Total/NA	Water	7470A	
280-147818-1 MSD	MW-13	Total/NA	Water	7470A	

#### Analysis Batch: 484229

Lab Sample ID 280-147818-1	Client Sample ID MW-13	Prep Type Total/NA	Matrix Water	Method 7470A	Prep Batch 483752
MB 240-483752/1-A	Method Blank	Total/NA	Water	7470A	483752
LCS 240-483752/2-A	Lab Control Sample	Total/NA	Water	7470A	483752
280-147818-1 MS	MW-13	Total/NA	Water	7470A	483752
280-147818-1 MSD	MW-13	Total/NA	Water	7470A	483752

# **General Chemistry**

#### Analysis Batch: 534086

<b>Lab Sample ID</b> 280-147818-5	Client Sample ID  MW-10-EB	Prep Type Total/NA	Matrix Water	Method SM 2540D	Prep Batch
280-147818-6	MW-17	Total/NA	Water	SM 2540D	
280-147818-7	MW-16	Total/NA	Water	SM 2540D	
280-147818-8	MW-7	Total/NA	Water	SM 2540D	

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# **QC Association Summary**

Client: HDR Inc Job ID: 280-147818-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

# **General Chemistry (Continued)**

#### **Analysis Batch: 534086 (Continued)**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 280-534086/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-534086/2	Lab Control Sample	Total/NA	Water	SM 2540D	

#### **Analysis Batch: 534215**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-147818-1	MW-13	Total/NA	Water	SM 2540D	
280-147818-2	MW-15	Total/NA	Water	SM 2540D	
280-147818-3	MW-10	Total/NA	Water	SM 2540D	
280-147818-4	MW-10-FD	Total/NA	Water	SM 2540D	
MB 280-534215/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-534215/2	Lab Control Sample	Total/NA	Water	SM 2540D	
LCSD 280-534215/3	Lab Control Sample Dup	Total/NA	Water	SM 2540D	
280-147818-4 DU	MW-10-FD	Total/NA	Water	SM 2540D	

#### **Analysis Batch: 534218**

Lab Sample ID 280-147818-1	Client Sample ID MW-13	Prep Type Total/NA	Matrix Water	Method SM 2540C	Prep Batch
MB 280-534218/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-534218/2	Lab Control Sample	Total/NA	Water	SM 2540C	
LCSD 280-534218/3	Lab Control Sample Dup	Total/NA	Water	SM 2540C	

#### **Analysis Batch: 534278**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-147818-1	MW-13	Total/NA	Water	9040B	<u> </u>
280-147818-2	MW-15	Total/NA	Water	9040B	
280-147818-3	MW-10	Total/NA	Water	9040B	
280-147818-4	MW-10-FD	Total/NA	Water	9040B	
280-147818-6	MW-17	Total/NA	Water	9040B	
280-147818-7	MW-16	Total/NA	Water	9040B	
280-147818-8	MW-7	Total/NA	Water	9040B	
LCS 280-534278/4	Lab Control Sample	Total/NA	Water	9040B	

#### **Analysis Batch: 534339**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-147818-2	MW-15	Total/NA	Water	SM 2540C	
280-147818-3	MW-10	Total/NA	Water	SM 2540C	
280-147818-4	MW-10-FD	Total/NA	Water	SM 2540C	
280-147818-5	MW-10-EB	Total/NA	Water	SM 2540C	
280-147818-6	MW-17	Total/NA	Water	SM 2540C	
280-147818-7	MW-16	Total/NA	Water	SM 2540C	
280-147818-8	MW-7	Total/NA	Water	SM 2540C	
MB 280-534339/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-534339/2	Lab Control Sample	Total/NA	Water	SM 2540C	

#### **Analysis Batch: 534411**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-147818-5	MW-10-EB	Total/NA	Water	9040B	
LCS 280-534411/4	Lab Control Sample	Total/NA	Water	9040B	

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# **QC Association Summary**

Client: HDR Inc Job ID: 280-147818-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

# **General Chemistry**

#### Analysis Batch: 536397

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-147818-1	MW-13	Total/NA	Water	9056A	
280-147818-1	MW-13	Total/NA	Water	9056A	
280-147818-2	MW-15	Total/NA	Water	9056A	
280-147818-2	MW-15	Total/NA	Water	9056A	
280-147818-3	MW-10	Total/NA	Water	9056A	
280-147818-3	MW-10	Total/NA	Water	9056A	
280-147818-4	MW-10-FD	Total/NA	Water	9056A	
280-147818-4	MW-10-FD	Total/NA	Water	9056A	
280-147818-5	MW-10-EB	Total/NA	Water	9056A	
280-147818-6	MW-17	Total/NA	Water	9056A	
280-147818-6	MW-17	Total/NA	Water	9056A	
280-147818-7	MW-16	Total/NA	Water	9056A	
280-147818-7	MW-16	Total/NA	Water	9056A	
280-147818-8	MW-7	Total/NA	Water	9056A	
280-147818-8	MW-7	Total/NA	Water	9056A	
MB 280-536397/6	Method Blank	Total/NA	Water	9056A	
LCS 280-536397/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-536397/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-536397/3	Lab Control Sample	Total/NA	Water	9056A	

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Client: HDR Inc Job ID: 280-147818-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Client Sample ID: MW-13

Date Collected: 04/21/21 13:25 Date Received: 04/23/21 14:35 Lab Sample ID: 280-147818-1

Matrix: Water

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	483223	04/28/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			483541	04/29/21 18:50	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	483223	04/28/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			483693	04/30/21 21:57	DTN	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	483752	05/03/21 14:00	MRL	TAL CAN
Total/NA	Analysis	7470A		1			484229	05/05/21 10:55	DTN	TAL CAN
Total/NA	Analysis	9040B		1			534278	04/28/21 18:29	QJB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	536397	05/17/21 15:27	CJ	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	536397	05/17/21 15:41	CJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	534218	04/28/21 16:02	LEB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	534215	04/28/21 15:23	LEB	TAL DEN

Client Sample ID: MW-15

Date Collected: 04/22/21 09:30

Date Received: 04/23/21 14:35

Lab Sample ID: 280-147818-2

Matrix: Water

Batch Batch Dil Initial Final Batch Prepared Method **Prep Type** Type Run **Factor Amount Amount** Number or Analyzed Analyst Lab Total Recoverable Prep 3005A 50 mL 50 mL 483223 04/28/21 14:00 MRL TAL CAN Total Recoverable 6010C 483541 04/29/21 19:19 KLC TAL CAN Analysis 1 Total Recoverable Prep 3005A 50 mL 50 mL 483223 04/28/21 14:00 MRL TAL CAN Total Recoverable 6020A Analysis 483693 04/30/21 21:59 DTN TAL CAN 1 Total/NA Prep 7470A 50 mL 50 mL 483224 04/28/21 14:00 MRL TAL CAN Total/NA 7470A 483586 04/30/21 17:42 SLD TAL CAN Analysis 1 Total/NA Analysis 9040B 534278 04/28/21 18:45 QJB TAL DEN Total/NA 9056A 5 mL 5 mL 536397 05/17/21 15:56 CJ Analysis 1 TAL DEN Total/NA Analysis 9056A 20 5 mL 5 mL 536397 05/17/21 16:11 CJ TAL DEN Total/NA Analysis SM 2540C 25 mL 100 mL 534339 04/29/21 12:11 JMH TAL DEN 1 Total/NA 250 mL 534215 04/28/21 15:23 LEB TAL DEN Analysis SM 2540D 250 mL

Client Sample ID: MW-10

Date Collected: 04/22/21 12:10

Date Received: 04/23/21 14:35

_	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	483223	04/28/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			483541	04/29/21 19:23	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	483223	04/28/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			483693	04/30/21 22:17	DTN	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	483224	04/28/21 14:00	MRL	TAL CAN
Total/NA	Analysis	7470A		1			483586	04/30/21 17:44	SLD	TAL CAN
Total/NA	Analysis	9040B		1			534278	04/28/21 18:49	QJB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	536397	05/17/21 17:56	CJ	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	536397	05/17/21 18:11	CJ	TAL DEN

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Lab Sample ID: 280-147818-3

**Matrix: Water** 

Client: HDR Inc Job ID: 280-147818-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

**Client Sample ID: MW-10** 

Date Collected: 04/22/21 12:10 Date Received: 04/23/21 14:35

Lab Sample ID: 280-147818-3

**Matrix: Water** 

Batch Batch Dil Initial Final Batch Prepared **Prep Type** Туре Method **Factor Amount** Number or Analyzed Analyst Run **Amount** Lab Total/NA Analysis SM 2540C 50 mL 100 mL 534339 04/29/21 12:11 JMH TAL DEN Total/NA 250 mL 534215 04/28/21 15:23 LEB Analysis SM 2540D 1 250 mL TAL DEN

Client Sample ID: MW-10-FD

Date Collected: 04/22/21 12:10 Date Received: 04/23/21 14:35

Lab Sample ID: 280-147818-4

**Matrix: Water** 

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	483223	04/28/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			483541	04/29/21 19:28	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	483223	04/28/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			483693	04/30/21 22:19	DTN	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	483224	04/28/21 14:00	MRL	TAL CAN
Total/NA	Analysis	7470A		1			483586	04/30/21 17:51	SLD	TAL CAN
Total/NA	Analysis	9040B		1			534278	04/28/21 18:52	QJB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	536397	05/17/21 18:26	CJ	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	536397	05/17/21 18:41	CJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	534339	04/29/21 12:11	JMH	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	534215	04/28/21 15:23	LEB	TAL DEN

Client Sample ID: MW-10-EB

Date Collected: 04/22/21 13:00

Date Received: 04/23/21 14:35

Lab Sample ID: 280-147818-5

**Matrix: Water** 

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	483223	04/28/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			483541	04/29/21 19:32	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	483223	04/28/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			483693	04/30/21 22:22	DTN	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	483224	04/28/21 14:00	MRL	TAL CAN
Total/NA	Analysis	7470A		1			483586	04/30/21 17:53	SLD	TAL CAN
Total/NA	Analysis	9040B		1			534411	04/29/21 21:16	QJB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	536397	05/17/21 18:55	CJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	534339	04/29/21 12:11	JMH	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	534086	04/27/21 16:32	JMH	TAL DEN

**Client Sample ID: MW-17** 

Date Collected: 04/23/21 10:10

Date Received: 04/23/21 14:35

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	483223	04/28/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			483541	04/29/21 19:37	KLC	TAL CAN

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Lab Sample ID: 280-147818-6

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**Matrix: Water** 

Client: HDR Inc Job ID: 280-147818-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

**Client Sample ID: MW-17** 

Date Collected: 04/23/21 10:10 Date Received: 04/23/21 14:35 Lab Sample ID: 280-147818-6

**Matrix: Water** 

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	483223	04/28/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			483693	04/30/21 22:24	DTN	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	483224	04/28/21 14:00	MRL	TAL CAN
Total/NA	Analysis	7470A		1			483586	04/30/21 17:55	SLD	TAL CAN
Total/NA	Analysis	9040B		1			534278	04/28/21 19:03	QJB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	536397	05/17/21 21:04	CJ	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	536397	05/17/21 21:19	CJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	534339	04/29/21 12:11	JMH	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	534086	04/27/21 16:32	JMH	TAL DEN

Client Sample ID: MW-16 Lab Sample ID: 280-147818-7

Date Collected: 04/23/21 11:40 Matrix: Water

Date Received: 04/23/21 14:35

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	483223	04/28/21 14:00	MRL	TAL CAI
Total Recoverable	Analysis	6010C		1			483541	04/29/21 19:41	KLC	TAL CA
Total Recoverable	Prep	3005A			50 mL	50 mL	483223	04/28/21 14:00	MRL	TAL CAI
Total Recoverable	Analysis	6020A		1			483693	04/30/21 22:27	DTN	TAL CA
Total/NA	Prep	7470A			50 mL	50 mL	483224	04/28/21 14:00	MRL	TAL CA
Total/NA	Analysis	7470A		1			483586	04/30/21 17:57	SLD	TAL CA
Total/NA	Analysis	9040B		1			534278	04/28/21 19:07	QJB	TAL DE
Total/NA	Analysis	9056A		1	5 mL	5 mL	536397	05/17/21 21:34	CJ	TAL DE
Total/NA	Analysis	9056A		20	5 mL	5 mL	536397	05/17/21 21:49	CJ	TAL DE
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	534339	04/29/21 12:11	JMH	TAL DE
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	534086	04/27/21 16:32	JMH	TAL DE

Client Sample ID: MW-7
Date Collected: 04/23/21 13:35
Lab Sample ID: 280-147818-8
Matrix: Water

Date Received: 04/23/21 14:35

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	483221	04/28/21 12:00	MRL	TAL CAN
Dissolved	Prep	3005A			50 mL	50 mL	483223	04/28/21 14:00	MRL	TAL CAN
Dissolved	Analysis	6010C		1			483541	04/29/21 20:15	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	483223	04/28/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			483541	04/29/21 19:54	KLC	TAL CAN
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	483221	04/28/21 12:00	MRL	TAL CAN
Dissolved	Prep	3005A			50 mL	50 mL	483223	04/28/21 14:00	MRL	TAL CAN
Dissolved	Analysis	6020A		1			483693	04/30/21 22:59	DTN	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	483223	04/28/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			483693	04/30/21 22:29	DTN	TAL CAN

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Client: HDR Inc Job ID: 280-147818-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

**Client Sample ID: MW-7** 

Lab Sample ID: 280-147818-8 Date Collected: 04/23/21 13:35

**Matrix: Water** 

Date Received: 04/23/21 14:35

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	483221	04/28/21 12:00	MRL	TAL CAN
Dissolved	Prep	7470A			50 mL	50 mL	483224	04/28/21 14:00	MRL	TAL CAN
Dissolved	Analysis	7470A		1			483586	04/30/21 18:01	SLD	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	483224	04/28/21 14:00	MRL	TAL CAN
Total/NA	Analysis	7470A		1			483586	04/30/21 17:59	SLD	TAL CAN
Total/NA	Analysis	9040B		1			534278	04/28/21 19:11	QJB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	536397	05/17/21 22:04	CJ	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	536397	05/17/21 22:19	CJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	534339	04/29/21 12:11	JMH	TAL DEN
Total/NA	Analysis	SM 2540D		1	50 mL	250 mL	534086	04/27/21 16:32	JMH	TAL DEN

#### **Laboratory References:**

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

# **Accreditation/Certification Summary**

Client: HDR Inc Job ID: 280-147818-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

## **Laboratory: Eurofins TestAmerica, Denver**

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Pr	ogram	Identification Number	Expiration Date
Oregon	NI	ELAP	4025-011	01-08-22
The following analytes the agency does not d	•	ort, but the laboratory is r	not certified by the governing authority.	This list may include analytes for which
	•	ort, but the laboratory is r Matrix	oot certified by the governing authority.  Analyte	This list may include analytes for which

#### **Laboratory: Eurofins TestAmerica, Canton**

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-22
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-21
Georgia	State	4062	02-23-22
Illinois	NELAP	004498	07-31-21
lowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-21 *
Kentucky (UST)	State	112225	02-23-21 *
Kentucky (WW)	State	KY98016	12-31-21
Minnesota	NELAP	OH00048	12-31-21
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-21
New York	NELAP	10975	03-31-22
Ohio VAP	State	CL0024	12-21-23
Oregon	NELAP	4062	02-23-22
Pennsylvania	NELAP	68-00340	08-31-21
Texas	NELAP	T104704517-18-10	08-31-21
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-21
Washington	State	C971	01-12-22
West Virginia DEP	State	210	12-31-21

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<sup>\*</sup> Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody  20 \$38 6065  Requested:  Requested:  Requested:  As AR  Sample (Type System)  C=Group, Company  11  21   305 C   4  22   310 C   6  22   32   6  23   140 C   6  24   140 C   6  25   6  26   7  27   140 C   6  28   140 C	Denvel setting #2000	Carrier	E-Mail:	Analysis Requested	Preservation Go	B. NaOH O. C. Ch. Accelete O. O. Wirric Acid	E - NaHSO4	App IV	hoppilly include.	Contain (Ch.	6020A, 74 28D - Ani 28D - Ani 22G - Ani Calc - TD TES PH	A3000-00-00-00-00-00-00-00-00-00-00-00-00		0	-0			81818			XXXXXXX ON Need S 1, 16 F 11.	200	Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)	Special Instructions/QC Requirements:  Nonths	ine:			Company
Sampler. Phone. TAT Req TAT Re		tral/	2 100 828 061	Due Date Requested:	TAT Requested (days):	AS AS		(ON 30	(Mes (	a - A07.	Sample Matrix 6020A, 7.	(C=Comp, O=versie/oil, 0 C C C C C C C C C C C C C C C C C C	Preservation Code: XX D N	12, 13,35 (	121 0930 6 (	1210	1210 6	1300 G	121 1010 G	1140	1335 G		Radiological		Date: Tin	CI 147C Company INC	Company	Date/Time: Company Received by

Eurofins TestAmerica, Denver

4955 Yarrow Street Arvada, CO 80002 Phone: 303-736-0100 Fax: 303-431-7171	120	hain of	Chain of Custody Record	y Reco	rd	ı				🔆 euronns	Environment Testing America
ormation (Sub Contract Lab)	Sampler			Lab PM Harrington, Danielle M	Danielle	Σ		Carrier Tracking No(s)	No(s):	COC No: 280-565245.1	
	Phane:			E-Mail: Danielle. Harrington@Eurofinset.com	rrington	@Euro		State of Origin: Colorado		Page: Page 1 of 1	
Сотралу. TestAmerica Laboratories, Inc.				Accredita NELAF	Accreditations Required (See note) NELAP - Oregon	Juired (S	ee note):			Job #: 280-147818-1	
Address. 4101 Shuffel Street NW,	Due Date Requeste 5/13/2021	ted:					Analysis Requested	uested		ρος	
City North Canton State, Zip. Cut 4720	TAT Requested (days):	ys):								B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4	m - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3
Phone 330-497-9396(Tel) 330-497-0772(Fax)	# Od			(4	ou cell)					7	R - Na2S203 S - H2S04 T - TSP Dodecabydrate
1	#OM				oisilloo				S	I · Ice J · DI Water	U - Acetone V - MCAA
Project Name: Xcel Energy GW CCR Monitoring - Cherokee	Project #: 28014371				ials (wid	rcury			neriistr	K - EDTA L - EDA	W - pH 4-5 Z - other (specify)
Site: Xcel Energy CCR - Cherokee Station	SSOW#:					eM qer			of con	Other:	
			Sample (wwwster, Sasobid, C=comp, O=wester)eit.	주 후 후 후 후 benetiii ble brethim MSM	20A/3005A 13	9_A014T\A0T			Tedmuk late		16
Sample Identification - Client ID (Lab ID)	Sample Date	Time	G=grab)   BT=Tissue, A=Air) Preservation Code:	ij×		74			01 X		Special Instructions/Note:
MW-13 (280-147818-1)	4/21/21	_	Water	ei	×	×			4	Use Collision Cell	
MW-15 (280-147818-2)	4/22/21	09:30 Mountain	Water	-ie	×	×			4	Use Collision Cell	
MW-10 (280-147818-3)	4/22/21	12:10 Mountain	Water	ē	×	×			4	Use Collision Cell	
MW-10-FD (280-147818-4)	4/22/21	12:10 Mountain	Water	er	×	×			4	Use Collision Cell	
MW-10-EB (280-147818-5)	4/22/21	13:00 Mountain	Water	er	×	×			4	Use Collision Cell	
MW-17 (280-147818-6)	4/23/21	10:10 Mountain	Water	er	×	×			4	Use Collision Cell	
MW-16 (280-147818-7)	4/23/21	11:40 Mountain	Water	eľ	×	×			4	Use Collision Cell	
MW-7 (280-147818-8)	4/23/21	13:35 Mountain	Water	e	×	×			4	Use Collision Cell	
Note: Since laboratory accreditations are subject to change. Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin issed above for analysis/lests/mainx being analyzed, the samples must be shipped back to the Eurofins TestAmerica alternion in the State of Origin issed above for analyzed. The samples must be shipped back to the Eurofins TestAmerica alternion immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.	a places the ownership being analyzed, the sa date, return the signed	of method, analyl mples must be shi Chain of Custody	e & accreditation copped back to the E attesting to said co	ompliance upon urofins TestAme mplicance to Eu	out subco	ntract la atory or tAmerica	boratories. This sampl other instructions will but	e shipment is fo	rwarded under chain-c	of-custody. If the laborate	ory does not currently ught to Eurofins
Possible Hazard Identification				San	nple Di	le Disposal (A f	( A fee may be as	assessed if sam	amples are retain	Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)    Patring To Client   Disposal But as   Archive For Mare	nonth)
Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliverable Rank: 4	ible Rank: 4		Spe	cial Ins	ruction	Requirem	ts:			
Empty Kit Relinquished by:		Date:		Time:				Method o	Method of Shipment:		
Relinquished by Bury Bury	Date/Tigne / 1/20/21	1305	Company		Report	A.	H.		7-2	21 1810	Company
Relinguishe¢tby	Date/Time		Company		Received by	p).			Date/Time:		Company
ı	Date/Time:		Company	,	Received by	by:			Date/Time:		Company
Custody Seals Intact: Custody Seal No.: △ Yes △ No					Cooler Te	mperatu	Cooler Temperature(s) °C and Other Remarks	narks:			
											Ver: 11/01/2020

k		

Eurofins TestAmerica Canton Sample Receipt Form/Narrative Canton Facility	Login # :
Client ETA Site Name	Cooler unpacked by:
Cooler Received on 4-27-21 Opened on 4-27-21	Moth
FedEx: 1st Grd fixp UPS FAS Clipper Client Drop Off TestAmerica Courier	Other
Receipt After-hours: Drop-off Date/Time Storage Location	
TestAmerica Cooler # Foam Box Client Cooler Box Other	
COOLANT: Wethe Blue Ice Dry Ice Water None	
1. Cooler temperature upon receipt IR GUN# IR-11 (CF +0.1 °C) Observed Cooler Tempo °C Corrected Cooler IR GUN #IR-12 (CF +0.2 °C) Observed Cooler Tempo °C Corrected Cooler	Temp. <u>5 .                                  </u>
-Were the seals on the outside of the cooler(s) signed & dated?  -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?  -Were tamper/custody seals intact and uncompromised?  3. Shippers' packing slip attached to the cooler(s)?  4. Did custody papers accompany the sample(s)?  5. Were the custody papers relinquished & signed in the appropriate place?  6. Was/were the person(s) who collected the samples clearly identified on the COC?  7. Did all bottles arrive in good condition (Unbroken)?  8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?  9. For each sample, does the COC specify preservatives (YAR), # of containers (YAR), and sate the correct bottle(s) used for the test(s) indicated?  11. Sufficient quantity received to perform indicated analyses?  12. Are these work share samples and all listed on the COC?  If yes, Questions 13-17 have been checked at the originating laboratory.  13. Were all preserved sample(s) at the correct pH upon receipt?  14. Were VOAs on the COC?  15. Were air bubbles >6 mm in any VOA vials?  16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	No No No No no property of grab/comp(Y/N) No
Contacted PM by via Verbal V	oice Mail Other
Concerning	
18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES	Samples processed by:
19. SAMPLE CONDITION	ing time had avaised
Sample(s) were received after the recommended hold	ing time nad expired.
Sample(s) were received with bubble >6 mm is	
Sample(3) were received with buodle >0 limit	in Grameter. (190thly Fivi)
20. SAMPLE PRESERVATION	
Sample(s) were fur Time preserved: Preservative(s) added/Lot number(s):	ther preserved in the laboratory.
VOA Sample Preservation - Date/Time VOAs Frozen:	

WI-NC-099

Ver: 11/01/2020

13 14

& eurofins Environment Testing

 $\mathcal{O}(\mathcal{A}|\mathcal{G})$  Chain of Custody Record

Eurofins TestAmerica, Denver

Phone: 303-736-0100 Fax: 303-431-7171

4955 Yarrow Street Arvada, CO 80002

0 - ANNaO2 P - Na2O4S Q - Na2SO3 R - Na2SO3 S - H2SO4 T - TSP Dodecahydrate U - Acetone Note: Since laboratory accretiations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratory accretiations are subject to change, Eurofins TestAmerica places the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica. Special Instructions/Note: W - pH 4-5 Z - other (spe V - MCAA 361) Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)

Return To Client Disposal By Lab Archive For Mont Preservation Codes: G - Amchlor H - Ascorbic Acid Use Collision Cell 280-147818-1 COC No. 280-565339.1 A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH Page Page 1 of 1 I - Ice J - DI Water Total Number of containers Aethod of Shipment Carrier Tracking No(s) State of Origin: Colorado **Analysis Requested** Cooler Temperature(s) °C and Other Remarks: Special Instructions/QC Requirements V100/FILTRATION Mercury Danielle.Harrington@Eurofinset.com × 610C/FILTRATION (MOD) Copy Analytes Accreditations Required (See note)
NELAP - Oregon Return To Client × SISSON ET (GOM) NOITARTIIT/A0208 VT0A/7470A\_Prep Mercury × Lab PM: Harrington, Danielle M Received by: × × 5020A/3005A 13 T. Metals (w/collision cell) (oh to seY) QZM/ZM mtoheq BT=Tissue, A=Air) (Wrwater. S=solid, Orwaste/oil. Preservation Code: Matrix Water Company (C=comp, G=grab) Sample Type Primary Deliverable Rank: 4 Sample Mountain Time Date: TAT Requested (days): Due Date Requested: 5/13/2021 Sample Date 4/27/2 ( Date/Time 4/23/21 28014371 Date/Time # 0/ Deliverable Requested: I, II, III, IV, Other (specify) Client Information (Sub Contract Lab) Xcel Energy GW CCR Monitoring - Cherokee Custody Seals Intact: Custody Seal No.: Sample Identification - Client ID (Lab ID) 330-497-9396(Tel) 330-497-0772(Fax) Xcel Energy CCR - Cherokee Station Possible Hazard Identification TestAmerica Laboratories, Inc. Empty Kit Relinquished by: 4101 Shuffel Street NW MW-7 (280-147818-8) Shipping/Receiving elinquished by: City: North Canton Unconfirmed linquished by nduished by State, Zip. OH, 44720

A Yes A No

18. CHAIN OF CUSTODY & SAMPL	E DISCREPANCIES	additional next page	Samples processed by:				
			· · · · · · · · · · · · · · · · · · ·				
19. SAMPLE CONDITION							
Sample(s)	were received a	after the recommended hold	ling time had expired.				
Sample(s)		were received	d in a broken container.				
Sample(s)	were received with bubble >6 mm in diameter. (Notify PM)						
20. SAMPLE PRESERVATION							
Sample(s)Preservati		were fu	rther preserved in the laboratory.				
		0(0)					

WI-NC-099

Client: HDR Inc Job Number: 280-147818-1

Login Number: 147818 List Source: Eurofins TestAmerica, Denver

List Number: 1

Creator: Levegood, William D

ordator. Lovegood, william D		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# **Environment Testing America**

# **ANALYTICAL REPORT**

Eurofins TestAmerica, Denver 4955 Yarrow Street Arvada, CO 80002 Tel: (303)736-0100

Laboratory Job ID: 280-147818-2

Client Project/Site: Xcel Energy GW CCR Monitoring -

Cherokee

For:

HDR Inc 1670 Broadway Suite 3400 Denver, Colorado 80202

Attn: Molly Reeves

Authorized for release by:

5/25/2021 8:31:38 AM

Danielle Harrington, Project Manager II (303)736-0176

Danielle.Harrington@Eurofinset.com

.....LINKS .....

Review your project results through

Total Access

**Have a Question?** 



Visit us at: www.eurofinsus.com/Env The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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QC Association	15
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## **Definitions/Glossary**

Client: HDR Inc Job ID: 280-147818-2

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

#### Qualifiers

Rad

Qualifier **Qualifier Description** 

Result is less than the sample detection limit.

#### **Glossary**

Abbreviation These commonly used abbreviations may or may not be present in this report.

Listed under the "D" column to designate that the result is reported on a dry weight basis

Percent Recovery %R **CFL** Contains Free Liquid CFU Colony Forming Unit CNF Contains No Free Liquid

Duplicate Error Ratio (normalized absolute difference) **DER** 

Dil Fac **Dilution Factor** 

DL Detection Limit (DoD/DOE)

DL, RA, RE, IN Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample

DLC Decision Level Concentration (Radiochemistry)

Estimated Detection Limit (Dioxin) **EDL** LOD Limit of Detection (DoD/DOE) LOQ Limit of Quantitation (DoD/DOE)

MCL EPA recommended "Maximum Contaminant Level" MDA Minimum Detectable Activity (Radiochemistry) MDC Minimum Detectable Concentration (Radiochemistry)

MDL Method Detection Limit MLMinimum Level (Dioxin) MPN Most Probable Number Method Quantitation Limit MQL

NC Not Calculated

ND Not Detected at the reporting limit (or MDL or EDL if shown)

NEG Negative / Absent POS Positive / Present

**PQL Practical Quantitation Limit** 

**PRES** Presumptive QC **Quality Control** 

Relative Error Ratio (Radiochemistry) **RER** 

Reporting Limit or Requested Limit (Radiochemistry) RL

**RPD** Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin) **TEQ** Toxicity Equivalent Quotient (Dioxin)

Too Numerous To Count **TNTC** 

5/25/2021

#### **Case Narrative**

Client: HDR Inc Job ID: 280-147818-2

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Job ID: 280-147818-2

Laboratory: Eurofins TestAmerica, Denver

Narrative

#### **CASE NARRATIVE**

**Client: HDR Inc** 

**Project: Xcel Energy GW CCR Monitoring - Cherokee** 

Report Number: 280-147818-2

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

#### **RECEIPT**

The samples were received on 04/23/2021; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt were 3.8° C, 4.8° C, 4.8° C and 5.0° C.

#### RADIUM-226 (GFPC)- Method 9315

The following samples were prepared at a reduced aliquot due to Matrix: MW-15 and MW-7.

The method 9315 MS/MSD could not be performed, due to insufficient sample volume. Method precision and accuracy have been verified by the acceptable LCS/LCSD analysis data.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### RADIUM-228- Method 9320

The following samples were prepared at a reduced aliquot due to Matrix: MW-15 and MW-7.

The method 9320 MS/MSD could not be performed, due to insufficient sample volume. Method precision and accuracy have been verified by the acceptable LCS/LCSD analysis data.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### RADIUM-226/RADIUM-228 (GFPC)

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

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# **Detection Summary**

Client: HDR Inc Project/Site: Xcel Energy GW CCR Monitoring - Cherokee	Job ID: 280-147818-2
Client Sample ID: MW-13	Lab Sample ID: 280-147818-1
No Detections.	
Client Sample ID: MW-15	Lab Sample ID: 280-147818-2
No Detections.	
Client Sample ID: MW-10	Lab Sample ID: 280-147818-3
No Detections.	
Client Sample ID: MW-10-FD	Lab Sample ID: 280-147818-4
No Detections.	
Client Sample ID: MW-10-EB	Lab Sample ID: 280-147818-5
No Detections.	
Client Sample ID: MW-17	Lab Sample ID: 280-147818-6
No Detections.	
Client Sample ID: MW-16	Lab Sample ID: 280-147818-7
No Detections.	
Client Sample ID: MW-7	Lab Sample ID: 280-147818-8
No Detections.	

5/25/2021

# **Method Summary**

Client: HDR Inc Job ID: 280-147818-2

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method	Method Description	Protocol	Laboratory
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

#### **Protocol References:**

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

#### Laboratory References:

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

# **Sample Summary**

Client: HDR Inc Job ID: 280-147818-2

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
280-147818-1	MW-13	Water	04/21/21 13:25	04/23/21 14:35	
280-147818-2	MW-15	Water	04/22/21 09:30	04/23/21 14:35	
280-147818-3	MW-10	Water	04/22/21 12:10	04/23/21 14:35	
280-147818-4	MW-10-FD	Water	04/22/21 12:10	04/23/21 14:35	
280-147818-5	MW-10-EB	Water	04/22/21 13:00	04/23/21 14:35	
280-147818-6	MW-17	Water	04/23/21 10:10	04/23/21 14:35	
280-147818-7	MW-16	Water	04/23/21 11:40	04/23/21 14:35	
280-147818-8	MW-7	Water	04/23/21 13:35	04/23/21 14:35	

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Client: HDR Inc Job ID: 280-147818-2

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Client Sample ID: MW-13	Lab Sample ID: 280-147818-1

Date Collected: 04/21/21 13:25 **Matrix: Water** 

Date Received: 04/23/21 14:35

Date Received.	J-7/20/21 14:0		Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.415		0.163	0.168	1.00	0.174	pCi/L	04/30/21 09:15	05/24/21 11:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.3		40 - 110					04/30/21 09:15	05/24/21 11:46	1

**Client Sample ID: MW-15** Lab Sample ID: 280-147818-2 Date Collected: 04/22/21 09:30

Date Received: 04	/23/21 14:35								
		Count	Total						
		Uncert.	Uncert.						
Analyte	Result Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0571 U	0.0832	0.0834	1.00	0.142	pCi/L	04/30/21 09:15	05/24/21 11:46	1
Carrier	%Yield Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	91.5	40 - 110					04/30/21 09:15	05/24/21 11:46	1

Client Sample ID: MW-10 Lab Sample ID: 280-147818-3 **Matrix: Water** 

Date Collected: 04/22/21 12:10

Date Received: 04/23/21 14:35

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0825	U	0.0857	0.0860	1.00	0.136	pCi/L	04/30/21 09:15	05/24/21 11:46	1
Carrier Ba Carrier	% <b>Yield</b> 92.1	Qualifier	<b>Limits</b> 40 - 110					<b>Prepared</b> 04/30/21 09:15	Analyzed 05/24/21 11:46	Dil Fac

Client Sample ID: MW-10-FD Lab Sample ID: 280-147818-4 **Matrix: Water** 

Date Collected: 04/22/21 12:10

Date Received: 04	/23/21 14:3	55	Count Uncert.	Total Uncert.					
Analyte Radium-226	0.0763	Qualifier U	(2σ+/-) 0.0847	(2σ+/-) 0.0850	1.00	MDC 0.137	 Prepared 04/30/21 09:15	Analyzed 05/24/21 11:46	Dil Fac
Carrier Ba Carrier	% <b>Yield</b> 95.8	Qualifier	Limits 40 - 110				<b>Prepared</b> 04/30/21 09:15	Analyzed 05/24/21 11:46	Dil Fac

Client Sample ID: MW-10-EB Lab Sample ID: 280-147818-5 **Matrix: Water** 

Date Collected: 04/22/21 13:00

Date Received: 04	/23/21 14:3	5								
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0188	U	0.0569	0.0570	1.00	0.130	pCi/L	04/30/21 09:15	05/24/21 11:48	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.0		40 - 110					04/30/21 09:15	05/24/21 11:48	1

Eurofins TestAmerica, Denver

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**Matrix: Water** 

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# **Client Sample Results**

Client: HDR Inc Job ID: 280-147818-2

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: 9315 - Radium-226 (GFPC)

**Client Sample ID: MW-17** Lab Sample ID: 280-147818-6

Date Collected: 04/23/21 10:10 **Matrix: Water** 

Date Received: 04/23/21 14:35

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.177		0.101	0.102	1.00	0.130	pCi/L	04/30/21 09:15	05/24/21 11:48	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	91.5		40 - 110					04/30/21 09:15	05/24/21 11:48	1

**Client Sample ID: MW-16** Lab Sample ID: 280-147818-7 Date Collected: 04/23/21 11:40 **Matrix: Water** 

Date Received: 04/23/21 14:35

Date Neceived.	04/23/21 14:3		Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0449	U	0.0737	0.0738	1.00	0.128	pCi/L	04/30/21 09:15	05/24/21 11:48	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.8		40 - 110					04/30/21 09:15	05/24/21 11:48	1

Client Sample ID: MW-7 Lab Sample ID: 280-147818-8

Date Collected: 04/23/21 13:35 **Matrix: Water** 

Date Received: (	04/23/21 14:3	5								
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.235	U	0.202	0.204	1.00	0.307	pCi/L	04/30/21 09:15	05/24/21 11:48	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.6		40 - 110					04/30/21 09:15	05/24/21 11:48	1

Method: 9320 - Radium-228 (GFPC)

**Client Sample ID: MW-13** Lab Sample ID: 280-147818-1 **Matrix: Water** 

Date Collected: 04/21/21 13:25 Date Received: 04/23/21 14:35

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0425	U	0.299	0.299	1.00	0.530	pCi/L	04/30/21 09:58	05/19/21 13:36	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.3		40 - 110					04/30/21 09:58	05/19/21 13:36	1
Y Carrier	91.2		40 - 110					04/30/21 09:58	05/19/21 13:36	1

**Client Sample ID: MW-15** Lab Sample ID: 280-147818-2 Date Collected: 04/22/21 09:30 **Matrix: Water** 

Date Received:	04/23/21 14:3	5									
			Count	Total							
			Uncert.	Uncert.							
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac	
Radium-228	0.155	U	0.196	0.196	1.00	0.325	pCi/L	04/30/21 09:58	05/19/21 13:36	1	

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Client: HDR Inc Job ID: 280-147818-2

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

# Method: 9320 - Radium-228 (GFPC) (Continued)

Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fa
Ba Carrier	91.5		40 - 110					04/30/21 09:58	05/19/21 13:36	
Y Carrier	89.0		40 - 110					04/30/21 09:58	05/19/21 13:36	
Client Sample ID	: MW-10							Lab Sam	ple ID: 280-14	7818-
Date Collected: (	04/22/21 12:1	0							Matrix	
Date Received: 0	04/23/21 14:3	5								
			Count	Total						
			Uncert.	Uncert.						
Analyte		Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fa
Radium-228	-0.0270	U	0.166	0.166	1.00	0.312	pCi/L	04/30/21 09:58	05/19/21 13:37	
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fa
Ba Carrier	92.1		40 - 110					04/30/21 09:58	05/19/21 13:37	
Y Carrier	89.0		40 - 110					04/30/21 09:58	05/19/21 13:37	
Client Sample ID	: MW-10-FD							Lab Sam	ple ID: 280-14	7818-
Date Collected: (									Matrix	: Wate
Date Received: 0	04/23/21 14:3	5								
			Count	Total						
		_	Uncert.	Uncert.						
Analyte		Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC		Prepared	Analyzed	Dil Fa
Radium-228	0.381	U	0.249	0.251	1.00	0.384	pCı/L	04/30/21 09:58	05/19/21 13:37	
Carrier		Qualifier	Limits					Prepared	Analyzed	Dil Fa
Ba Carrier	95.8		40 - 110					04/30/21 09:58	05/19/21 13:37	
Y Carrier	90.8		40 - 110					04/30/21 09:58	05/19/21 13:37	
Client Sample ID	: MW-10-EB							Lab Sam	ple ID: 280-14	7818-
<b>Date Collected: 0</b>									Matrix	: Wate
Date Received: 0	04/23/21 14:3	5								
			Count	Total						
		_	Uncert.	Uncert.						
Analyte		Qualifier	(2σ+/-)	(2σ+/-)	RL		Unit	Prepared	Analyzed	Dil Fa
Radium-228	0.0479	U	0.193	0.193	1.00	0.340	pCi/L	04/30/21 09:58	05/19/21 13:37	
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fa
Ba Carrier	90.0		40 - 110					04/30/21 09:58	05/19/21 13:37	
Y Carrier	94.2		40 - 110					04/30/21 09:58	05/19/21 13:37	
Client Sample ID								Lab Sam	ple ID: 280-14	
Date Collected: 0									Matrix	: Wate
Date Received: 0	04/23/21 14:3	5		_						
			Count	Total						
			Uncert.	Uncert.				_		
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fa

Analyzed

04/30/21 09:58 05/19/21 13:37

04/30/21 09:58 05/19/21 13:37

04/30/21 09:58 05/19/21 13:37

Prepared

0.241

1.00

0.353 pCi/L

0.238

Limits

40 - 110

40 - 110

0.419

91.5

90.8

%Yield Qualifier

Radium-228

Carrier

Ba Carrier

Y Carrier

Dil Fac

Client: HDR Inc Job ID: 280-147818-2

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: 9320 - Radium-228 (GFPC)

**Client Sample ID: MW-16** Lab Sample ID: 280-147818-7

Date Collected: 04/23/21 11:40 **Matrix: Water** 

Date Received: 04/23/21 14:35

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.472		0.241	0.245	1.00	0.351	pCi/L	04/30/21 09:58	05/19/21 13:37	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.8		40 - 110					04/30/21 09:58	05/19/21 13:37	1
Y Carrier	90.1		40 - 110					04/30/21 09:58	05/19/21 13:37	1

Client Sample ID: MW-7 Lab Sample ID: 280-147818-8 **Matrix: Water** 

Date Collected: 04/23/21 13:35 Date Received: 04/23/21 14:35

Count Total Uncert. Uncert.

Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Radium-228 0.676 U 0.539 0.542 1.00 0.854 pCi/L 04/30/21 09:58 05/19/21 13:37

Carrier **%Yield Qualifier** Limits Prepared Analyzed Dil Fac 04/30/21 09:58 05/19/21 13:37 Ba Carrier 40 - 110 87.6 Y Carrier 89.7 40 - 110 04/30/21 09:58 05/19/21 13:37

Method: Ra226 Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: MW-13 Lab Sample ID: 280-147818-1 **Matrix: Water** 

Date Collected: 04/21/21 13:25

Date Received: 04/23/21 14:35

			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.458	U	0.341	0.343	5.00	0.530	pCi/L	_	05/24/21 16:07	1

**Client Sample ID: MW-15** Lab Sample ID: 280-147818-2 **Matrix: Water** 

Date Collected: 04/22/21 09:30 Date Received: 04/23/21 14:35

			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.212	U	0.213	0.213	5.00	0.325	pCi/L		05/24/21 16:07	1

**Client Sample ID: MW-10** Lab Sample ID: 280-147818-3 **Matrix: Water** 

Date Collected: 04/22/21 12:10 Date Received: 04/23/21 14:35

Date Hoodingal Chi										
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226	0.0555	U	0.187	0.187	5.00	0.312	pCi/L		05/24/21 16:07	1

+ 228

Job ID: 280-147818-2

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

# Method: Ra226 Ra228 - Combined Radium-226 and Radium-228

Count

Client Sample ID: MW-10-FD Lab Sample ID: 280-147818-4

Date Collected: 04/22/21 12:10 **Matrix: Water** 

Date Received: 04/23/21 14:35

Client: HDR Inc

ı				Count	IUlai						
				Uncert.	Uncert.						
	Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Combined Radium	0.458		0.263	0.265	5.00	0.384	pCi/L		05/24/21 16:07	1
	226 + 228										

Total

Client Sample ID: MW-10-EB Lab Sample ID: 280-147818-5

Date Collected: 04/22/21 13:00 **Matrix: Water** 

Date Received: 04/23/21 14:35

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0291	U	0.201	0.201	5.00	0.340	pCi/L		05/24/21 16:07	1

**Client Sample ID: MW-17** Lab Sample ID: 280-147818-6

Date Collected: 04/23/21 10:10 **Matrix: Water** 

Date Received: 04/23/21 14:35

			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.596		0.259	0.262	5.00	0.353	pCi/L		05/24/21 16:07	1

**Client Sample ID: MW-16** Lab Sample ID: 280-147818-7 **Matrix: Water** 

Date Collected: 04/23/21 11:40 Date Received: 04/23/21 14:35

Count Total Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac **Combined Radium** 0.517 0.252 0.256 5.00 0.351 pCi/L 05/24/21 16:07

Client Sample ID: MW-7 Lab Sample ID: 280-147818-8

Date Collected: 04/23/21 13:35 **Matrix: Water** 

Date Received: 04/23/21 14:35

			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium	0.912		0.576	0.579	5.00	0.854	pCi/L		05/24/21 16:07	1

Total

Count

226 + 228

226 + 228

Client: HDR Inc Job ID: 280-147818-2

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-507835/23-A

**Matrix: Water** 

**Analysis Batch: 511401** 

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 507835

MB MB Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac Radium-226 0.03151 U 0.0636 0.0636 1.00 0.116 pCi/L 04/30/21 09:15 05/24/21 11:48

Total

MB

Carrier **%Yield Qualifier** Limits Prepared Analyzed Dil Fac Ba Carrier 87.6 40 - 110 04/30/21 09:15 05/24/21 11:48

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 507835

Lab Sample ID: LCS 160-507835/1-A **Matrix: Water** 

**Analysis Batch: 511399** 

Total LCS LCS %Rec. **Spike** Uncert. Analyte Added Result Qual  $(2\sigma + / -)$ RL %Rec Limits MDC Unit Radium-226 11.3 10.97 1.16 1.00 0.139 pCi/L 75 - 125

Count

LCS LCS Carrier %Yield Qualifier Limits Ba Carrier 95.2 40 - 110

Lab Sample ID: LCSD 160-507835/2-A

**Matrix: Water** 

**Analysis Batch: 511399** 

**Client Sample ID: Lab Control Sample Dup** 

Prep Type: Total/NA

Prep Batch: 507835

Total LCSD LCSD %Rec. **RER** Spike Uncert. %Rec Analyte Added  $(2\sigma + / -)$ RL **MDC** Unit Limits Result Qual RER Limit Radium-226 11.3 1.15 1.00 0.129 pCi/L 96 75 - 125 0.05 10.86

LCSD LCSD Carrier %Yield Qualifier Limits Ba Carrier 91.2 40 - 110

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-507838/23-A

**Matrix: Water** 

Analysis Batch: 510517

Client Sample ID: Method Blank Prep Type: Total/NA

Prep Batch: 507838

MB MB Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Dil Fac Analyzed Radium-228 0.05595 Ū 0.234 0.234 1.00 0.411 pCi/L 04/30/21 09:58 05/19/21 13:37

Total

Count

MB MB

Carrier %Yield Qualifier Limits Prepared Dil Fac Analyzed Ba Carrier 87.6 40 - 110 04/30/21 09:58 05/19/21 13:37 40 - 110 Y Carrier 91.2 04/30/21 09:58 05/19/21 13:37

Eurofins TestAmerica, Denver

5/25/2021

# **QC Sample Results**

Client: HDR Inc Job ID: 280-147818-2

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: 9320 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-507838/1-A

**Matrix: Water** 

**Analysis Batch: 510474** 

**Client Sample ID: Lab Control Sample** Prep Type: Total/NA

Prep Batch: 507838

Total LCS LCS %Rec. Spike Uncert. %Rec Analyte Added Result Qual  $(2\sigma + / -)$ RL**MDC** Unit Limits Radium-228 9.71 8.976 1.05 1.00 0.371 pCi/L 75 - 125

LCS LCS

Carrier	%Yield	Qualifier	Limits
Ba Carrier	95.2		40 - 110
Y Carrier	89.7		40 - 110

Lab Sample ID: LCSD 160-507838/2-A **Client Sample ID: Lab Control Sample Dup** 

**Matrix: Water** 

Analysis Batch: 510474

Total

Prep Type: Total/NA

Prep Batch: 507838

**Spike** LCSD LCSD Uncert. Analyte Added Result Qual Radium-228 9.71 8.027

 $(2\sigma + / -)$ 0.971

RL

1.00

**MDC** Unit 0.368 pCi/L 83

%Rec. %Rec Limits 75 - 125

**RER** Limit RER 0.47

LCSD LCSD

Carrier %Yield Qualifier Limits Ba Carrier 40 - 110 91.2 89.3 40 - 110 Y Carrier

# **QC Association Summary**

Client: HDR Inc Job ID: 280-147818-2

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

#### Rad

#### **Prep Batch: 507835**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-147818-1	MW-13	Total/NA	Water	PrecSep-21	
280-147818-2	MW-15	Total/NA	Water	PrecSep-21	
280-147818-3	MW-10	Total/NA	Water	PrecSep-21	
280-147818-4	MW-10-FD	Total/NA	Water	PrecSep-21	
280-147818-5	MW-10-EB	Total/NA	Water	PrecSep-21	
280-147818-6	MW-17	Total/NA	Water	PrecSep-21	
280-147818-7	MW-16	Total/NA	Water	PrecSep-21	
280-147818-8	MW-7	Total/NA	Water	PrecSep-21	
MB 160-507835/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-507835/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-507835/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

#### Prep Batch: 507838

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-147818-1	MW-13	Total/NA	Water	PrecSep_0	
280-147818-2	MW-15	Total/NA	Water	PrecSep_0	
280-147818-3	MW-10	Total/NA	Water	PrecSep_0	
280-147818-4	MW-10-FD	Total/NA	Water	PrecSep_0	
280-147818-5	MW-10-EB	Total/NA	Water	PrecSep_0	
280-147818-6	MW-17	Total/NA	Water	PrecSep_0	
280-147818-7	MW-16	Total/NA	Water	PrecSep_0	
280-147818-8	MW-7	Total/NA	Water	PrecSep_0	
MB 160-507838/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-507838/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-507838/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

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#### **Lab Chronicle**

Client: HDR Inc Job ID: 280-147818-2

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

**Client Sample ID: MW-13** 

Date Collected: 04/21/21 13:25 Date Received: 04/23/21 14:35

Lab Sample ID: 280-147818-1

**Matrix: Water** 

**Matrix: Water** 

Batch Batch Dil Initial Final Batch Prepared **Prep Type** Method **Factor Amount** Number or Analyzed Analyst Type Run **Amount** Lab Total/NA PrecSep-21 750.97 mL 507835 04/30/21 09:15 LAR TAL SL Prep 1.0 g Total/NA TAL SL 9315 511399 05/24/21 11:46 JCB Analysis 1 Total/NA Prep PrecSep 0 750.97 mL 1.0 g 507838 04/30/21 09:58 LAR TAL SL Total/NA 9320 TAL SL Analysis 1 510517 05/19/21 13:36 ANW Total/NA Analysis Ra226 Ra228 511413 05/24/21 16:07 FLC TAL SL 1

Client Sample ID: MW-15 Lab Sample ID: 280-147818-2

Date Collected: 04/22/21 09:30 Date Received: 04/23/21 14:35

Prep Type Total/NA Total/NA	Batch Type Prep Analysis	Batch Method PrecSep-21 9315	Run	Dil Factor	Initial Amount 1000.91 mL	Final Amount 1.0 g	Batch Number 507835 511399	Prepared or Analyzed 04/30/21 09:15 05/24/21 11:46		Lab TAL SL TAL SL
Total/NA Total/NA	Prep Analysis	PrecSep_0 9320		1	1000.91 mL	1.0 g	507838 510517	04/30/21 09:58 05/19/21 13:36		TAL SL TAL SL
Total/NA	Analysis	Ra226_Ra228		1			511413	05/24/21 16:07	FLC	TAL SL

Lab Sample ID: 280-147818-3 **Client Sample ID: MW-10** Date Collected: 04/22/21 12:10 **Matrix: Water** 

Date Received: 04/23/21 14:35

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.21 mL	1.0 g	507835	04/30/21 09:15	LAR	TAL SL
Total/NA	Analysis	9315		1			511399	05/24/21 11:46	JCB	TAL SL
Total/NA	Prep	PrecSep_0			1000.21 mL	1.0 g	507838	04/30/21 09:58	LAR	TAL SL
Total/NA	Analysis	9320		1			510517	05/19/21 13:37	ANW	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			511413	05/24/21 16:07	FLC	TAL SL

Client Sample ID: MW-10-FD Lab Sample ID: 280-147818-4

Date Collected: 04/22/21 12:10 Date Received: 04/23/21 14:35

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.96 mL	1.0 g	507835	04/30/21 09:15	LAR	TAL SL
Total/NA	Analysis	9315		1			511399	05/24/21 11:46	JCB	TAL SL
Total/NA	Prep	PrecSep_0			1000.96 mL	1.0 g	507838	04/30/21 09:58	LAR	TAL SL
Total/NA	Analysis	9320		1			510517	05/19/21 13:37	ANW	TAL SL
Total/NA	Analysis	Ra226 Ra228		1			511413	05/24/21 16:07	FLC	TAL SL

Page 16 of 23

**Matrix: Water** 

Client: HDR Inc Job ID: 280-147818-2

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Client Sample ID: MW-10-EB

Date Collected: 04/22/21 13:00 Date Received: 04/23/21 14:35 Lab Sample ID: 280-147818-5

Matrix: Water

**Matrix: Water** 

Batch Batch Dil Initial Batch Final Prepared Method Number or Analyzed **Prep Type** Type Run **Factor** Amount **Amount** Analyst Lab Total/NA PrecSep-21 999.16 mL 507835 04/30/21 09:15 LAR TAL SL Prep 1.0 g Total/NA 9315 511401 TAL SL Analysis 1 05/24/21 11:48 JCB Total/NA Prep PrecSep 0 999.16 mL 1.0 g 507838 04/30/21 09:58 LAR TAL SL Total/NA Analysis 9320 1 510517 05/19/21 13:37 ANW TAL SL Total/NA Analysis Ra226 Ra228 511413 05/24/21 16:07 FLC TAL SL 1

Client Sample ID: MW-17 Lab Sample ID: 280-147818-6

Date Collected: 04/23/21 10:10 Date Received: 04/23/21 14:35

_	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.48 mL	1.0 g	507835	04/30/21 09:15	LAR	TAL SL
Total/NA	Analysis	9315		1			511401	05/24/21 11:48	JCB	TAL SL
Total/NA	Prep	PrecSep_0			1000.48 mL	1.0 g	507838	04/30/21 09:58	LAR	TAL SL
Total/NA	Analysis	9320		1			510517	05/19/21 13:37	ANW	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			511413	05/24/21 16:07	FLC	TAL SL

Client Sample ID: MW-16

Date Collected: 04/23/21 11:40

Lab Sample ID: 280-147818-7

Matrix: Water

Date Received: 04/23/21 14:35

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.14 mL	1.0 g	507835	04/30/21 09:15	LAR	TAL SL
Total/NA	Analysis	9315		1			511401	05/24/21 11:48	JCB	TAL SL
Total/NA	Prep	PrecSep_0			1000.14 mL	1.0 g	507838	04/30/21 09:58	LAR	TAL SL
Total/NA	Analysis	9320		1			510517	05/19/21 13:37	ANW	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			511413	05/24/21 16:07	FLC	TAL SL

Client Sample ID: MW-7 Lab Sample ID: 280-147818-8

Date Collected: 04/23/21 13:35 Date Received: 04/23/21 14:35

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			500.50 mL	1.0 g	507835	04/30/21 09:15	LAR	TAL SL
Total/NA	Analysis	9315		1			511401	05/24/21 11:48	JCB	TAL SL
Total/NA	Prep	PrecSep_0			500.50 mL	1.0 g	507838	04/30/21 09:58	LAR	TAL SL
Total/NA	Analysis	9320		1			510517	05/19/21 13:37	ANW	TAL SL
Total/NA	Analysis	Ra226 Ra228		1			511413	05/24/21 16:07	FLC	TAL SL

**Laboratory References:** 

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Eurofins TestAmerica, Denver

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# **Accreditation/Certification Summary**

Client: HDR Inc Job ID: 280-147818-2

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

## Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-001	05-06-22
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-21
California	Los Angeles County Sanitation Districts	10259	06-30-21
California	State	2886	06-30-21
Connecticut	State	PH-0241	03-31-21 *
Florida	NELAP	E87689	06-30-21
HI - RadChem Recognition	State	n/a	06-30-21
Illinois	NELAP	004553	11-30-21
Iowa	State	373	12-01-22
Kansas	NELAP	E-10236	10-31-21
Kentucky (DW)	State	KY90125	01-01-22
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-21
Louisiana	NELAP	04080	06-30-21
Louisiana (DW)	State	LA011	12-31-21
Maryland	State	310	09-30-21
MI - RadChem Recognition	State	9005	06-30-21
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-21
New Jersey	NELAP	MO002	06-30-21
New York	NELAP	11616	04-01-22
North Dakota	State	R-207	06-30-21
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-21
Oregon	NELAP	4157	09-01-21
Pennsylvania	NELAP	68-00540	03-01-22
South Carolina	State	85002001	06-30-21
Texas	NELAP	T104704193	07-31-21
US Fish & Wildlife	US Federal Programs	058448	07-31-21
USDA	US Federal Programs	P330-17-00028	03-11-23
Utah	NELAP	MO000542019-11	07-31-21
Virginia	NELAP	10310	06-14-21
Washington	State	C592	08-30-21
West Virginia DEP	State	381	10-31-21

 $<sup>^{\</sup>star} \ \text{Accreditation/Certification renewal pending - accreditation/certification considered valid}.$ 

Chain of Custody  20 \$38 6065  Requested:  Requested:  Requested:  As AR  Sample (Type System)  C=Group, Company  11  21   305 C   4  22   310 C   6  22   32   6  23   140 C   6  24   140 C   6  25   6  26   7  27   140 C   6  27   140 C   6  27   140 C   6  28   140 C   6  28   140 C   6  28   140 C   6  29   140 C   6  20   140 C	Denvel setting #2000	Carrier	E-Mail:	Analysis Requested	Preservation Go	B. NaOH O. C. Ch. Accelete O. O. Wirric Acid	E - NaHSO4	App IV	hoppilly include.	Contain (Ch.	6020A, 74 28D - Ani 28D - Ani 22G - Ani Calc - TD TES PH	A3000-00-00-00-00-00-00-00-00-00-00-00-00		0	-0			81818			XXXXXXX ON Need S 1, 16 F 11.	200	Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)	Special Instructions/QC Requirements:  Nonths	ine:			Company
Sampler. Phone. TAT Req TAT Re		tral/	2 100 828 061	Due Date Requested:	TAT Requested (days):	AS AS		(ON 30	(Nes (	a - A07.	Sample Matrix 6020A, 7.	(C=Comp, O=versie/oil, 0 C C C C C C C C C C C C C C C C C C	Preservation Code: XX D N	12, 13,35 (	121 0930 6 (	1210	1210 6	1300 G	121 1010 G	1140	1335 G		Radiological		Date: Tin	CI 147C Company INC	Company	Date/Time: Company Received by

# Chain of Custody Record

**Eurofins TestAmerica, Denver** 

4955 Yarrow Street

eurofins Environment Testing America

Client Information (Sub Contract Lab)	Calibra											
lient Contact:				Harrin	Harrington, Danielle M	anielle l	5		Carrier Tracking No(s)	No(s):	COC No: 280-565246.	5.1
Snipping/Receiving	Phone:			E-Mail: Danie	lle.Harrir	ngton@	E-маі: Danielle.Harrington@Eurofinset.com		State of Origin: Colorado		Page Page 1 of 1	
Company. TestAmerica Laboratories, Inc.				2	vccreditatic	ons Requ Oregor	Accreditations Required (See note) NELAP - Oregon	(e)			Job #: 280-147818-	2
Address: 13715 Rider Trail North,	Due Date Requested 5/14/2021	:pe					₹	Analysis Reguested	uested		Preservation Codes:	18
City	TAT Requested (days):	ays):				F	F				A - HCL	
Earth City State, Zp: MO, 63045	T				ans						C - Zn Acetate D - Nitric Acid	n - None O - AsNaO2 P - Na2O4S O - Na2SO3
Phone. 314-298-8566(Tel) 314-298-8757(Fax)	#Od						poqı				F - MeOH G - Amchlor	
Email:	:#OM				(0)	_	eM lso					
Project Name: Xcel Energy GW CCR Monitoring - Cherokee	Project #: 28014371				N 10 86		op) ro				k - EDTA	W - pH 4-5 Z - other (specif
Sile: Xcel Energy CCR - Cherokee Station	SSOW#:				SD (Y		.bC\ (W				os con	
Sample Identification - Client ID (Lab ID)	Sample Date	Sample (C	Sample Type (C=comp, o	Matrix (W=water, S=solid, O=wastefoll,	benefiii bleii MISM mnofhe Bigsss 2156	9315_Ra226/Pre 9320_Ra228/Pre	7528R3228_GF				otal Number o	
			O F		X	-						Special illstructions/Note.
MW-13 (280-147818-1)	4/21/21		-	Water	×	×	×				2	
MW-15 (280-147818-2)	4/22/21	09:30 Mountain		Water	×	×	×				2	
MW-10 (280-147818-3)	4/22/21	12:10 Mountain		Water	×	×	×				2	
MW-10-FD (280-147818-4)	4/22/21	12:10 Mountain		Water	×	×	×				2	
MW-10-EB (280-147818-5)	4/22/21	13:00 Mountain		Water	×	×	×			,	2	
MW-17 (280-147818-6)	4/23/21	10:10 Mountain		Water	×	×	×			\	2	
MW-16 (280-147818-7)	4/23/21	11:40 Mountain		Water	×	×	×			ì	2	
MW-7 (280-147818-8)	4/23/21	13:35 Mountain		Water	×	×	×				2	
Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/lests/maintx being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica.	America places the ownershi matrix being analyzed, the scrent to date, return the signed	p of method, analy amples must be sh	te & accreditati	on compliance	e upon out	t subconti a laborato ns TestAr	ract laborate bry or other in	ries. This sampl	shipment is form	varded under ch	ain-of-custody. If the	laboratory does not curr be brought to Eurofins
Possible Hazard Identification					Samp	le Disp	osal (A)	ee may be as	sessed if sar	nples are re	Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)	an 1 month)
Unconfirmed Deliverable Boomestad   1   11   17 Other (coords)	-					Return	Return To Client		Disposal By Lab		Archive For	Months
anyelabre requested: 1, 11, 11, Ourer (specify)	rimary Delivera	able Kank: 4			Specie	al Instru	ictions/Q(	Special Instructions/QC Requirements:	.;;			
Empty Kit Relinquished by:		Date:			Time:				Method of Shipment	shipment:		
Kelinquished by Shall And Day	V/2C/U	100	Con	Company	Re	Received by	FED EX	置		Date/Time:		Company
FED EX	Oate/ Line:		5	Company	, Re	Received by	(M)	`}		Date/Time: 4   2 > 12	0260	Company E TA ST
- 1	Date/Time:		Con	Сотрапу	B	Received by	<b>b</b>			Date/Time.		
Custody Seals Intact: Custody Seal No.:  A Yes A No					Ö	oler Tem	perature(s)	Cooler Temperature(s) °C and Other Remarks.	arks:			

Client: HDR Inc Job Number: 280-147818-2

Login Number: 147818 List Source: Eurofins TestAmerica, Denver

List Number: 1

Creator: Levegood, William D

Creator: Levegood, William D		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Client: HDR Inc Job Number: 280-147818-2

Login Number: 147818

List Number: 2

Creator: Worthington, Sierra M

List Source: Eurofins TestAmerica, St. Louis List Creation: 04/27/21 12:28 PM

Creator: Worthington, Sierra M		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested	True	

True

True

True

N/A

**Eurofins TestAmerica, Denver** 

MS/MSDs

<6mm (1/4").

Multiphasic samples are not present.

Residual Chlorine Checked.

Samples do not require splitting or compositing.

Containers requiring zero headspace have no headspace or bubble is

# **Tracer/Carrier Summary**

Client: HDR Inc Job ID: 280-147818-2

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: 9315 - Radium-226 (GFPC)

**Matrix: Water Prep Type: Total/NA** 

			Percent Yield (Acceptance Limits)
		Ва	
Lab Sample ID	Client Sample ID	(40-110)	
280-147818-1	MW-13	87.3	
280-147818-2	MW-15	91.5	
280-147818-3	MW-10	92.1	
280-147818-4	MW-10-FD	95.8	
280-147818-5	MW-10-EB	90.0	
280-147818-6	MW-17	91.5	
280-147818-7	MW-16	94.8	
280-147818-8	MW-7	87.6	
_CS 160-507835/1-A	Lab Control Sample	95.2	
_CSD 160-507835/2-A	Lab Control Sample Dup	91.2	
MB 160-507835/23-A	Method Blank	87.6	
Tracer/Carrier Legend	I		

Method: 9320 - Radium-228 (GFPC)

**Matrix: Water** Prep Type: Total/NA

				Percent Yield (Acceptance Limits)
		Ва	Υ	
Lab Sample ID	Client Sample ID	(40-110)	(40-110)	
280-147818-1	MW-13	87.3	91.2	
280-147818-2	MW-15	91.5	89.0	
280-147818-3	MW-10	92.1	89.0	
280-147818-4	MW-10-FD	95.8	90.8	
280-147818-5	MW-10-EB	90.0	94.2	
280-147818-6	MW-17	91.5	90.8	
280-147818-7	MW-16	94.8	90.1	
280-147818-8	MW-7	87.6	89.7	
LCS 160-507838/1-A	Lab Control Sample	95.2	89.7	
LCSD 160-507838/2-A	Lab Control Sample Dup	91.2	89.3	
MB 160-507838/23-A	Method Blank	87.6	91.2	

Ba = Ba Carrier

Y = Y Carrier

Page 23 of 23



# **Environment Testing America**

# **ANALYTICAL REPORT**

Eurofins TestAmerica, Denver 4955 Yarrow Street Arvada, CO 80002 Tel: (303)736-0100

Laboratory Job ID: 280-149667-1

Client Project/Site: Xcel Energy GW CCR Monitoring -

Cherokee

For:

HDR Inc 1670 Broadway Suite 3400 Denver, Colorado 80202

Attn: Molly Reeves

Savielle Harrison

Authorized for release by: 6/28/2021 8:45:11 AM

Danielle Harrington, Project Manager II (303)736-0176

Danielle.Harrington@Eurofinset.com

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The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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# **Definitions/Glossary**

Client: HDR Inc Job ID: 280-149667-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

#### **Qualifiers**

M	eta	ls
•••	Ctu	•

Qualifier Qualifier Description

Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

#### **General Chemistry**

Qualifier	Qualifier Description
^+	Continuing Calibration Verification (CCV) is outside acceptance limits, high biased.
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

#### **Glossary**

LOD

MQL

Ciossaiy	
Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)

LOQ Limit of Quantitation (DoD/DOE)

MCL EPA recommended "Maximum Contaminant Level"

MDA Minimum Detectable Activity (Radiochemistry)

MDC Minimum Detectable Concentration (Radiochemistry)
MDL Method Detection Limit
ML Minimum Level (Dioxin)
MPN Most Probable Number

Method Quantitation Limit

Limit of Detection (DoD/DOE)

NC Not Calculated

ND Not Detected at the reporting limit (or MDL or EDL if shown)

NEG Negative / Absent POS Positive / Present

PQL Practical Quantitation Limit

PRES Presumptive
QC Quality Control

RER Relative Error Ratio (Radiochemistry)

RL Reporting Limit or Requested Limit (Radiochemistry)

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin)
TEQ Toxicity Equivalent Quotient (Dioxin)

TNTC Too Numerous To Count

6/28/2021

#### **Case Narrative**

Client: HDR Inc Job ID: 280-149667-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Job ID: 280-149667-1

Laboratory: Eurofins TestAmerica, Denver

**Narrative** 

#### **CASE NARRATIVE**

**Client: HDR Inc** 

**Project: Xcel Energy GW CCR Monitoring - Cherokee** 

Report Number: 280-149667-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

#### **RECEIPT**

The samples were received on 06/10/2021; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 17.3 C, which is above the EPA's recommended temperature of 6C. However, the sample is considered acceptable as it was received the same day as collection.

Please note, 1 of 2 500ml nitric containers has no label. Sample ID/date/time is written on lid of container. The sample was logged per the chain of custody.

Please note, the RAD analysis is reported under login 280-149667-2.

#### **DISSOLVED METALS- Method 6010C/6020A**

The accuracy and precision of the Boron MS/MSD performed on a laboratory generated sample could not be reliably evaluated, as the concentrations present in the parent sample were 4 times greater than the matrix spike concentration. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

The accuracy and precision of the Calcium and Lithium MS/MSD performed on a laboratory generated sample could not be reliably evaluated, as the concentrations present in the parent sample were 4 times greater than the matrix spike concentration. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### TOTAL RECOVERABLE METALS- Method 6010C/6020A

Thallium was detected in method blank MB 240-490510/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. Because the concentration in the method blank is not present at a level greater than the reporting limit, corrective action is deemed unnecessary.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### **DISSOLVED MERCURY**

Laboratory generated MS/MSD analysis data have been provided. The MS/MSD for method 7470A Dissolved Mercury exhibited spike compound recoveries outside the QC limits. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

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#### **Case Narrative**

Client: HDR Inc Job ID: 280-149667-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Job ID: 280-149667-1 (Continued)

Laboratory: Eurofins TestAmerica, Denver (Continued)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### **TOTAL MERCURY**

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### **GENERAL CHEMISTRY- VARIOUS**

Sample MW-14 required a dilution or prepped at a dilution prior to various analysis. The reporting limits have been adjusted accordingly.

Please note that the recoveries, for the Chloride laboratory generated MS/MSD, are within QC limits; however, these are estimated values as the concentrations exceeded the calibration range. Method precision and accuracy has been verified by the acceptable LCS/LCSD analysis data; therefore, corrective action is deemed unnecessary.

The continuing calibration verification (CCV) associated with batch 280-541068 recovered above the upper control limit for Fluoride. The samples associated with this CCV were non-detects for the affected analytes; therefore, corrective action is deemed unnecessary.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

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# **Detection Summary**

Client: HDR Inc Job ID: 280-149667-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

# Client Sample ID: MW-14

# Lab Sample ID: 280-149667-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.0		0.10	0.057	mg/L	1	_	6010C	Total
									Recoverable
Boron	1100		100		ug/L	1		6010C	Dissolved
Arsenic	0.0019	J	0.0050	0.00075	mg/L	1		6020A	Total
									Recoverabl
Barium	0.10		0.0050	0.0022	mg/L	1		6020A	Total
0.1.	0.40		4.0	0.50	,			00004	Recoverabl
Calcium	210		1.0	0.58	mg/L	1		6020A	Total Recoverabl
Chromium	0.014		0.0020	0.0025	ma/l	1		6020A	Total
Chroman	0.014		0.0020	0.0025	mg/L	'		0020A	Recoverabl
Cobalt	0.0022		0.0010	0.00019	ma/l	1		6020A	Total
	0.0022		0.00.0	0.000.0	9/=	·		00207.	Recoverabl
Lead	0.0041		0.0010	0.00045	mg/L	1		6020A	Total
					-				Recoverab
Lithium	0.080		0.0080	0.0017	mg/L	1		6020A	Total
									Recoverabl
Molybdenum	0.021		0.010	0.0011	mg/L	1		6020A	Total
	2 244		0.0050	0.00000	,			22224	Recoverabl
Selenium	0.011		0.0050	0.00089	mg/L	1		6020A	Total
Arsenic	0.81	1	5.0	0.75	ug/L	1		6020A	Recoverabl Dissolved
Barium	43	J	5.0					6020A	Dissolved
Calcium	210000		1000		ug/L ug/L	1		6020A	Dissolved
					U	· ·			
Cobalt	0.42	J	1.0		ug/L	1		6020A	Dissolved
Molybdenum	19		5.0		ug/L	1		6020A	Dissolved
Selenium	11		5.0		ug/L	1		6020A	Dissolved
Lithium	81		8.0		ug/L	1		6020A	Dissolved
pH adj. to 25 deg C	7.3		0.1		SU	1		9040B	Total/NA
Temperature	20.9	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	420		60	20	mg/L	20		9056A	Total/NA
Sulfate	370		100	21	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	1600		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	46		4.0	1 1	mg/L	1		SM 2540D	Total/NA

This Detection Summary does not include radiochemical test results.

6/28/2021

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# **Method Summary**

Client: HDR Inc Job ID: 280-149667-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
'470A	Mercury (CVAA)	SW846	TAL CAN
9040B	рН	SW846	TAL DEN
056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL DEN
8005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN
'470A	Preparation, Mercury	SW846	TAL CAN
FILTRATION	Sample Filtration	None	TAL CAN

#### **Protocol References:**

None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

#### Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396 TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

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# **Sample Summary**

Client: HDR Inc Job ID: 280-149667-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
280-149667-1	MW-14	Water	06/10/21 14:45	06/10/21 16:00	

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# Client Sample Results

Client: HDR Inc Job ID: 280-149667-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: 6010C - Metals (ICP) - Total Recoverable

Client Sample ID: MW-14 Lab Sample ID: 280-149667-1 **Matrix: Water** 

Date Collected: 06/10/21 14:45 Date Received: 06/10/21 16:00

RL **MDL** Unit Dil Fac Analyte Result Qualifier Prepared Analyzed 0.10 0.057 mg/L 06/14/21 14:00 06/15/21 14:19 Boron 1.0

Method: 6010C - Metals (ICP) - Dissolved

Client Sample ID: MW-14 Lab Sample ID: 280-149667-1

Date Collected: 06/10/21 14:45 Date Received: 06/10/21 16:00

Analyte Result Qualifier RL **MDL** Unit **Prepared** Analyzed Dil Fac 57 ug/L Boron 100 06/14/21 14:00 06/15/21 14:36 1100

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: MW-14 Lab Sample ID: 280-149667-1 Date Collected: 06/10/21 14:45 **Matrix: Water** 

Date Received: 06/10/21 16:00 Analyte Result Qualifier **MDL** Unit Dil Fac RL Prepared Analyzed Antimony ND 0.0020 0.00057 mg/L 06/14/21 14:00 06/17/21 22:15 **Arsenic** 0.0019 0.0050 0.00075 mg/L 06/14/21 14:00 06/17/21 22:15 0.0050 0.0022 mg/L 06/14/21 14:00 06/17/21 22:15 **Barium** 0.10 Beryllium ND 0.0010 0.00062 mg/L 06/14/21 14:00 06/17/21 22:15 Cadmium ND 0.0010 0.00020 mg/L 06/14/21 14:00 06/17/21 22:15 **Calcium** 210 1.0 0.58 mg/L 06/14/21 14:00 06/17/21 22:15 **Chromium** 0.0020 0.0025 mg/L 06/14/21 14:00 06/17/21 22:15 0.014 0.0010 0.00019 mg/L 06/14/21 14:00 06/17/21 22:15 Cobalt 0.0022 Lead 0.0041 0.0010 0.00045 mg/L 06/14/21 14:00 06/17/21 22:15 Lithium 0.0080 0.0017 mg/L 06/14/21 14:00 06/18/21 12:58 0.080 06/14/21 14:00 06/17/21 22:15 0.0011 mg/L Molybdenum 0.021 0.010 0.00089 mg/L Selenium 0.011 0.0050 06/14/21 14:00 06/17/21 22:15 06/14/21 14:00 06/17/21 22:15 Thallium 0.00020 mg/L ND 0.0010

Method: 6020A - Metals (ICP/MS) - Dissolved

Client Sample ID: MW-14 Lab Sample ID: 280-149667-1 Date Collected: 06/10/21 14:45 **Matrix: Water** 

Date Received: 06/10/2 Analyte	1 16:00 Result Qual	ifier RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.81 J	5.0	0.75	ug/L		06/14/21 14:00	06/17/21 22:17	1
Barium	43	5.0	2.2	ug/L		06/14/21 14:00	06/17/21 22:17	1
Beryllium	ND	1.0	0.62	ug/L		06/14/21 14:00	06/17/21 22:17	1
Calcium	210000	1000	580	ug/L		06/14/21 14:00	06/17/21 22:17	1
Cadmium	ND	1.0	0.20	ug/L		06/14/21 14:00	06/17/21 22:17	1
Cobalt	0.42 J	1.0	0.19	ug/L		06/14/21 14:00	06/17/21 22:17	1
Chromium	ND	5.0	2.5	ug/L		06/14/21 14:00	06/17/21 22:17	1
Molybdenum	19	5.0	1.1	ug/L		06/14/21 14:00	06/17/21 22:17	1
Lead	ND	1.0	0.45	ug/L		06/14/21 14:00	06/17/21 22:17	1
Antimony	ND	2.0	0.57	ug/L		06/14/21 14:00	06/17/21 22:17	1
Selenium	11	5.0	0.89	ug/L		06/14/21 14:00	06/17/21 22:17	1
Lithium	81	8.0	1.7	ug/L		06/14/21 14:00	06/18/21 13:01	1
Thallium	ND	1.0	0.20	ug/L		06/14/21 14:00	06/17/21 22:17	1

Eurofins TestAmerica, Denver

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**Matrix: Water** 

# **Client Sample Results**

Client: HDR Inc Job ID: 280-149667-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-14 Lab Sample ID: 280-149667-1

Date Collected: 06/10/21 14:45

Date Received: 06/10/21 16:00

Matrix: Water

 Analyte
 Result
 Qualifier
 RL
 MDL
 Unit
 D
 Prepared
 Analyzed
 Dil Fac

 Mercury
 ND
 0.20
 0.13
 ug/L
 06/14/21 14:00
 06/15/21 12:13
 1

Method: 7470A - Mercury (CVAA) - Dissolved

Client Sample ID: MW-14

Date Collected: 06/10/21 14:45

Lab Sample ID: 280-149667-1

Matrix: Water

Date Received: 06/10/21 16:00

 Analyte
 Result
 Qualifier
 RL
 MDL ug/L
 Unit
 D of of 14/21 14:00
 Prepared of of 14/21 14:00
 Analyzed of of 15/21 12:19
 Dil Fac

**General Chemistry** 

Client Sample ID: MW-14

Lab Sample ID: 280-149667-1

Date Collected: 06/10/21 14:45

Matrix: Water

Date Received: 06/10/21 16:00

Analyte Result Qualifier RL MDL Unit Prepared Dil Fac Analyzed pH adj. to 25 deg C 7.3 HF 0.1 0.1 SU 06/14/21 13:47 **Temperature** 20.9 HF 1.0 1.0 Degrees C 06/14/21 13:47 Chloride 60 20 mg/L 06/25/21 00:30 20 420 Fluoride ND ^+ 10 3.3 mg/L 20 06/25/21 00:30 **Sulfate** 370 100 21 mg/L 06/25/21 23:45 20 **Total Dissolved Solids (TDS)** 1600 20 9.4 mg/L 06/17/21 09:52 **Total Suspended Solids** 46 4.0 1.1 mg/L 06/16/21 16:26

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Client: HDR Inc Job ID: 280-149667-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-490510/1-A

**Matrix: Water** 

Analyte

Analyte

Boron

Boron

Analysis Batch: 490849

Client Sample ID: Method Blank **Prep Type: Total Recoverable** 

**Prep Batch: 490510** 

MB MB Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac 0.10 06/14/21 14:00 06/15/21 12:27 ND 0.057 mg/L

Lab Sample ID: LCS 240-490510/2-A

**Matrix: Water** 

**Analysis Batch: 490849** 

Spike Added

RL

0.0050

0.0050

0.0010

0.0010

0.0020

0.0010

0.010

0.0080

0.0010

RL

0.0010

1.0

1.00

LCS LCS Result Qualifier 1.03

**MDL** Unit

0.00075 mg/L

0.0022 mg/L

0.00062 mg/L

0.00020 mg/L 0.58 mg/L

0.0025 mg/L

0.00019 mg/L 0.00045 mg/L

0.00057 mg/L

0.0011 mg/L

0.0017 mg/L

0.00089 mg/L

0.00020 mg/L

**MDL** Unit

0.00020 mg/L

Unit mg/L

D %Rec 103

n

Prepared

80 - 120

**Client Sample ID: Lab Control Sample** 

%Rec. Limits

**Prep Type: Total Recoverable** 

**Prep Batch: 490510** 

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-490510/1-A

**Matrix: Water** 

Chromium

Cobalt

Thallium

**Analysis Batch: 491097** 

MB MB

ND

ND

0.000599 J

MB MB

Analyte	Result	Qualifier
Arsenic	ND	
Barium	ND	
Beryllium	ND	
Cadmium	ND	
Calcium	ND	

Lead ND 0.0010 Antimony ND 0.0020 Molybdenum ND Lithium ND Selenium ND 0.0050

Lab Sample ID: MB 240-490510/1-A **Matrix: Water** 

Analysis Batch: 491290

Analyte Result Qualifier Thallium ND

Lab Sample ID: LCS 240-490510/3-A

**Matrix: Water Analysis Batch: 491097**  Client Sample ID: Method Blank

**Prep Type: Total Recoverable Prep Batch: 490510** 

Analyzed

00/14/21	14.00	00/10/21	15.47	- 1
06/14/21	14:00	06/16/21	15:47	1
06/14/21	14:00	06/16/21	15:47	1
06/14/21	14:00	06/16/21	15:47	1
06/14/21	14:00	06/16/21	15:47	1
06/14/21	14:00	06/16/21	15:47	1
06/14/21	14:00	06/16/21	15:47	1
06/14/21	14:00	06/16/21	15:47	1
06/14/21	14:00	06/16/21	15:47	1
06/14/21	14:00	06/16/21	15:47	1
06/14/21	14:00	06/16/21	15:47	1
06/14/21	14:00	06/16/21	15:47	1

06/14/21 14:00 06/16/21 15:47 06/14/21 14:00 06/16/21 15:47

**Client Sample ID: Method Blank Prep Type: Total Recoverable** 

**Prep Batch: 490510** 

Prepared Analyzed Dil Fac 06/14/21 14:00 06/17/21 21:30

**Client Sample ID: Lab Control Sample Prep Type: Total Recoverable** 

**Prep Batch: 490510** 

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Arsenic	1.00	0.973		mg/L		97	80 - 120	
Barium	1.00	0.990		mg/L		99	80 - 120	
Beryllium	0.500	0.512		mg/L		102	80 - 120	
Cadmium	0.500	0.491		mg/L		98	80 - 120	
Calcium	25.0	24.7		mg/L		99	80 - 120	
Chromium	0.500	0.502		mg/L		100	80 - 120	
Cobalt	0.500	0.504		mg/L		101	80 - 120	
Lead	0.500	0.512		mg/L		102	80 - 120	

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Dil Fac

6/28/2021

Client: HDR Inc Job ID: 280-149667-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 240-490510/3-A

**Matrix: Water** 

**Analysis Batch: 491097** 

**Client Sample ID: Lab Control Sample Prep Type: Total Recoverable** 

**Prep Batch: 490510** 

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Antimony	0.100	0.0989		mg/L		99	80 - 120	
Molybdenum	0.500	0.492		mg/L		98	80 - 120	
Lithium	0.500	0.494		mg/L		99	80 - 120	
Selenium	1.00	0.989		mg/L		99	80 - 120	
Thallium	1.00	1.04		ma/L		104	80 - 120	

Spike

Added

1 00

LCS LCS

0.930

Result Qualifier

Unit

mg/L

Lab Sample ID: LCS 240-490510/3-A

**Matrix: Water** 

Analyte

Thallium

**Analysis Batch: 491290** 

**Client Sample ID: Lab Control Sample Prep Type: Total Recoverable** 

**Prep Batch: 490510** 

%Rec. D %Rec Limits 93 80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 240-490511/1-A

**Matrix: Water** 

**Analysis Batch: 490863** 

Client Sample ID: Method Blank

Prep Type: Total/NA **Prep Batch: 490511** 

MB MB

Analyte Result Qualifier RL **MDL** Unit **Prepared** Analyzed Dil Fac Mercury ND 0.20 0.13 ug/L 06/14/21 14:00 06/15/21 11:23

Lab Sample ID: LCS 240-490511/2-A

**Matrix: Water** 

Analysis Batch: 490863

**Client Sample ID: Lab Control Sample** Prep Type: Total/NA

**Prep Batch: 490511** 

LCS LCS Spike %Rec. Analyte Added Result Qualifier Limits Unit D %Rec 5.00 5.07 80 - 120 Mercury ug/L 101

Method: 9040B - pH

Lab Sample ID: LCS 280-539809/4

**Matrix: Water** 

**Analysis Batch: 539809** 

**Client Sample ID: Lab Control Sample** 

**Prep Type: Total/NA** 

LCS LCS Spike %Rec. Analyte Added Result Qualifier Unit Limits D %Rec pH adj. to 25 deg C 7 00 7.0 SU 100 99 - 101

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-541068/6

**Matrix: Water** 

**Analysis Batch: 541068** 

**Client Sample ID: Method Blank Prep Type: Total/NA** 

MB MB

Analyte	Result C	Qualifier RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND	3.0	1.0	mg/L			06/24/21 15:36	1
Fluoride	ND	0.50	0.17	mg/L			06/24/21 15:36	1
Sulfate	ND	5.0	1.0	mg/L			06/24/21 15:36	1

Eurofins TestAmerica, Denver

Job ID: 280-149667-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

#### Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 280-541068/4

**Matrix: Water** 

Client: HDR Inc

Analysis Batch: 541068

Client Sample ID: Lab Control Sample **Prep Type: Total/NA** 

Spike LCS LCS %Rec. Added Result Qualifier Unit %Rec Limits Analyte Chloride 100 101 mg/L 101 90 - 110 Fluoride 5.00 5.11 mg/L 102 90 - 110 Sulfate 100 103 90 - 110 mg/L 103

Lab Sample ID: LCSD 280-541068/5 Client Sample ID: Lab Control Sample Dup **Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 541068** 

Spike LCSD LCSD %Rec. **RPD** Added Analyte Result Qualifier Unit D %Rec Limits **RPD** I imit 101 Chloride 100 mg/L 101 90 - 1100 10 5.00 Fluoride 5.12 mg/L 102 90 - 110 0 10 100 Sulfate 103 mg/L 103 90 - 110 10

Lab Sample ID: MRL 280-541068/3 **Client Sample ID: Lab Control Sample Prep Type: Total/NA** 

**Matrix: Water** 

**Analysis Batch: 541068** 

Spike MRL MRL %Rec. Added Analyte Result Qualifier Unit D %Rec Limits Chloride 5.00 4.59 mg/L 92 50 - 150 Fluoride 0.500 0.457 J mg/L 91 50 - 150 Sulfate 5.00 4.29 J mg/L 86 50 - 150

Lab Sample ID: MB 280-541247/6 Client Sample ID: Method Blank **Prep Type: Total/NA** 

**Matrix: Water** 

**Analysis Batch: 541247** 

MB MB RL Result Qualifier **MDL** Unit Analyte Prepared Analyzed Dil Fac Sulfate ND 5.0 1.0 mg/L 06/25/21 12:10

Lab Sample ID: LCS 280-541247/4 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 541247** 

Spike LCS LCS %Rec Analyte Added Result Qualifier Unit %Rec Limits Sulfate 100 101 mg/L 101 90 - 110

Lab Sample ID: LCSD 280-541247/5 Client Sample ID: Lab Control Sample Dup **Prep Type: Total/NA** 

**Matrix: Water** 

**Analysis Batch: 541247** 

Spike LCSD LCSD **RPD** %Rec. Analyte Added Result Qualifier Unit %Rec Limits RPD Limit Sulfate 100 101 mg/L 101 90 - 110

Lab Sample ID: MRL 280-541247/3 Client Sample ID: Lab Control Sample **Prep Type: Total/NA** 

**Matrix: Water** 

**Analysis Batch: 541247** 

Spike MRL MRL %Rec. Analyte Added Result Qualifier Unit %Rec Limits Sulfate 5.00 4.13 J mg/L 83 50 - 150

Eurofins TestAmerica, Denver

6/28/2021

# QC Sample Results

Client: HDR Inc Job ID: 280-149667-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-540214/1 **Client Sample ID: Method Blank** 

**Matrix: Water** 

Analysis Batch: 540214

MB MB

Result Qualifier RL **MDL** Unit Analyzed Dil Fac Analyte **Prepared** 10 4.7 mg/L 06/17/21 09:52 Total Dissolved Solids (TDS) ND

Lab Sample ID: LCS 280-540214/2 **Client Sample ID: Lab Control Sample Prep Type: Total/NA** 

**Matrix: Water** 

Analysis Batch: 540214

Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit D %Rec Limits Total Dissolved Solids (TDS) 502 480 mg/L 96 88 - 114

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 280-540121/2 Client Sample ID: Method Blank Prep Type: Total/NA

**Matrix: Water** 

Analysis Batch: 540121

MB MB Result Qualifier RL **MDL** Unit Dil Fac **Analyte** Prepared Analyzed **Total Suspended Solids** ND 4.0 1.1 mg/L 06/16/21 16:26

Lab Sample ID: LCS 280-540121/1 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 540121** 

Spike LCS LCS %Rec. Added Analyte Result Qualifier Unit %Rec Limits **Total Suspended Solids** 100 94.0 mg/L 94 79 - 114

Prep Type: Total/NA

# **QC Association Summary**

Client: HDR Inc Job ID: 280-149667-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

#### **Metals**

Fi	Itration	Ratch	<b>4</b> 90509

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-149667-1	MW-14	Dissolved	Water	FILTRATION	

#### **Prep Batch: 490510**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-149667-1	MW-14	Dissolved	Water	3005A	490509
280-149667-1	MW-14	Total Recoverable	Water	3005A	
MB 240-490510/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-490510/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-490510/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

#### **Prep Batch: 490511**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-149667-1	MW-14	Dissolved	Water	7470A	490509
280-149667-1	MW-14	Total/NA	Water	7470A	
MB 240-490511/1-A	Method Blank	Total/NA	Water	7470A	
LCS 240-490511/2-A	Lab Control Sample	Total/NA	Water	7470A	

#### **Analysis Batch: 490849**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-149667-1	MW-14	Dissolved	Water	6010C	490510
280-149667-1	MW-14	Total Recoverable	Water	6010C	490510
MB 240-490510/1-A	Method Blank	Total Recoverable	Water	6010C	490510
LCS 240-490510/2-A	Lab Control Sample	Total Recoverable	Water	6010C	490510

#### **Analysis Batch: 490863**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-149667-1	MW-14	Dissolved	Water	7470A	490511
280-149667-1	MW-14	Total/NA	Water	7470A	490511
MB 240-490511/1-A	Method Blank	Total/NA	Water	7470A	490511
LCS 240-490511/2-A	Lab Control Sample	Total/NA	Water	7470A	490511

#### **Analysis Batch: 491097**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 240-490510/1-A	Method Blank	Total Recoverable	Water	6020A	490510
LCS 240-490510/3-A	Lab Control Sample	Total Recoverable	Water	6020A	490510

#### Analysis Batch: 491290

<b>Lab Sample ID</b> 280-149667-1	Client Sample ID MW-14	Prep Type Dissolved	Matrix Water	Method 6020A	Prep Batch 490510
280-149667-1	MW-14	Total Recoverable	Water	6020A	490510
MB 240-490510/1-A	Method Blank	Total Recoverable	Water	6020A	490510
LCS 240-490510/3-A	Lab Control Sample	Total Recoverable	Water	6020A	490510

#### **Analysis Batch: 491521**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-149667-1	MW-14	Dissolved	Water	6020A	490510
280-149667-1	MW-14	Total Recoverable	Water	6020A	490510

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# **QC Association Summary**

Client: HDR Inc Job ID: 280-149667-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

# **General Chemistry**

#### Analysis Batch: 539809

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-149667-1	MW-14	Total/NA	Water	9040B	
LCS 280-539809/4	Lab Control Sample	Total/NA	Water	9040B	

#### **Analysis Batch: 540121**

Lab Sample ID 280-149667-1	Client Sample ID MW-14	Prep Type Total/NA	Matrix Water	Method SM 2540D	Prep Batch
MB 280-540121/2	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-540121/1	Lab Control Sample	Total/NA	Water	SM 2540D	

#### **Analysis Batch: 540214**

<b>Lab Sample ID</b> 280-149667-1	Client Sample ID MW-14	Prep Type Total/NA	Matrix Water	Method SM 2540C	Prep Batch
MB 280-540214/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-540214/2	Lab Control Sample	Total/NA	Water	SM 2540C	

#### **Analysis Batch: 541068**

<b>Lab Sample ID</b> 280-149667-1	Client Sample ID MW-14	Prep Type Total/NA	Matrix Water	Method 9056A	Prep Batch
MB 280-541068/6	Method Blank	Total/NA	Water	9056A	
LCS 280-541068/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-541068/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-541068/3	Lab Control Sample	Total/NA	Water	9056A	

#### **Analysis Batch: 541247**

Lab Sample ID 280-149667-1	Client Sample ID  MW-14	Prep Type Total/NA	Matrix Water	Method 9056A	Prep Batch
MB 280-541247/6	Method Blank	Total/NA	Water	9056A	
LCS 280-541247/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-541247/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-541247/3	Lab Control Sample	Total/NA	Water	9056A	

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#### **Lab Chronicle**

Client: HDR Inc Job ID: 280-149667-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

**Client Sample ID: MW-14** 

Date Collected: 06/10/21 14:45 Date Received: 06/10/21 16:00 Lab Sample ID: 280-149667-1

Matrix: Water

Danie Timo	Batch	Batch	D	Dil	Initial	Final	Batch	Prepared	Amalust	Lab
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	490509	06/14/21 12:20		TAL CAN
Dissolved	Prep	3005A			50 mL	50 mL	490510	06/14/21 14:00		TAL CAN
Dissolved	Analysis	6010C		1			490849	06/15/21 14:36	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	490510	06/14/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			490849	06/15/21 14:19	KLC	TAL CAN
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	490509	06/14/21 12:20	MRL	TAL CAN
Dissolved	Prep	3005A			50 mL	50 mL	490510	06/14/21 14:00	MRL	TAL CAN
Dissolved	Analysis	6020A		1			491290	06/17/21 22:17	DTN	TAL CAN
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	490509	06/14/21 12:20	MRL	TAL CAN
Dissolved	Prep	3005A			50 mL	50 mL	490510	06/14/21 14:00	MRL	TAL CAN
Dissolved	Analysis	6020A		1			491521	06/18/21 13:01	DTN	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	490510	06/14/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			491290	06/17/21 22:15	DTN	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	490510	06/14/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			491521	06/18/21 12:58	DTN	TAL CAN
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	490509	06/14/21 12:20	MRL	TAL CAN
Dissolved	Prep	7470A			50 mL	50 mL	490511	06/14/21 14:00	MRL	TAL CAN
Dissolved	Analysis	7470A		1			490863	06/15/21 12:19	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	490511	06/14/21 14:00	MRL	TAL CAN
Total/NA	Analysis	7470A		1			490863	06/15/21 12:13	DSH	TAL CAN
Total/NA	Analysis	9040B		1			539809	06/14/21 13:47	QJB	TAL DEN
Total/NA	Analysis	9056A		20	10 mL	10 mL	541068	06/25/21 00:30	CJ	TAL DEN
Total/NA	Analysis	9056A		20	10 mL	10 mL	541247	06/25/21 23:45	CJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	540214	06/17/21 09:52	JMH	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	540121	06/16/21 16:26	SVC	TAL DEN

#### **Laboratory References:**

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

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# **Accreditation/Certification Summary**

Client: HDR Inc Job ID: 280-149667-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

## **Laboratory: Eurofins TestAmerica, Denver**

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Pr	ogram	Identification Number	Expiration Date
Oregon	NE	ELAP	4025-011	01-08-22
The following analyte:	s are included in this reno	ort but the laboratory is r	not certified by the governing authority.	This list may include analytes for which
	•	ort, but the laboratory is i	iot certified by the governing authority.	This list may include analytes for which
the agency does not of Analysis Method	•	Matrix	Analyte	This list may include analytes for which

#### **Laboratory: Eurofins TestAmerica, Canton**

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-22
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-21
Georgia	State	4062	02-23-22
Illinois	NELAP	200004	07-31-21
Iowa	State	421	06-01-21 *
Kansas	NELAP	E-10336	04-30-22
Kentucky (UST)	State	112225	02-23-22
Kentucky (WW)	State	KY98016	12-31-21
Minnesota	NELAP	OH00048	12-31-21
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-21
New York	NELAP	10975	03-31-22
Ohio VAP	State	CL0024	12-21-23
Oregon	NELAP	4062	02-23-22
Pennsylvania	NELAP	68-00340	08-31-21
Texas	NELAP	T104704517-18-10	08-31-21
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-21
Washington	State	C971	01-12-22
West Virginia DEP	State	210	12-31-21

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<sup>\*</sup> Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins TestAmerica, Denver

Scord  Dinking Water? Yes \( \text{No   Mark   Mark   Rec Ne   No  } \)  Sine Contact  Sine Contact  Sine Contact  Sine Contact  Sine Contact  Sine Contact  Trows S. A.C.  Watrix  Project Manage  Trows S. A.C.  Sine Contact  Trows S. A.C.  Sine Contact  The Sine C	The Leader In Evillating Water? Yes   No   The Leader In Environmental Testing   The Life of the Leader In Environmental Testing   The Life of the Leader In Environmental Testing   The Life of the L	Chain of	Sampler ID		TestAmerica	
The Leader   Note of Control	Diriching Water? Yes   No   THE LEADER IN ENVIRONMENTAL TESTING    Project Manager   No   THE LEADER IN ENVIRONMENTAL TESTING   Project Manager   No   THE LEADER IN ENVIRONMENTAL TESTING   Project Manager   No   THE LEADER IN ENVIRONMENTAL TESTING   Project Manager   No   THE LEADER IN ENVIRONMENTAL TESTING   Project Manager   THE LEADER IN ENVIRONMENTAL TESTING	dy Record	remperature on nece			
State   Stat	State   Date   Manager   Date   Dat	0508)		No 🗆	EADER IN ENVIRONMENTAL TESTING	
Single Land   Single   Singl	State   20 Code   State   St	2 Inc.	Me III	Reves	Date //0/	Chain of Custody Number
CCR   CarrentWeb   Marrier   Table   Time	CCR   Camerivagolii Mances   72.0 53.8 (L.0.6.5   T.   Amonts space is needed!)   CCR   Camerivagolii Mances   72.0 53.8 (L.0.6.5   T.   Amonts space is needed!)   CCR   Camerivagolii Mances   72.0 53.8 (L.0.6.5   T.   Amonts space is needed!)   CCR   Camerivagolii Mances   72.0 53.8 (L.0.6.5   T.   Amonts space is needed!)   CCR   Camerivagolii Mances   72.0 53.8 (L.0.6.5   T.   Amonts space is needed!)   CCR   Camerivagolii Mances   Camerivagolii Manc	S Meridian	400 Site Contact	7		
CCR	CCR   Camerivarybut Matrix   Containers & Colors   Colo	3		Lab Contact		
Date   Time     Adaptive     Descriptions of Receipt   Date   Time     Date   Time   Time     Date   Time     Date   Time   Tim	Date Time Adatix Containers & O' C'	ne and Location (State)		7208386065	OFFA SO SO Ho SI	
Date   Time   2   1445   X   3   3   3   3   3   3   3   3   3	Date   Time   Air sed   Sample Disposal   Sample Disposal   Sample Disposal   Time   Time   Sample Disposal   Time   Ti	N-018 (28014371)		Containers & Preservatives	(1) (1)	Special Instructions/ Conditions of Receipt
		Sample I.D. No. and Description for each sample may be combined on one line)	Time Air Agueous Sed.	NgOH HCI HNO3	1406 1450 1450 1450 1450	
Service   Sign initiant   Poison B   Unknown   Sample Disposal By Lab   Active For	entification    Sample Disposal By Lab   Archive For   Anothis longer than 1 months   After may be assessed	<u></u>	X SHH 12/01/6		XXX	Sub Partibon
						1. ( ox / 0/2. f.)
Cab   Cliffer	trand Identification  Table By  The Beguined By  The By  The Beguined By					Canton
Sample Disposal   Skin Irritant   Poison B   Unknown   Return To Citent   Disposal By Lab   Archive For   Months (orger than 1 month)   New York   Months (orger than 1 month)   New York   Months (orger than 1 month)   New York   New York   New York   Neceived By   New York   New York   New York   Neceived By   New York	Sample Disposal By Lab   Archive For   Months					126 (120
Perturcation    Sample Disposal By Lab   Archive For Months	entification    Flammable   Skin Irritant   Poison B   Unknown   Return To Client   Disposal By Lab   Archive For   Months     As Hours   Tobys   14 Days   21 Days   Other     Date   Time   2.1 Received By   Archive For   Months     Date   Time   3. Received By   Archive By   Date   Time   3. Received By   Archive By   Date   Time   3. Received By   Date   Time   Time					Motel
entification    Flammable   Skin Irritant   Poison B   Unknown   Return To Client   Disposal By Lab   Archive For   Months     A8 Hours   7 Days   14 Days   21 Days   Date   Time   1. Received By     Date   Time   3. Received By   Date   Time   Time   3. Received By   Date   Time	Sample Disposal   Skin Irritant   Poison B   Unknown   Sample Disposal By Lab   Archive For   Months					
Sample Disposal   Skin Irritant   Poison B   Unknown   Return To Client   Disposal By Lab   Archive For   Months     A8 Hours   7 Days   14 Days   21 Days   Other   Time   1. Received By     Date   Time   3. Received By   Time   3. Received By     Date   Time   3. Received By   Time   T	Sample Disposal   Skin Irritant   Poison B   Unknown   Return To Client   Disposal By Lab   Archive For   Months     A8 Hours   7 Days   14 Days   21 Days   Other   Time   1. Received By     Date   Time   3. Received By     Date   Time   Time   3. Received By     Date   Time   Time   3. Received By     Date   Time			280-149667 Chain of Custo	A P	
Sample Disposal   Skin Irritant   Poison B   Unknown   Return To Client   Disposal By Lab   Archive For Months     A8 Hours   7 Days   14 Days   21 Days   Other   Date   Time   1. Received By     Date   Time   3. Received By   Time   3. Received By   Time   T	Sample Disposal   Skin Imitant   Poison B   Unknown   Return To Client   Disposal By Lab   Archive For Months     A8 Hours   7 Days   14 Days   21 Days   Other   Time   1. Received By     Date   Time   3. Received By   Time   Time   Time   3. Received By   Time   Ti					
Flammable   Skin Imfant   Poison B   Unknown   Return To Client   Disposal By Lab   Archive For   Months     A8 Hours   7 Days   14 Days   21 Days   Other   Time   1. Received By     Date   Time   3. Received By   Time   3. Received By     Date   Time   3. Received By   Time   3. Received By   Time	Required    Chequired   Skin Imfant   Poison B   Unknown   Return To Client   Disposal By Lab   Archive For   Months     A8 Hours   7 Days   14 Days   21 Days   Other   Time   1. Received By     Date   Time   Time   2. Received By     Date   Time   Time   3. Received By     Date   Time   Time   Time   3. Received By     Date   Time   Time   3. Received By     Date   Time   Tim	:				المراجعة الم
3. Received By  Date  Time  1. Received By  Date  Time  2. Received By  Date  Time  3. Received By  Date  Time  3. Received By  Date	thed By the By t	mmable Skin Imtant	Unknown	Disposal By Lab	Archive For Months	(h)
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		ned By		3. Received By		

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6/28/2021

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Eurofins TestAmerica, Denver

4955 Yarrow Street Arvada, CO 80002 Dhone, 303,736,0400 Eav. 303,431,7474	Chai	n of Cus	Chain of Custody Record	cord							Environment Testi
	Sampler:		Lab PM.		2		Carrier Tracking No(s	king No(s):		COC No.	
Client Information (Sub Contract Lab)			Harring	Harrington, Danielle M	lle M					280-572553.1	
Client Conlact Shipping/Receiving	Phone		Danielle	. Harringto	E-Mail: Danielle Harrington@Eurofinset.com	set.com	Colorado	gin		Page 1 of 1	
Company. TestAmerica Laboratories Inc.			Acc	Accreditations Requir	Accreditations Required (See note)	note)	725			Job #: 280-149667-1	
Address:	Due Date Requested:					Analye	Analysis Reguested			Preservation Codes:	es:
City.	TAT Requested (days):	:								A · HCL B · NaOH	M - Hexane N - None
North Canton State, Zip. OH 44720										C - Zn Acetate D - Nitric Acid E - NaHSO4	O - AsNaO2 P - Na2O4S O - Na2SO3
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			(lleo ud						F - MeOH G - Amchlor H - Ascorbic Acid	R - Na2S2O3 S - H2SO4 T - TSP Dodecahydral
Email	#OM		or No								U - Acetone V - MCAA
Project Name Xcel Energy GW CCR Monitoring - Cherokee	Project #: 28014371		• (Aea			op) co	(Inc.)				W - pH 4-5 Z - other (specify)
Sile Xcel Energy CCR - Cherokee Station	\$SOW#		dwes		eM qe1	W) NOI	200			Other:	
	Sample	Sample Type (C=comp,	Matrix (Wrwater, Sacoid, Orwateloil,	<b>M/SM mno</b> th	OC/3005A B	18/11/18/1 00/FILTRAT	TAЯTJI3\A0			S S S S S S S S S S S S S S S S S S S	~
Sample Identification - Client ID (Lab ID)	Sample Date Time	-	BT=Tissue, A=Air)	_	747	109					Special Instructions/Note:
		1	Freservation code.	<		-			1	7	
MW-14 (280-149667-1)	6/10/21 14:45 Mountain	5 ain	Water	×	×	×	×			2 Use Collision Cell	
					_				300.000		
Note: Since laboratory accreditations are subject to change. Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment maintain accreditation in the State of Origin listed above for analysis/tests/mark being analyzed, the samples must be shipped back to the Eurofins TestAmerica aboratory or other instructions will be provided. TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.	sa places the ownership of meth being analyzed, the samples m date, return the signed Chain o	od, analyte & accreust be shipped back	ditation compliance k to the Eurofins Tes to said complicance	upon out sub stAmerica lab to Eurofins 1	ocontract labor ocratory or ot FestAmerica.	ratories. T	his sample shipment ons will be provided	is forwarded t	under chain to accredit	This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently citons will be provided. Any changes to accreditation status should be brought to Eurofins	story does not currently ought to Eurofins
Possible Hazard Identification				Sample	Disposal (	A fee m	y be assessed	if samples	are reta	Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)	month)
Unconfirmed				Re	Return To Client	ent	Disposal By Lab	y Lab	]	Archive For	Months
Deliverable Requested: I, II, III, IV. Other (specify)	Primary Deliverable Rank: 4	nk: 4		Special Ir	Special Instructions/QC Requirements	/QC Req	uirements:				
Empty Kit Relinquished by:	Date:		Tir	Time:			Metho	Method of Shipment	i i		
Reinquished by Ne Os Oh	12/1//Q	1241	CALLES OF THE STATE OF THE STAT	Received by	Wing pa.	Alle	6)	Date/Time.	-/2-	21 1000	Thursday
Relinquished by:	Date/rime:		Сотралу	Received by	ed by:			Date/Time	ne:		Company
Relinquished by	Date/Time:		Company	Received by	ed by:			Date/Time	ne:		Company
Custody Seals Intact: Custody Seal No.:				Cooler	Temperature	(s) °C and	Cooler Temperature(s) °C and Other Remarks:				

WI-NC-099

VOA Sample Preservation - Date/Time VOAs Frozen:

6/28/2021

Client: HDR Inc Job Number: 280-149667-1

Login Number: 149667 List Source: Eurofins TestAmerica, Denver

List Number: 1

Creator: Rystrom, Joshua R

ordator: rtyshom, boshda rt		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

**Eurofins TestAmerica, Denver** 

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# **Environment Testing America**

# **ANALYTICAL REPORT**

Eurofins TestAmerica, Denver 4955 Yarrow Street Arvada, CO 80002 Tel: (303)736-0100

Laboratory Job ID: 280-149667-2

Client Project/Site: Xcel Energy GW CCR Monitoring -

Cherokee

For:

HDR Inc 1670 Broadway Suite 3400 Denver, Colorado 80202

Attn: Molly Reeves

Authorized for release by: 7/23/2021 7:28:53 AM

Savielle Harrison

Danielle Harrington, Project Manager II (303)736-0176

Danielle.Harrington@Eurofinset.com

LINKS .....

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**Have a Question?** 



Visit us at:

www.eurofinsus.com/Env

The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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# **Table of Contents**

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### **Definitions/Glossary**

Client: HDR Inc Job ID: 280-149667-2

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

#### **Qualifiers**

₹	а	d

DLC

Qualifier

G	The Sample MDC is greater than the requested RL.
U	Result is less than the sample detection limit.

**Qualifier Description** 

### Glossary

These commonly used abbreviations may or may not be present in this report.
Listed under the "D" column to designate that the result is reported on a dry weight basis
Percent Recovery
Contains Free Liquid
Colony Forming Unit
Contains No Free Liquid
Duplicate Error Ratio (normalized absolute difference)
Dilution Factor
Detection Limit (DoD/DOE)
Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample

EDL Estimated Detection Limit (Dioxin) LOD Limit of Detection (DoD/DOE) LOQ Limit of Quantitation (DoD/DOE)

EPA recommended "Maximum Contaminant Level" MCL Minimum Detectable Activity (Radiochemistry) MDA MDC Minimum Detectable Concentration (Radiochemistry)

Decision Level Concentration (Radiochemistry)

MDL Method Detection Limit Minimum Level (Dioxin) ML Most Probable Number MPN MQL Method Quantitation Limit

NC Not Calculated

ND Not Detected at the reporting limit (or MDL or EDL if shown)

NEG Negative / Absent POS Positive / Present

**Practical Quantitation Limit** PQL

**PRES** Presumptive **Quality Control** QC

**RER** Relative Error Ratio (Radiochemistry)

RL Reporting Limit or Requested Limit (Radiochemistry)

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin) Toxicity Equivalent Quotient (Dioxin) **TEQ** 

TNTC Too Numerous To Count

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#### **Case Narrative**

Client: HDR Inc Job ID: 280-149667-2

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Job ID: 280-149667-2

Laboratory: Eurofins TestAmerica, Denver

**Narrative** 

#### **CASE NARRATIVE**

**Client: HDR Inc** 

**Project: Xcel Energy GW CCR Monitoring - Cherokee** 

Report Number: 280-149667-2

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

#### **RECEIPT**

The samples were received on 06/10/2021; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 17.3 C, which is above the EPA's recommended temperature of 6C. However, the samples are considered acceptable since it was collected and submitted to the laboratory on the same day and there is evidence that the chilling process has begun.

#### RADIUM-226 (GFPC)- Method 9315

The following samples were prepared at a reduced aliquot due to Matrix: MW-14.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### RADIUM-228- Method 9320

The following samples were prepared at a reduced aliquot due to Matrix: MW-14

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### RADIUM-226/RADIUM-228 (GFPC)

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

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# **Detection Summary**

Client: HDR Inc Job ID: 280-149667-2

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Client Sample ID: MW-14

Lab Sample ID: 280-149667-1

No Detections.

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# **Method Summary**

Client: HDR Inc Job ID: 280-149667-2

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method	Method Description	Protocol	Laboratory
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

#### **Protocol References:**

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

#### Laboratory References:

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

# **Sample Summary**

Client: HDR Inc Job ID: 280-149667-2

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-149667-1	MW-14	Water	06/10/21 14:45	06/10/21 16:00

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# **Client Sample Results**

Client: HDR Inc Job ID: 280-149667-2

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-14 Lab Sample ID: 280-149667-1

Date Collected: 06/10/21 14:45 **Matrix: Water** 

Date Received:	06/10/21 16:0	10	Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.500		0.268	0.272	1.00	0.346	pCi/L	06/15/21 09:02	07/13/21 17:03	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	52.3		40 - 110					06/15/21 09:02	07/13/21 17:03	1

Method: 9320 - Radium-228 (GFPC)

**Client Sample ID: MW-14** Lab Sample ID: 280-149667-1 **Matrix: Water** 

Date Collected: 06/10/21 14:45

Date Received: 06	6/10/21 16:0	0								
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.773	UG	0.828	0.831	1.00	1.36	pCi/L	06/15/21 10:14	07/01/21 09:28	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	52.3		40 - 110					06/15/21 10:14	07/01/21 09:28	1
Y Carrier	89.0		40 - 110					06/15/21 10:14	07/01/21 09:28	1

Method: Ra226 Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: MW-14 Lab Sample ID: 280-149667-1 **Matrix: Water** 

Date Collected: 06/10/21 14:45 Date Received: 06/10/21 16:00

			Count	Total							
			Uncert.	Uncert.							
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac	
Combined Radium 226	1.27	U	0.870	0.874	5.00	1.36	pCi/L		07/22/21 12:09	1	

+ 228

7/23/2021

Client: HDR Inc Job ID: 280-149667-2

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-514286/23-A Client Sample ID: Method Blank

**Matrix: Water** 

**Matrix: Water** 

Analysis Batch: 518325

Prep Type: Total/NA **Analysis Batch: 518325** Prep Batch: 514286 Count Total

	МВ	MB	Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.01798	U	0.0652	0.0652	1.00	0.123	pCi/L	06/15/21 09:02	07/13/21 17:02	1

MB MB

Carrier **%Yield Qualifier** Limits Prepared Analyzed Dil Fac Ba Carrier 77.3 40 - 110 06/15/21 09:02 07/13/21 17:02

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 514286

Total LCS LCS %Rec. **Spike** Uncert. Analyte Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits Radium-226 11.3 9.146 0.969 1.00 0.121 pCi/L 75 - 125

LCS LCS Carrier %Yield Qualifier Limits Ba Carrier 84.1 40 - 110

Lab Sample ID: LCS 160-514286/1-A

Lab Sample ID: LCSD 160-514286/2-A **Client Sample ID: Lab Control Sample Dup** 

**Matrix: Water** 

**Analysis Batch: 518325** 

Prep Type: Total/NA

Prep Batch: 514286

Total LCSD LCSD %Rec. **RER** Spike Uncert. Analyte Added  $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits Result Qual RER Limit Radium-226 11.3 9.447 1.00 1.00 0.118 pCi/L 83 75 - 125 0.15

LCSD LCSD Carrier %Yield Qualifier Limits Ba Carrier 40 - 110

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-514295/23-A Client Sample ID: Method Blank **Matrix: Water** Prep Type: Total/NA Analysis Batch: 516924 **Prep Batch: 514295** 

Count Total MB MB Uncert. Uncert. Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Dil Fac Analyzed

Analyte Radium-228 0.06475 Ū 0.274 0.274 1.00 0.481 pCi/L 06/15/21 10:14 07/01/21 09:32 MB MB

Carrier %Yield Qualifier Limits Prepared Dil Fac Analyzed Ba Carrier 77.3 40 - 110 06/15/21 10:14 07/01/21 09:32 40 - 110 Y Carrier 84.9 06/15/21 10:14 07/01/21 09:32

7/23/2021

# **QC Sample Results**

Client: HDR Inc Job ID: 280-149667-2

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: 9320 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-514295/1-A

**Matrix: Water** 

Analysis Batch: 516904

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

**Prep Batch: 514295** 

Total LCS LCS %Rec. Spike Uncert. Analyte Added Result Qual  $(2\sigma + / -)$ RL**MDC** Unit %Rec Limits Radium-228 9.57 9.998 1.18 1.00 0.408 pCi/L 104 75 - 125

LCS LCS

%Yield Qualifier Carrier Limits Ba Carrier 84.1 40 - 110 Y Carrier 83.0 40 - 110

Lab Sample ID: LCSD 160-514295/2-A **Client Sample ID: Lab Control Sample Dup** 

**Matrix: Water** 

Analyte

Radium-228

**Analysis Batch: 516918** 

105

Prep Type: Total/NA

0.04

**Prep Batch: 514295** 

75 - 125

Total **Spike** LCSD LCSD Uncert. %Rec. **RER** %Rec Limits Limit Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit RER

1.19

1.00

0.454 pCi/L

LCSD LCSD

9.57

10.09

Carrier %Yield Qualifier Limits Ba Carrier 79.1 40 - 110 40 - 110 Y Carrier 86.7

# **QC Association Summary**

Client: HDR Inc Job ID: 280-149667-2

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

#### Rad

### **Prep Batch: 514286**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-149667-1	MW-14	Total/NA	Water	PrecSep-21	
MB 160-514286/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-514286/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-514286/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

### **Prep Batch: 514295**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-149667-1	MW-14	Total/NA	Water	PrecSep_0	
MB 160-514295/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-514295/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-514295/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

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### **Lab Chronicle**

Client: HDR Inc Job ID: 280-149667-2

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Client Sample ID: MW-14 Lab Sample ID: 280-149667-1

Date Collected: 06/10/21 14:45

Date Received: 06/10/21 16:00

Matrix: Water

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			501.34 mL	1.0 g	514286	06/15/21 09:02	MJ	TAL SL
Total/NA	Analysis	9315		1			518324	07/13/21 17:03	SCB	TAL SL
Total/NA	Prep	PrecSep_0			501.34 mL	1.0 g	514295	06/15/21 10:14	MJ	TAL SL
Total/NA	Analysis	9320		1			516918	07/01/21 09:28	ANW	TAL SL
Total/NA	Analysis	Ra226 Ra228		1			519746	07/22/21 12:09	SCB	TAL SL

### **Laboratory References:**

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

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# **Accreditation/Certification Summary**

Client: HDR Inc Job ID: 280-149667-2

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

### Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	<b>Expiration Date</b>
Alaska (UST)	State	20-001	05-06-22
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-21
California	Los Angeles County Sanitation Districts	10259	06-30-22
California	State	2886	06-30-21 *
Connecticut	State	PH-0241	03-31-23
Florida	NELAP	E87689	06-30-22
HI - RadChem Recognition	State	n/a	06-30-22
Illinois	NELAP	004553	11-30-21
lowa	State	373	12-01-22
Kansas	NELAP	E-10236	10-31-21
Kentucky (DW)	State	KY90125	01-01-22
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-21
Louisiana	NELAP	04080	06-30-22
Louisiana (DW)	State	LA011	12-31-21
Maryland	State	310	09-30-22
MI - RadChem Recognition	State	9005	06-30-21 *
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-21
New Jersey	NELAP	MO002	07-01-22
New York	NELAP	11616	04-01-22
North Dakota	State	R-207	06-30-21 *
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-21
Oregon	NELAP	4157	09-01-21
Pennsylvania	NELAP	68-00540	03-01-22
South Carolina	State	85002001	06-30-22
Texas	NELAP	T104704193	07-31-21
US Fish & Wildlife	US Federal Programs	058448	07-31-21
USDA	US Federal Programs	P330-17-00028	03-11-23
Utah	NELAP	MO000542019-11	07-31-21
Virginia	NELAP	10310	06-14-22
Washington	State	C592	08-30-21
West Virginia DEP	State	381	10-31-21

 $<sup>^{\</sup>star} \ \text{Accreditation/Certification renewal pending - accreditation/certification considered valid}.$ 

	Sampler ID	10.50 × 40.0T	
Chain of Custody Record	Temperature on Receipt		
TAL-4124-280 (0508)	Drinking Water? Yes ☐ No ☐	☐ THE LEADER IN ENVIRONMENTAL TESTING	
	Project Manage    Nanage		Chain of Custody Number
City Transfer State Zip Code	Site Contact	Analy	Page of
Project Name and Location (State)  XC. P. C.	Carrier/Waybill Namber		
Contract/Purchase Order/Quote No.  DEN-018 (28014371)	Matrix	90 Y	Special Instructions/ Conditions of Receipt
Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Ti Mir Air Aqueous Sed. Soil	1810 1810 1810 1810 1810 1810 1810 1810	
MW-14 6/10/21	X Shh1 1	XXXXXX	Sub Raddrens to
			St. Low/Metals to
			Jot 1. I del
			Diss. Metals
	\$		
	000	ZdU-1490b/ Chain of Custody	
Possible Hazard Identification	Sample Disposal		
Non-Hazard Flammable Skin Imitant Poison B	ent	Archive For Months	(A fee may be assessed if samples are retained longer than 1 month)
21 Days 14 Days 21 Days 21 Days 21 Days	Other	QC Requirements (Specify)	
	C/10/21   1600   1	1. Received By	Cate Time
c. Helinquisned By	Time	2. Riceived By	Date Time
3. Relinquished By	Date	3. Received By	Date
Comments (6.9 CF+0,4 TRI)			

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DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy 7/23/2021

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Eurofins TestAmerica, Denver

Phone: 303-736-0100 Fax: 303-431-7171

Arvada, CO 80002 4955 Yarrow Street

N - None
O - Ashao2
P - Na2045
Q - Na2S03
R - Na2S203
S - H2S04
T - ISP Dodecahydrate Note: Since aboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This samples thipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/lests/mairix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica. V - MCAA W - pH 4-5 Z - other (specify) Special Instructions/Note: ンゴ Ver: 11/01/2020 Months 619 ompany Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)

Return To Client Disposal By Lab Archive For Mon Preservation Codes: G - Amchlor H - Ascorbic Acid 280-149667-2 COC No: 280-572552.1 C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH Page 1 of 1 I - Ice J - DI Water K - EDTA L - EDA 5280 A - HCL B - NaOH Total Number of containers 2 6/12/21 Date/Time Method of Shipment: Carrier Tracking No(s): State of Origin: Colorado Analysis Requested Cooler Temperature(s) °C and Other Remarks Special Instructions/QC Requirements: E-Mail
Danielle. Harrington@Eurofinset.com
Accreditations Required (See note).
NELAP - Oregon Received by:
FED EX Kazzekazza\_GFPC/ (MOD) Local Method × Lab PM. Harrington, Danielle M × 9320\_Ra228/PrecSep\_0 Radium-228 - 2/3 - 5UB 315\_Ra226/PrecSep\_21 Radium-226 - 1/3 - SUB Perform MS/MSD (Yes or No) Time: Preservation Code: (W=water, S=solid, O=waste/oil, Matrix Water Company (C=comp, G=grab) Sample Type 9Ch/ Primary Deliverable Rank: 4 Mountain Sample Time Date: 06/11/20) 1 Date/Time: AT Requested (days): Due Date Requested: 7/11/2021 Sample Date 6/10/21 Project #: 28014371 Date/Time: Client Information (Sub Contract Lab) Deliverable Requested: I, II, III, IV, Other (specify) Xcel Energy GW CCR Monitoring - Cherokee Custody Seal No. Sample Identification - Client ID (Lab ID) 314-298-8566(Tel) 314-298-8757(Fax) Xcel Energy CCR - Cherokee Station Possible Hazard Identification 而较 TestAmerica Laboratories, Inc. Empty Kit Relinquished by Address 13715 Rider Trail North, Custody Seals Intact: △ Yes △ No WW-14 (280-149667-1) Shipping/Receiving State, Zip: MO, 63045 Unconfirmed inquished by: inquished by: nquished by City: Earth City

Client: HDR Inc Job Number: 280-149667-2

Login Number: 149667 List Source: Eurofins TestAmerica, Denver

List Number: 1

Creator: Rystrom, Joshua R

Creator. Rystrom, Joshua R		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

**Eurofins TestAmerica, Denver** 

Client: HDR Inc Job Number: 280-149667-2

Login Number: 149667
List Source: Eurofins TestAmerica, St. Louis
List Number: 2
List Creation: 06/12/21 12:52 PM

Creator: Mazariegos, Leonel A

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

N/A

Eurofins TestAmerica, Denver

Residual Chlorine Checked.

# **Tracer/Carrier Summary**

Client: HDR Inc Job ID: 280-149667-2

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: 9315 - Radium-226 (GFPC)

Matrix: Water Prep Type: Total/NA

			Percent Yield (Acceptance Limits)
		Ва	
Lab Sample ID	Client Sample ID	(40-110)	
280-149667-1	MW-14	52.3	
LCS 160-514286/1-A	Lab Control Sample	84.1	
LCSD 160-514286/2-A	Lab Control Sample Dup	79.1	
MB 160-514286/23-A	Method Blank	77.3	
Tracer/Carrier Legenc	I		
Ba = Ba Carrier			

Method: 9320 - Radium-228 (GFPC)

Matrix: Water Prep Type: Total/NA

				Percent Yield (Acceptance Limits)
		Ва	Υ	
Lab Sample ID	Client Sample ID	(40-110)	(40-110)	
280-149667-1	MW-14	52.3	89.0	
LCS 160-514295/1-A	Lab Control Sample	84.1	83.0	
LCSD 160-514295/2-A	Lab Control Sample Dup	79.1	86.7	
MB 160-514295/23-A	Method Blank	77.3	84.9	

Ba = Ba Carrier

Y = Y Carrier

Eurofins TestAmerica, Denver

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# **ANALYTICAL REPORT**

Eurofins TestAmerica, Denver 4955 Yarrow Street Arvada, CO 80002 Tel: (303)736-0100

Laboratory Job ID: 280-152997-1

Client Project/Site: Xcel Energy GW CCR Monitoring -

Cherokee Revision: 1

For:

HDR Inc 1670 Broadway Suite 3400 Denver, Colorado 80202

Attn: Molly Reeves

Authorized for release by: 10/28/2021 11:23:06 AM

Danielle Harrington, Project Manager II (303)736-0176

Danielle.Harrington@Eurofinset.com

.....LINKS .....

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The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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# **Definitions/Glossary**

Client: HDR Inc Job ID: 280-152997-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

**Qualifiers** 

**Metals** 

J Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation These commonly used abbreviations may or may not be present in this report.

Listed under the "D" column to designate that the result is reported on a dry weight basis

%R Percent Recovery
CFL Contains Free Liquid
CFU Colony Forming Unit
CNF Contains No Free Liquid

DER Duplicate Error Ratio (normalized absolute difference)

Dil Fac Dilution Factor

DL Detection Limit (DoD/DOE)

DL, RA, RE, IN Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample

DLC Decision Level Concentration (Radiochemistry)

EDL Estimated Detection Limit (Dioxin)

LOD Limit of Detection (DoD/DOE)

LOQ Limit of Quantitation (DoD/DOE)

MCL EPA recommended "Maximum Contaminant Level"

MDA Minimum Detectable Activity (Radiochemistry)

MDC Minimum Detectable Concentration (Radiochemistry)

MDL Method Detection Limit
ML Minimum Level (Dioxin)
MPN Most Probable Number
MQL Method Quantitation Limit

NC Not Calculated

ND Not Detected at the reporting limit (or MDL or EDL if shown)

NEG Negative / Absent
POS Positive / Present

PQL Practical Quantitation Limit

PRES Presumptive
QC Quality Control

RER Relative Error Ratio (Radiochemistry)

RL Reporting Limit or Requested Limit (Radiochemistry)

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin)
TEQ Toxicity Equivalent Quotient (Dioxin)

TNTC Too Numerous To Count

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#### **Case Narrative**

Client: HDR Inc Job ID: 280-152997-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Job ID: 280-152997-1

Laboratory: Eurofins TestAmerica, Denver

**Narrative** 

#### **CASE NARRATIVE**

**Client: HDR Inc** 

**Project: Xcel Energy GW CCR Monitoring - Cherokee** 

Report Number: 280-152997-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

#### **RECEIPT**

The samples were received on 09/15/2021; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 4.4 C.

#### **DISSOLVED METALS (ICPMS)- METHOD 6020A**

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### **TOTAL RECOVERABLE METALS (ICPMS)- METHOD 6020A**

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### TOTAL SUSPENDED SOLIDS

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### **REVISION**

Per client request 10/27/2021, MW-15 needs to also report Cobalt and MW-7 needs to also report Selenium.

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# **Detection Summary**

Client: HDR Inc Job ID: 280-152997-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Client Sample ID: MW-15	Lab Sample ID: 280-152997-1
-------------------------	-----------------------------

Analyte	Result Qualifier	RL	MDL	Unit	Dil Fac	D Method	Prep Type
Selenium	0.056	0.0050	0.00089	mg/L	1	6020A	Total
							Recoverable
Cobalt	0.0042	0.0010	0.00019	mg/L	1	6020A	Total
							Recoverable
Selenium	52	5.0	0.89	ug/L	1	6020A	Dissolved
Cobalt	4.1	1.0	0.19	ug/L	1	6020A	Dissolved
Total Suspended Solids	27	4.0	1.1	mg/L	1	SM 2540D	Total/NA

#### **Client Sample ID: MW-7** Lab Sample ID: 280-152997-2

Analyte	Result Qualifier	RL	MDL	Unit	Dil Fac	D Method	Prep Type
Cobalt	0.0027	0.0010	0.00019	mg/L		6020A	Total
							Recoverable
Lead	0.0045	0.0010	0.00045	mg/L	1	6020A	Total
							Recoverable
Selenium	0.0015 J	0.0050	0.00089	mg/L	1	6020A	Total
							Recoverable
Cobalt	1.7	1.0	0.19	ug/L	1	6020A	Dissolved
Total Suspended Solids	400	8.3	2.3	mg/L	1	SM 2540D	Total/NA

# **Method Summary**

Client: HDR Inc Job ID: 280-152997-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method	Method Description	Protocol	Laboratory
6020A	Metals (ICP/MS)	SW846	TAL CAN
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL DEN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN
FILTRATION	Sample Filtration	None	TAL CAN

#### **Protocol References:**

None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

#### **Laboratory References:**

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

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# **Sample Summary**

Client: HDR Inc Job ID: 280-152997-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-152997-1	MW-15	Water	09/14/21 14:45	09/15/21 11:15
280-152997-2	MW-7	Water	09/15/21 09:30	09/15/21 11:15

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Client: HDR Inc Job ID: 280-152997-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: 6020A - Metals (ICP/MS) - Total Recoverable

**Client Sample ID: MW-15** Lab Sample ID: 280-152997-1 **Matrix: Water** 

Date Collected: 09/14/21 14:45 Date Received: 09/15/21 11:15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	0.056		0.0050	0.00089	mg/L		09/20/21 14:00	09/21/21 23:26	1
Cobalt	0.0042		0.0010	0.00019	mg/L		09/20/21 14:00	09/21/21 23:26	1

**Client Sample ID: MW-7** Lab Sample ID: 280-152997-2 **Matrix: Water** Date Collected: 09/15/21 09:30

Date Received: 09/15/21 11:15

	Date Received, 03/13/21 11.13									
	Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Cobalt	0.0027		0.0010	0.00019	mg/L		09/20/21 14:00	09/21/21 23:29	1
	Lead	0.0045		0.0010	0.00045	mg/L		09/20/21 14:00	09/21/21 23:29	1
	Selenium	0.0015	J	0.0050	0.00089	mg/L		09/20/21 14:00	09/21/21 23:29	1
ľ										

Method: 6020A - Metals (ICP/MS) - Dissolved

Client Sample ID: MW-15 Lab Sample ID: 280-152997-1 Date Collected: 09/14/21 14:45 **Matrix: Water** 

Date Received: 09/15/21 11:15

Analyte	Result Qualif	fier RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	52	5.0	0.89	ug/L		09/20/21 14:00	09/21/21 19:45	1
Cobalt	4.1	1.0	0.19	ug/L		09/20/21 14:00	09/21/21 19:45	1

**Client Sample ID: MW-7** Lab Sample ID: 280-152997-2 Date Collected: 09/15/21 09:30 **Matrix: Water** 

Date Received: 09/15/21 11:15

Date Neceived. 03/13/21 11.13									
Analyte	Result (	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	1.7		1.0	0.19	ug/L		09/20/21 14:00	09/21/21 19:48	1
Lead	ND		1.0	0.45	ug/L		09/20/21 14:00	09/21/21 19:48	1
Selenium	ND		5.0	0.89	ug/L		09/20/21 14:00	09/21/21 19:48	1

**General Chemistry** 

**Client Sample ID: MW-15** Lab Sample ID: 280-152997-1 Date Collected: 09/14/21 14:45 **Matrix: Water** 

Date Received: 09/15/21 11:15

Analyte	Result Qualifier	RL	MDL Unit	D	Prepared	Analyzed	Dil Fac	
Total Suspended Solids	27	4.0	1.1 mg/L			09/15/21 19:05	1	

**Client Sample ID: MW-7** Lab Sample ID: 280-152997-2 **Matrix: Water** 

Date Collected: 09/15/21 09:30 Date Received: 09/15/21 11:15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	400		8.3	2.3	mg/L			09/15/21 19:05	1

### Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-504478/1-A

**Matrix: Water** 

Client: HDR Inc

**Analysis Batch: 504786** 

Client Sample ID: Method Blank **Prep Type: Total Recoverable** 

Prep Batch: 504478

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		1.0	0.45	ug/L		09/20/21 14:00	09/21/21 18:33	1
Selenium	ND		5.0	0.89	ug/L		09/20/21 14:00	09/21/21 18:33	1
Cobalt	ND		1.0	0.19	ug/L		09/20/21 14:00	09/21/21 18:33	1

Lab Sample ID: LCS 240-504478/2-A

**Matrix: Water** 

**Analysis Batch: 504786** 

Client Sample ID: Lab Control Sample **Prep Type: Total Recoverable** 

Prep Batch: 504478

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Lead	500	504		ug/L		101	80 - 120	
Selenium	1000	922		ug/L		92	80 - 120	
Cobalt	500	500		ug/L		100	80 - 120	

Lab Sample ID: MB 240-504480/1-A

**Matrix: Water** 

Analysis Batch: 504786

Client Sample ID: Method Blank **Prep Type: Total Recoverable** 

**Prep Batch: 504480** 

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.0010	0.00045	mg/L	<del></del>	09/20/21 14:00	09/21/21 22:30	1
Selenium	ND		0.0050	0.00089	mg/L		09/20/21 14:00	09/21/21 22:30	1
Cobalt	ND		0.0010	0.00019	mg/L		09/20/21 14:00	09/21/21 22:30	1

Lab Sample ID: LCS 240-504480/2-A

**Matrix: Water** 

**Analysis Batch: 504786** 

**Client Sample ID: Lab Control Sample Prep Type: Total Recoverable** Prep Batch: 504480

Spike LCS LCS %Rec. Added Result Qualifier Analyte Unit Limits D %Rec Lead 0.500 0.504 mg/L 101 80 - 120 1.00 0.925 Selenium mg/L 92 80 - 120 Cobalt 0.500 0.511 mg/L 102 80 - 120

### Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 280-549953/2 Client Sample ID: Method Blank **Matrix: Water** 

Analysis Batch: 549953

Prep Type: Total/NA

mg/L

MB MB Result Qualifier RL **MDL** Unit Dil Fac Analyte Prepared Analyzed **Total Suspended Solids** ND 4.0 1.1 mg/L 09/15/21 17:57

Lab Sample ID: LCS 280-549953/1 **Client Sample ID: Lab Control Sample** Prep Type: Total/NA

100

**Matrix: Water** 

**Total Suspended Solids** 

**Analysis Batch: 549953** Spike LCS LCS %Rec. Added Analyte Result Qualifier Unit D %Rec Limits

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# **QC Association Summary**

Client: HDR Inc Job ID: 280-152997-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

#### **Metals**

### **Prep Batch: 504478**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-152997-1	MW-15	Dissolved	Water	3005A	504479
280-152997-2	MW-7	Dissolved	Water	3005A	504479
MB 240-504478/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-504478/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

### Filtration Batch: 504479

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-152997-1	MW-15	Dissolved	Water	FILTRATION	
280-152997-2	MW-7	Dissolved	Water	FILTRATION	

#### **Prep Batch: 504480**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-152997-1	MW-15	Total Recoverable	Water	3005A	
280-152997-2	MW-7	Total Recoverable	Water	3005A	
MB 240-504480/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-504480/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

#### **Analysis Batch: 504786**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-152997-1	MW-15	Dissolved	Water	6020A	504478
280-152997-1	MW-15	Total Recoverable	Water	6020A	504480
280-152997-2	MW-7	Dissolved	Water	6020A	504478
280-152997-2	MW-7	Total Recoverable	Water	6020A	504480
MB 240-504478/1-A	Method Blank	Total Recoverable	Water	6020A	504478
MB 240-504480/1-A	Method Blank	Total Recoverable	Water	6020A	504480
LCS 240-504478/2-A	Lab Control Sample	Total Recoverable	Water	6020A	504478
LCS 240-504480/2-A	Lab Control Sample	Total Recoverable	Water	6020A	504480

## **General Chemistry**

### Analysis Batch: 549953

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-152997-1	MW-15	Total/NA	Water	SM 2540D	
280-152997-2	MW-7	Total/NA	Water	SM 2540D	
MB 280-549953/2	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-549953/1	Lab Control Sample	Total/NA	Water	SM 2540D	

Eurofins TestAmerica, Denver

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#### **Lab Chronicle**

Client: HDR Inc Job ID: 280-152997-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

**Client Sample ID: MW-15** 

Date Received: 09/15/21 11:15

Date Collected: 09/14/21 14:45

Lab Sample ID: 280-152997-1

**Matrix: Water** 

Batch Batch Dil Initial Batch Final Prepared Method Factor or Analyzed **Prep Type** Type Run **Amount Amount** Number Analyst Lab Dissolved Filtration **FILTRATION** 1.0 mL 504479 09/20/21 13:10 SHB TAL CAN 1.0 mL Dissolved 3005A 50 mL 504478 09/20/21 14:00 SHB TAL CAN Prep 50 mL Dissolved Analysis 6020A 504786 09/21/21 19:45 AJC TAL CAN Total Recoverable TAL CAN Prep 3005A 50 mL 50 mL 504480 09/20/21 14:00 SHB Total Recoverable Analysis 6020A 1 504786 09/21/21 23:26 AJC TAL CAN Total/NA Analysis SM 2540D 1 250 mL 250 mL 549953 09/15/21 19:05 SVC TAL DEN

Lab Sample ID: 280-152997-2

Matrix: Water

Matrix: Water

Date Collected: 09/15/21 09:30
Date Received: 09/15/21 11:15

Client Sample ID: MW-7

_	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	504479	09/20/21 13:10	SHB	TAL CAN
Dissolved	Prep	3005A			50 mL	50 mL	504478	09/20/21 14:00	SHB	TAL CAN
Dissolved	Analysis	6020A		1			504786	09/21/21 19:48	AJC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	504480	09/20/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6020A		1			504786	09/21/21 23:29	AJC	TAL CAN
Total/NA	Analysis	SM 2540D		1	120 mL	250 mL	549953	09/15/21 19:05	SVC	TAL DEN

#### **Laboratory References:**

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

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# **Accreditation/Certification Summary**

Client: HDR Inc Job ID: 280-152997-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

### **Laboratory: Eurofins TestAmerica, Denver**

The accreditations/certifications listed below are applicable to this report.

Αι	uthority	Program	Identification Number	Expiration Date
Or	regon	NELAP	4025-011	01-08-22

## **Laboratory: Eurofins TestAmerica, Canton**

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-22
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kansas	NELAP	E-10336	04-30-22
Kentucky (UST)	State	112225	02-23-22
Kentucky (WW)	State	KY98016	12-31-21
Minnesota	NELAP	OH00048	12-31-21
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-22
New York	NELAP	10975	03-31-22
Ohio VAP	State	CL0024	12-21-23
Oregon	NELAP	4062	02-23-22
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-18-10	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-22
West Virginia DEP	State	210	12-31-21

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Eurofins TestAmerica, Denver 4955 Yarrow Street Avada, CO 80000 Phone (303) 736-0100 Fav (303) 434-7171	Chain of Custody Record		eurofins   Environment Testing   TestAmerica
Client Information	Sampler Lab PM: Lab PM: Bandy Darlene F	Carrier Tracking No(s):	COC No:
Cilent Contact Anna Lundin	538 6005 dariene		Page:
Company: HDR Inc	Analysis	Requested	Job #:
Address: 9781 S. Meridian Blvd Suite 400		11170	eservation Cod
City: Englewood	6		EZO
State, Zlp: CO, 80112			Nitric Acid NaHSO4 MeOH
Phone: 734-263-7138(Tel)	00) VI	.5 ]1	Amehlor S Ascorbic Acid T
Email: anna.lundin@hdrinc.com	s or M (OM) (QA)		1 Ice J Di Water 7 Entre
Project Name: Xoel Energy GW CCR Monitoring Cherokee	Sa or	W entertu	L EDA Z
Site: Colorado	qme2 Y) azi A0TAY) soolı s8_0s	00 100	Other
	Sample Matrix (Westered Sensolide Hillered Hillered Sensolide Hillered Hillered Sensolide Hillered Hillered Sensolide Hillered	~\°55	Salentum/
Sample Identification	Field ( 2540 ) 2540   2		A Special Instruc
╢.	Leselvation code.		ot slets / More to St. Louis / Metals to
MW-15	114/21 1445	X	Sto rediction to St. Louis / Interdis to Canton
ナーブ ナーブ	19115/21 0930 G W M X   X	×	30,35 metals + Hereal
			1500 mi inpreserved
			DPb/Cobalt/TSS only
	280-152997 Chain of Custody		
Skin Imitant	Sample Disposal ( A fee may   Sample Disposal ( A fee may   Poison B Unknown Radiological	essed if samples are re	stained longer than 1 month) Archive For Months
I II III IV Other (specify)	Speci		
Empty Kit Relinquished by	ë	Method of Shipment:	
Relinquished by:	1110 HOR 12/2	14/5/Mb ==	1 1115 Company DEN
Relinquished by:	Company	Date/Time:	Còmpany
	Date/Ппе: Company Received by:	Date/Time:	Company
Custody Seals Intact: Custody Seal No.	Cooler Temperature(s) %C and Other Remarks:	r Remarks: 3 4 G +10	
			Ver 01/16/2019

Ver: 06/08/2021

Chain of Custody Record

Eurofins TestAmerica, Denver

\*\* eurofins | Environment Testing | America

Eurofins TestAmerica, Denver			3		_	:: eurofins	
4933 Tarrow Street Arvada, CO 80002 Phone: 303-736-0100 Fax: 303-431-7171	Chain	Chain of Custody Record	Record			-	Environment Testing America
Client Information (Sub Contract Lab)	Sampler:	Lat	Lab PM: Harrington, Danielle M	Carrier Tracking No(s)	_	COC No: 280-585162.1	
	Phone:	E-N	E-Mail: Danielle. Harrington@Eurofinset.com	State of Origin: Colorado	:-	Page: Page 1 of 1	
Company TestAmerica Laboratories, Inc.			Accreditations Required (See note) NELAP - Oregon	: (c		Job #: 280-152997-1	
Address: 4101 Shuffel Street NW,	Due Date Requested: 10/14/2021			Analysis Requested		-	122
City. North Canton	TAT Requested (days):					A - HCL B - NaOH C - Zn Acetate	M - Hexane N = None O - AsNaO2
State, Zip. OH, 44720			uce)				- Na204S
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	#Od#		oisilloo				R - Na2S2O3 - H2SO4
	# OM		(o) als (w)				- I SP Dodecanydrate J - Acetone / - MCAA
Project Name. Xcel Energy GW CCR Monitoring - Cherokee	Project # 28014371		95 Of Met		nənisə	K - EDTA L - EDA	W - pH 4-5 Z - other (specify)
Site Xcel Energy CCR - Cherokee Station	SSOW#:		ОИ (WC		of con	Other:	
	olame	Sample Matrix Type (W=vater, S=solid,	E besettig to M/SM mno M) A3008/A ITARTITAR ITARTITIA		l Number	572	(N03
Sample Identification - Client ID (Lab ID)	Sample Date Time	- 6	Fiel Per 6020		STOT	Special Inst	Special Instructions/Note:
	X	Preservation Code:	X		X		V
MW-15 (280-152997-1)	9/14/21 14:45 Mountain	Water	×		12	Use Collision Cell	
MW-7 (280-152997-2)	9/15/21 09:30	Water	×		2	Use Collision Cell	
							1
Note: Since laboratory accreditations are subject to change. Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/lests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica altertion in the State of Origin listed above for analysis/lests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica. The provided. Any changes to accreditation status should be brought to Eurofins TestAmerica.	merica places the ownership of method, a natrix being analyzed, the samples must b ent to date, return the signed Chain of Cus	analyte & accreditation comples shipped back to the Eurofin stody attesting to said complications.	ance upon out subcontract laborator s TestAmerica laboratory or other in ance to Eurofins TestAmerica.	es. This sample shipment is structions will be provided. Ar	forwarded under chain-of-	custody. If the laborato	y does not currently tht to Eurofins
Possible Hazard Identification			Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)	e may be assessed if	samples are retaine	ed longer than 1 m	onth)
Unconfirmed Deliverable Remisested: 1-11-111 IV Other (specify)	L. Jaco aldonovilo O vacania		Return To Client	Disposal By Lab	Lab Archi	Archive For	Months
conscional address of the training of the constant of the cons	rillialy Deliverable Kalik.	4	Special Instructions/QC Requirements	Kequirements:			
Empty Kit Relinquished by:	Date:		<u>نو</u>	Method	Method of Shipment:		
Kelinquished by:	Date/Time: 2	1253 ETUDEN			Dater ime.	7/1025	Company Company
Reinquished by:	Date/Time:	Company	Received by:		Date/Time:		Company
	Date/Time:	Company	Received by:		Date/Time:		Сотрапу
Custody Seals Intact: Custody Seal No.: A Yes A No			Cooler Temperature(s) °C and Other Remarks:	and Other Remarks:			1
							06/00/2001

Eurofins TestAmerica Canton Sample Receipt Form/Narrative	Login # :
Canton Facility	
Client Site Name	Cooler unpacked by:
Cooler Received on 9 - 7 - 7 Opened on 9 - 7 - 7	10/0/1
FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier	Other
Receipt After-hours: Drop-off Date/Time Storage Location	
TestAmerica Cooler # Foam Box Client Cooler Box Other	
Packing material used: Bubble Wrap Foam Plastic Bag None Other	
COOLANT: Wet Ice Blue Ice Dry Ice Water None	
1. Cooler temperature upon receipt See Multiple Cooler Fo	m /, 7
IR GUN# IR-11 (CF +0.1 °C) Observed Cooler Temp. C Corrected Cooler IR GUN #IR-12 (CF +0.2 °C) Observed Cooler Temp. C Corrected Cooler	
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity	s No
	No NA Tests that are not
	checked for per by
	No NA Receiving:
3. Shippers' packing slip attached to the cooler(s)?	
4. Did custody papers accompany the sample(s)?	No Oil and Grease
5. Were the custody papers relinquished & signed in the appropriate place?	No TOC
	(1)
	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	
9. For each sample, does the COC specify preservatives (Y/N),# of containers (Y/N), and sa	
	) No
~	No
12. Are these work share samples and all listed on the COC?	) No
If yes, Questions 13-17 have been checked at the originating laboratory.	) 140
	No NA pH Strip Lot# HC157842
	No
	No NA
	Ne
	No
Contacted PM Date by via Verbal	oice Mail Wher
Concerning	
1	
1 271	
18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES •  additional next page	Samples processed by:
<b>→</b>	
<u>_</u>	
19. SAMPLE CONDITION	
	og time had evnired
	in a broken container.
Sample(s) were received with bubble >6 mm in	diameter. (Notify PM)
20. SAMPLE PRESERVATION	
Sample(s) were furt	her preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):	"
VOA Sample Preservation - Date/Time VOAs Frozen:	
31 1	

WI-NC-099

Client: HDR Inc Job Number: 280-152997-1

Login Number: 152997 List Source: Eurofins TestAmerica, Denver

List Number: 1

Creator: O'Hara, Jake F

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
s the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is 6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# **Environment Testing America**

# **ANALYTICAL REPORT**

Eurofins TestAmerica, Denver 4955 Yarrow Street Arvada, CO 80002 Tel: (303)736-0100

Laboratory Job ID: 280-154472-1

Client Project/Site: Xcel Energy GW CCR Monitoring -

Cherokee

For:

HDR Inc 1670 Broadway **Suite 3400** 

Denver, Colorado 80202

Attn: Molly Reeves

Authorized for release by: 11/22/2021 10:16:25 AM

Savielle Harrison

Danielle Harrington, Project Manager II (303)736-0176

Danielle.Harrington@Eurofinset.com

·····LINKS ······

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The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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# **Definitions/Glossary**

Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

### **Qualifiers**

M	eta	Is
	CLU	10

Qualifier **Qualifier Description** 

Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

### **General Chemistry**

Qualifier	Qualifier Description
^1+	Initial Calibration Verification (ICV) is outside acceptance limits, high biased.
F1	MS and/or MSD recovery exceeds control limits.
F3	Duplicate RPD exceeds the control limit
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
Rad	

Qualifier	Qualifier Description
G	The Sample MDC is greater than the requested RL.
U	Result is less than the sample detection limit.

Glossary	
Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)

MCL MDA MDC

EPA recommended "Maximum Contaminant Level" Minimum Detectable Activity (Radiochemistry) Minimum Detectable Concentration (Radiochemistry)

MDL Method Detection Limit MLMinimum Level (Dioxin) MPN Most Probable Number Method Quantitation Limit MQL NC Not Calculated

Not Detected at the reporting limit (or MDL or EDL if shown) ND

NEG Negative / Absent POS Positive / Present PQL **Practical Quantitation Limit** 

**PRES** Presumptive QC **Quality Control** 

**RER** Relative Error Ratio (Radiochemistry)

RLReporting Limit or Requested Limit (Radiochemistry)

**RPD** Relative Percent Difference, a measure of the relative difference between two points

Toxicity Equivalent Factor (Dioxin) TEF Toxicity Equivalent Quotient (Dioxin) TEQ

TNTC Too Numerous To Count

Eurofins TestAmerica, Denver

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### **Case Narrative**

Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Job ID: 280-154472-1

Laboratory: Eurofins TestAmerica, Denver

**Narrative** 

### **CASE NARRATIVE**

**Client: HDR Inc** 

**Project: Xcel Energy GW CCR Monitoring - Cherokee** 

Report Number: 280-154472-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

This report may include reporting limits (RLs) less than Eurofins TestAmerica's standard reporting limit. The reported sample results and associated reporting limits are being used specifically to meet the needs of this project. Note that data are not normally reported to these levels without qualification because they are inherently less reliable and potentially less defensible than required by the latest industry standards.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

### **RECEIPT**

The samples were received on 10/21/2021; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt were 1.9°C, 2.6°C and 3.2°C.

### TOTAL RECOVERABLE METALS- METHOD 6010C/ 6020A

The accuracy and precision of the Calcium MS/MSD performed on a laboratory generated sample could not be reliably evaluated, as the concentrations present in the parent sample were 4 times greater than the matrix spike concentration. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### **TOTAL MERCURY- METHOD 7470A**

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### **GENERAL CHEMISTRY- VARIOUS**

Several samples required dilution prior to analysis due to matrix interferences or high analyte concentrations for various analyses. The reporting limits have been adjusted accordingly.

The pH sample duplicate analysis data for sample MW-10 exhibited RPD data outside the QC limits. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

Method 9040B: The initial calibration verification (ICV) result for batch 280-554951 was above the upper control limit. However The ICV buffer within ± 0.05 pH units. Sample results have been reported as qualified data.

MS/MSD analyses were performed on sample MW-13EB. The MS/MSD for Sulfate method 9056A exhibited spike compound recoveries outside the QC limits. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

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### **Case Narrative**

Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Job ID: 280-154472-1 (Continued)

Laboratory: Eurofins TestAmerica, Denver (Continued)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### RADIUM-226 (GFPC)- METHOD 9315

The following samples were prepared at a reduced aliquot due to Matrix: MW-10 (280-154472-1) and MW-14 (280-154472-4).

The method 9315 MS/MSD could not be performed, due to insufficient sample volume. Method precision and accuracy have been verified by the acceptable LCS/LCSD analysis data.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### RADIUM-228- METHOD 9320

The following samples were prepared at a reduced aliquot due to Matrix: MW-10 (280-154472-1) and MW-14 (280-154472-4).

Radium-228 was detected in method blank MB 160-533889/23-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. Because the concentration in the method blank is not present at a level greater than the reporting limit, corrective action is deemed unnecessary.

The method 9320 MS/MSD could not be performed, due to insufficient sample volume. Method precision and accuracy have been verified by the acceptable LCS/LCSD analysis data.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### RADIUM-226/RADIUM-228 (GFPC)

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

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Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

# **Client Sample ID: MW-10**

# Lab Sample ID: 280-154472-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	2.9		0.10	0.057	mg/L	1	_	6010C	Total
									Recoverable
Arsenic	0.00097	J	0.0050	0.00075	mg/L	1		6020A	Total
									Recoverable
Barium	0.059		0.0050	0.0022	mg/L	1		6020A	Total
									Recoverable
Calcium	260		1.0	0.58	mg/L	1		6020A	Total
									Recoverable
Chromium	0.0032		0.0025	0.0025	mg/L	1		6020A	Total
									Recoverable
Cobalt	0.0054		0.0010	0.00019	mg/L	1		6020A	Total
									Recoverable
Lithium	0.073		0.0080	0.0017	mg/L	1		6020A	Total
									Recoverable
Molybdenum	0.069		0.010	0.0011	mg/L	1		6020A	Total
Calarina	0.070		0.0050	0.00000	/1	4		C000A	Recoverable
Selenium	0.078		0.0050	0.00089	mg/L	1		6020A	Total
pH adj. to 25 deg C	7.1	ше	0.1		SU			9040B	Recoverable Total/NA
. ,						-			
Temperature	21.2	HF	1.0		Degrees C	1		9040B	Total/NA
Chloride	420		60		mg/L	20		9056A	Total/NA
Fluoride	2.1		0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	990		100	21	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	2100		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	13		4.0	1.1	mg/L	1		SM 2540D	Total/NA

# **Client Sample ID: MW-13**

# Lab Sample ID: 280-154472-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.55		0.10	0.057	mg/L	1	_	6010C	Total
									Recoverable
Barium	0.083		0.0050	0.0022	mg/L	1		6020A	Total
					,,				Recoverable
Calcium	130		1.0	0.58	mg/L	1		6020A	Total
Cabalt	0.00041		0.0010	0.00010				6020A	Recoverable
Cobalt	0.00041	J	0.0010	0.00019	mg/L			0020A	Total Recoverable
Lithium	0.039		0.0080	0.0017	mg/L	1		6020A	Total
					J				Recoverable
Molybdenum	0.0030	J	0.010	0.0011	mg/L	1		6020A	Total
									Recoverable
Selenium	0.0074		0.0050	0.00089	mg/L	1		6020A	Total
									Recoverable
pH adj. to 25 deg C	7.6	HF	0.1		SU	1		9040B	Total/NA
Temperature	20.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	180		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	0.95		0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	290		50	10	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	1000		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	2.8	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

# Client Sample ID: MW-13EB

# Lab Sample ID: 280-154472-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
pH adj. to 25 deg C	8.3	HF ^1+	0.1	0.1	SU	1	_	9040B	Total/NA
Temperature	18.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA

This Detection Summary does not include radiochemical test results.

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# **Detection Summary**

Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

### Client Sample ID: MW-13EB (Continued)

### Lab Sample ID: 280-154472-3

Analyte	Result Qualifier	RL	MDL Unit	Dil Fac D Method	Prep Type
Total Suspended Solids	2.0 J	4.0	1.1 mg/L	1 SM 2540D	Total/NA

# Client Sample ID: MW-14 Lab Sample ID: 280-154472-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.92		0.10	0.057	mg/L	1	_	6010C	Total
									Recoverable
Arsenic	0.0012	J	0.0050	0.00075	mg/L	1		6020A	Total
									Recoverable
Barium	0.048		0.0050	0.0022	mg/L	1		6020A	Total
0. Indiana			0.0040					00004	Recoverable
Cadmium	0.00020	J	0.0010	0.00020	mg/L	1		6020A	Total
Calcium	180		1.0	0.59	mg/L	1		6020A	Recoverable Total
Calcium	100		1.0	0.50	mg/L			0020A	Recoverable
Cobalt	0.00098	J	0.0010	0.00019	ma/l	1		6020A	Total
0024.1	0.00000		0.00.0	0.000.0	9/=	•		0020/.	Recoverable
Lead	0.00070	J	0.0010	0.00045	mg/L	1		6020A	Total
									Recoverable
Lithium	0.074		0.0080	0.0017	mg/L	1		6020A	Total
									Recoverable
Molybdenum	0.022		0.010	0.0011	mg/L	1		6020A	Total
									Recoverable
Selenium	0.0047	J	0.0050	0.00089	mg/L	1		6020A	Total
all adi ta DE dag C	7.1	ш	0.1	0.1	CLI	1		9040B	Recoverable Total/NA
pH adj. to 25 deg C						-			
Temperature	20.3	HF	1.0		Degrees C	1		9040B	Total/NA
Chloride	330		60		mg/L	20		9056A	Total/NA
Fluoride	1.7		0.50		mg/L	1		9056A	Total/NA
Sulfate	330		100	21	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	1400		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	84		4.0	1.1	mg/L	1		SM 2540D	Total/NA

# Client Sample ID: MW-15

# Lab Sample ID: 280-154472-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D M	ethod	Prep Type
Boron	2.7		0.10	0.057	mg/L	1	60	010C	Total
									Recoverable
Antimony	0.0014	J	0.0020	0.00057	mg/L	1	60	)20A	Total
A									Recoverable
Arsenic	0.0021	J	0.0050	0.00075	mg/L	1	60	)20A	Total
									Recoverable
Barium	0.037		0.0050	0.0022	mg/L	1	60	020A	Total
0.11.	400		4.0	0.50			0.0	2004	Recoverable
Calcium	190		1.0	0.58	mg/L	1	60	)20A	Total
Cobalt	0.0069		0.0010	0.00019	ma/l	1	60	)20A	Recoverable
Copail	0.0009		0.0010	0.00019	mg/L	I	OC.	)20A	Total Recoverable
Lithium	0.087		0.0080	0.0017	ma/l	1	60	)20A	Total
Littlam	0.007		0.0000	0.0017	mg/L	•	00	2011	Recoverable
Molybdenum	0.048		0.010	0.0011	ma/L	1	60	020A	Total
,					3				Recoverable
Selenium	0.059		0.0050	0.00089	mg/L	1	60	020A	Total
									Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1	90	040B	Total/NA
Temperature	20.3	HF	1.0	1.0	Degrees C	1	90	040B	Total/NA
Chloride	330		60	20	mg/L	20	90	)56A	Total/NA

This Detection Summary does not include radiochemical test results.

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# **Detection Summary**

Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

# Client Sample ID: MW-15 (Continued)

### Lab Sample ID: 280-154472-5

Analyte	Result (	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	1.7		0.50	0.17	mg/L	1	_	9056A	Total/NA
Sulfate	540		100	21	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	1600		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	4.4		4.0	1.1	mg/L	1		SM 2540D	Total/NA

# **Client Sample ID: MW-16**

# Lab Sample ID: 280-154472-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.49		0.10	0.057	mg/L	1	_	6010C	Total
									Recoverable
Arsenic	0.0025	J	0.0050	0.00075	mg/L	1		6020A	Total
									Recoverable
Barium	0.050		0.0050	0.0022	mg/L	1		6020A	Total
									Recoverable
Calcium	130		1.0	0.58	mg/L	1		6020A	Total
									Recoverable
Cobalt	0.00046	J	0.0010	0.00019	mg/L	1		6020A	Total
1.20.2	0.050		0.0000	0.0047				00004	Recoverable
Lithium	0.059		0.0080	0.0017	mg/L	1		6020A	Total
Molyhdonum	0.011		0.010	0.0011	ma/l	1		6020A	Recoverable Total
Molybdenum	0.011		0.010	0.0011	IIIg/L			0020A	Recoverable
Selenium	0.0068		0.0050	0.00089	ma/l	1		6020A	Total
Coloriidiii	0.0000		0.0000	0.00000	9/ =			002071	Recoverable
pH adj. to 25 deg C	7.3	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.5	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	300		60	20	mg/L	20		9056A	Total/NA
Fluoride	1.7		0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	470		100	21	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	1300		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	1.2	J	4.0		mg/L	1		SM 2540D	Total/NA

### **Client Sample ID: MW-16D**

### Lab Sample ID: 280-154472-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.50		0.10	0.057	mg/L	1	_	6010C	Total
									Recoverable
Arsenic	0.0027	J	0.0050	0.00075	mg/L	1		6020A	Total
									Recoverable
Barium	0.050		0.0050	0.0022	mg/L	1		6020A	Total
									Recoverable
Calcium	130		1.0	0.58	mg/L	1		6020A	Total
									Recoverable
Cobalt	0.00045	J	0.0010	0.00019	mg/L	1		6020A	Total
									Recoverable
Lithium	0.060		0.0080	0.0017	mg/L	1		6020A	Total
									Recoverable
Molybdenum	0.010		0.010	0.0011	mg/L	1		6020A	Total
									Recoverable
Selenium	0.0069		0.0050	0.00089	mg/L	1		6020A	Total
									Recoverable
pH adj. to 25 deg C	7.1	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.5	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	300		60	20	mg/L	20		9056A	Total/NA
Fluoride	1.7		0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	470		100		mg/L	20		9056A	Total/NA

This Detection Summary does not include radiochemical test results.

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# **Detection Summary**

Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

# Client Sample ID: MW-16D (Continued)

# Lab Sample ID: 280-154472-7

Analyte	Result	Qualifier	RL	MDL	Unit	Oil Fac	D	Method	Prep Type
Total Dissolved Solids (TDS)	1400		20	9.4	mg/L	1	_	SM 2540C	Total/NA
Total Suspended Solids	1.2	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

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# **Method Summary**

Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL CAN
9040B	pH	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL DEN
315	Radium-226 (GFPC)	SW846	TAL SL
320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
8005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN
7470A	Preparation, Mercury	SW846	TAL CAN
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

### **Protocol References:**

None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

### **Laboratory References:**

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

# **Sample Summary**

Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-154472-1	MW-10	Water	10/19/21 15:30	10/21/21 09:34
280-154472-2	MW-13	Water	10/20/21 10:15	10/21/21 09:34
280-154472-3	MW-13EB	Water	10/20/21 10:40	10/21/21 09:34
280-154472-4	MW-14	Water	10/20/21 11:50	10/21/21 09:34
280-154472-5	MW-15	Water	10/19/21 14:05	10/21/21 09:34
280-154472-6	MW-16	Water	10/19/21 10:35	10/21/21 09:34
280-154472-7	MW-16D	Water	10/19/21 10:35	10/21/21 09:34

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Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: 6010C - Metals (	(ICP) - Total Recoverable
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Client Sample ID: MW-10 Date Collected: 10/19/21 15:30 Date Received: 10/21/21 09:34							Lab Sam	ple ID: 280-19 Matrix	54472-1 :: Water
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	2.9		0.10	0.057	mg/L		10/29/21 14:00	11/02/21 14:25	1
Client Sample ID: MW-13							Lab Sam	ple ID: 280-1	54472-2
Date Collected: 10/20/21 10:15								Matrix	: Water
Date Received: 10/21/21 09:34									
Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.55		0.10	0.057	mg/L		10/29/21 14:00	11/02/21 14:30	1
Client Sample ID: MW-13EB							Lab Sam	ple ID: 280-1	54472-3
Date Collected: 10/20/21 10:40								 Matrix	: Water
Date Received: 10/21/21 09:34									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.057	mg/L		10/29/21 14:00	11/02/21 14:42	1
Client Sample ID: MW-14							Lab Sam	ple ID: 280-1	54472-4
Date Collected: 10/20/21 11:50									: Water
Date Received: 10/21/21 09:34									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.92		0.10	0.057	mg/L		10/29/21 14:00	11/02/21 14:47	1
Client Sample ID: MW-15							Lab Sam	ple ID: 280-1	54472-5
Date Collected: 10/19/21 14:05									: Water
Date Received: 10/21/21 09:34									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	2.7		0.10	0.057	mg/L		10/29/21 14:00	11/02/21 14:51	1
Client Sample ID: MW-16							Lab Sam	ple ID: 280-1	54472-6
Date Collected: 10/19/21 10:35									: Water
Date Received: 10/21/21 09:34									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.49		0.10	0.057	mg/L		10/29/21 14:00	11/02/21 14:55	1

Client Sample ID: MW-16D Date Collected: 10/19/21 10:35

Date Received: 10/21/21 09:34

Analyte

Result Qualifier RL MDL Unit Prepared Analyzed Boron 0.50 0.10 0.057 mg/L 10/29/21 14:00 11/02/21 15:00

### Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: MW-10 Date Collected: 10/19/21 15:30 Date Received: 10/21/21 09:34							Lab Sample ID: 280-1544 Matrix: W			
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Antimony	ND		0.0020	0.00057	mg/L		10/29/21 14:00	11/01/21 15:09	1	
Arsenic	0.00097	J	0.0050	0.00075	mg/L		10/29/21 14:00	11/01/21 15:09	1	
Barium	0.059		0.0050	0.0022	mg/L		10/29/21 14:00	11/01/21 15:09	1	
Beryllium	ND		0.0010	0.00062	mg/L		10/29/21 14:00	11/01/21 15:09	1	
Cadmium	ND		0.0010	0.00020	mg/L		10/29/21 14:00	11/01/21 15:09	1	
Calcium	260		1.0	0.58	mg/L		10/29/21 14:00	11/01/21 15:09	1	
Chromium	0.0032		0.0025	0.0025	mg/L		10/29/21 14:00	11/01/21 15:09	1	

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Lab Sample ID: 280-154472-7 **Matrix: Water** 

Dil Fac

Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

### Method: 6020A - Metals (ICP/MS) - Total Recoverable (Continued)

**Client Sample ID: MW-10** Lab Sample ID: 280-154472-1 Date Collected: 10/19/21 15:30 **Matrix: Water** 

Date Received: 10/21/21 09:34

Date Received. 10/21/21 0	0.04							
Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	0.0054	0.0010	0.00019	mg/L		10/29/21 14:00	11/01/21 15:09	1
Lead	ND	0.0010	0.00045	mg/L		10/29/21 14:00	11/01/21 15:09	1
Lithium	0.073	0.0080	0.0017	mg/L		10/29/21 14:00	11/01/21 15:09	1
Molybdenum	0.069	0.010	0.0011	mg/L		10/29/21 14:00	11/01/21 15:09	1
Selenium	0.078	0.0050	0.00089	mg/L		10/29/21 14:00	11/01/21 15:09	1
Thallium	ND	0.0010	0.00020	ma/L		10/29/21 14:00	11/01/21 15:09	1

**Client Sample ID: MW-13** Lab Sample ID: 280-154472-2 Date Collected: 10/20/21 10:15 **Matrix: Water** 

Date Received: 10/21/21 09:34

Date Received: 10/21/2	21 09:34								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Antimony	ND		0.0020	0.00057	mg/L		10/29/21 14:00	11/01/21 15:11	
Arsenic	ND		0.0050	0.00075	mg/L		10/29/21 14:00	11/01/21 15:11	
Barium	0.083		0.0050	0.0022	mg/L		10/29/21 14:00	11/01/21 15:11	
Beryllium	ND		0.0010	0.00062	mg/L		10/29/21 14:00	11/01/21 15:11	
Cadmium	ND		0.0010	0.00020	mg/L		10/29/21 14:00	11/01/21 15:11	
Calcium	130		1.0	0.58	mg/L		10/29/21 14:00	11/01/21 15:11	
Chromium	ND		0.0025	0.0025	mg/L		10/29/21 14:00	11/01/21 15:11	
Cobalt	0.00041	J	0.0010	0.00019	mg/L		10/29/21 14:00	11/01/21 15:11	
Lead	ND		0.0010	0.00045	mg/L		10/29/21 14:00	11/01/21 15:11	
Lithium	0.039		0.0080	0.0017	mg/L		10/29/21 14:00	11/01/21 15:11	
Molybdenum	0.0030	J	0.010	0.0011	mg/L		10/29/21 14:00	11/01/21 15:11	
Selenium	0.0074		0.0050	0.00089	mg/L		10/29/21 14:00	11/01/21 15:11	
Thallium	ND		0.0010	0.00020	mg/L		10/29/21 14:00	11/01/21 15:11	

Lab Sample ID: 280-154472-3 **Client Sample ID: MW-13EB** Date Collected: 10/20/21 10:40 **Matrix: Water** 

Date Received: 10/21/21 09:34

Date Received: 10/21/2	21 09:34							
Analyte	Result Qu	ualifier RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND ND	0.0020	0.00057	mg/L		10/29/21 14:00	11/01/21 15:14	1
Arsenic	ND	0.0050	0.00075	mg/L		10/29/21 14:00	11/01/21 15:14	1
Barium	ND	0.0050	0.0022	mg/L		10/29/21 14:00	11/01/21 15:14	1
Beryllium	ND	0.0010	0.00062	mg/L		10/29/21 14:00	11/01/21 15:14	1
Cadmium	ND	0.0010	0.00020	mg/L		10/29/21 14:00	11/01/21 15:14	1
Calcium	ND	1.0	0.58	mg/L		10/29/21 14:00	11/01/21 15:14	1
Chromium	ND	0.0025	0.0025	mg/L		10/29/21 14:00	11/01/21 15:14	1
Cobalt	ND	0.0010	0.00019	mg/L		10/29/21 14:00	11/01/21 15:14	1
Lead	ND	0.0010	0.00045	mg/L		10/29/21 14:00	11/01/21 15:14	1
Lithium	ND	0.0080	0.0017	mg/L		10/29/21 14:00	11/01/21 15:14	1
Molybdenum	ND	0.010	0.0011	mg/L		10/29/21 14:00	11/01/21 15:14	1
Selenium	ND	0.0050	0.00089	mg/L		10/29/21 14:00	11/01/21 15:14	1
Thallium	ND	0.0010	0.00020	mg/L		10/29/21 14:00	11/01/21 15:14	1

Client Sample ID: MW-14 Lab Sample ID: 280-154472-4 **Matrix: Water** 

Date Collected: 10/20/21 11:50 Date Received: 10/21/21 09:34

Bute Received: 10/21/21 00:04									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/29/21 14:00	11/01/21 15:16	1
Arsenic	0.0012	J	0.0050	0.00075	mg/L		10/29/21 14:00	11/01/21 15:16	1
Barium	0.048		0.0050	0.0022	mg/L		10/29/21 14:00	11/01/21 15:16	1

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Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

### Method: 6020A - Metals (ICP/MS) - Total Recoverable (Continued)

Client Sample ID: MW-14 Lab Sample ID: 280-154472-4 Date Collected: 10/20/21 11:50 **Matrix: Water** 

Date Received: 10/21/21 09:34

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Beryllium	ND		0.0010	0.00062	mg/L		10/29/21 14:00	11/01/21 15:16	1
Cadmium	0.00020	J	0.0010	0.00020	mg/L		10/29/21 14:00	11/01/21 15:16	1
Calcium	180		1.0	0.58	mg/L		10/29/21 14:00	11/01/21 15:16	1
Chromium	ND		0.0025	0.0025	mg/L		10/29/21 14:00	11/01/21 15:16	1
Cobalt	0.00098	J	0.0010	0.00019	mg/L		10/29/21 14:00	11/01/21 15:16	1
Lead	0.00070	J	0.0010	0.00045	mg/L		10/29/21 14:00	11/01/21 15:16	1
Lithium	0.074		0.0080	0.0017	mg/L		10/29/21 14:00	11/01/21 15:16	1
Molybdenum	0.022		0.010	0.0011	mg/L		10/29/21 14:00	11/01/21 15:16	1
Selenium	0.0047	J	0.0050	0.00089	mg/L		10/29/21 14:00	11/01/21 15:16	1
Thallium	ND		0.0010	0.00020	mg/L		10/29/21 14:00	11/01/21 15:16	1

**Client Sample ID: MW-15** Lab Sample ID: 280-154472-5 Date Collected: 10/19/21 14:05 **Matrix: Water** 

Date Received: 10/21/21	09:34						matrix	· Wator
Analyte	Result Qualif	ier RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0014 J	0.0020	0.00057	mg/L		10/29/21 14:00	11/01/21 15:19	1
Arsenic	0.0021 J	0.0050	0.00075	mg/L		10/29/21 14:00	11/01/21 15:19	1
Barium	0.037	0.0050	0.0022	mg/L		10/29/21 14:00	11/01/21 15:19	1
Beryllium	ND	0.0010	0.00062	mg/L		10/29/21 14:00	11/01/21 15:19	1
Cadmium	ND	0.0010	0.00020	mg/L		10/29/21 14:00	11/01/21 15:19	1
Calcium	190	1.0	0.58	mg/L		10/29/21 14:00	11/01/21 15:19	1
Chromium	ND	0.0025	0.0025	mg/L		10/29/21 14:00	11/01/21 15:19	1
Cobalt	0.0069	0.0010	0.00019	mg/L		10/29/21 14:00	11/01/21 15:19	1
Lead	ND	0.0010	0.00045	mg/L		10/29/21 14:00	11/01/21 15:19	1
Lithium	0.087	0.0080	0.0017	mg/L		10/29/21 14:00	11/01/21 15:19	1
Molybdenum	0.048	0.010	0.0011	mg/L		10/29/21 14:00	11/01/21 15:19	1
Selenium	0.059	0.0050	0.00089	mg/L		10/29/21 14:00	11/01/21 15:19	1
Thallium	ND	0.0010	0.00020	mg/L		10/29/21 14:00	11/01/21 15:19	1

**Client Sample ID: MW-16** Lab Sample ID: 280-154472-6 Date Collected: 10/19/21 10:35 **Matrix: Water** 

Date Received: 10/21/2	21 09:34								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/29/21 14:00	11/01/21 15:21	1
Arsenic	0.0025	J	0.0050	0.00075	mg/L		10/29/21 14:00	11/01/21 15:21	1
Barium	0.050		0.0050	0.0022	mg/L		10/29/21 14:00	11/01/21 15:21	1
Beryllium	ND		0.0010	0.00062	mg/L		10/29/21 14:00	11/01/21 15:21	1
Cadmium	ND		0.0010	0.00020	mg/L		10/29/21 14:00	11/01/21 15:21	1
Calcium	130		1.0	0.58	mg/L		10/29/21 14:00	11/01/21 15:21	1
Chromium	ND		0.0025	0.0025	mg/L		10/29/21 14:00	11/01/21 15:21	1
Cobalt	0.00046	J	0.0010	0.00019	mg/L		10/29/21 14:00	11/01/21 15:21	1
Lead	ND		0.0010	0.00045	mg/L		10/29/21 14:00	11/01/21 15:21	1
Lithium	0.059		0.0080	0.0017	mg/L		10/29/21 14:00	11/01/21 15:21	1
Molybdenum	0.011		0.010	0.0011	mg/L		10/29/21 14:00	11/01/21 15:21	1
Selenium	0.0068		0.0050	0.00089	mg/L		10/29/21 14:00	11/01/21 15:21	1
Thallium	ND		0.0010	0.00020	mg/L		10/29/21 14:00	11/01/21 15:21	1

Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

# Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: MW-16D Date Collected: 10/19/21 10:35				Lab Sample ID: 280-1544 Matrix: V					
Date Received: 10/21/21 09:34 Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/29/21 14:00	11/01/21 15:24	1
Arsenic	0.0027	J	0.0050	0.00075	mg/L		10/29/21 14:00	11/01/21 15:24	1
Barium	0.050		0.0050	0.0022	mg/L		10/29/21 14:00	11/01/21 15:24	1
Beryllium	ND		0.0010	0.00062	mg/L		10/29/21 14:00	11/01/21 15:24	1
Cadmium	ND		0.0010	0.00020	mg/L		10/29/21 14:00	11/01/21 15:24	1
Calcium	130		1.0	0.58	mg/L		10/29/21 14:00	11/01/21 15:24	1
Chromium	ND		0.0025	0.0025	mg/L		10/29/21 14:00	11/01/21 15:24	1
Cobalt	0.00045	J	0.0010	0.00019	mg/L		10/29/21 14:00	11/01/21 15:24	1
Lead	ND		0.0010	0.00045	mg/L		10/29/21 14:00	11/01/21 15:24	1
Lithium	0.060		0.0080	0.0017	mg/L		10/29/21 14:00	11/01/21 15:24	1
Molybdenum	0.010		0.010	0.0011	mg/L		10/29/21 14:00	11/01/21 15:24	1
Selenium	0.0069		0.0050	0.00089	mg/L		10/29/21 14:00	11/01/21 15:24	1
Thallium	ND		0.0010	0.00020	mg/L		10/29/21 14:00	11/01/21 15:24	1

Date Received: 10/21/21 09:34

Analyte

Mercury

Client Sample ID: MW-10 Date Collected: 10/19/21 15:30							Lab Samı	ole ID: 280-15 Matrix	34472-1 : Water
Date Received: 10/21/21 09:34 Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L	=	10/29/21 14:00		1
Client Sample ID: MW-13 Date Collected: 10/20/21 10:15 Date Received: 10/21/21 09:34							Lab Samı	ole ID: 280-15 Matrix	64472-2 : Water
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		10/29/21 14:00	11/01/21 14:48	1
Client Sample ID: MW-13EB Date Collected: 10/20/21 10:40 Date Received: 10/21/21 09:34							Lab Samı	ole ID: 280-15 Matrix	64472-3 : Water
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		10/29/21 14:00	11/01/21 14:50	1
Client Sample ID: MW-14 Date Collected: 10/20/21 11:50 Date Received: 10/21/21 09:34							Lab Samı	ole ID: 280-15 Matrix	4472-4 : Water
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		10/29/21 14:00	11/01/21 14:52	1
Client Sample ID: MW-15 Date Collected: 10/19/21 14:05 Date Received: 10/21/21 09:34							Lab Samı	ole ID: 280-15 Matrix	64472-5 : Water
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		10/29/21 14:00	11/01/21 14:54	1
Client Sample ID: MW-16 Date Collected: 10/19/21 10:35							Lab Samı	ole ID: 280-15 Matrix	64472-6 : Water

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Analyzed

10/29/21 14:00 11/01/21 14:56

Prepared

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0.20

MDL Unit

0.13 ug/L

Result Qualifier

ND

Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-16D Lab Sample ID: 280-154472-7

Date Collected: 10/19/21 10:35 **Matrix: Water** Date Received: 10/21/21 09:34

Analyte RL **MDL** Unit Prepared Dil Fac Result Qualifier **Analyzed** Mercury ND 0.20 0.13 ug/L 10/29/21 14:00 11/01/21 14:58

**General Chemistry** 

**Client Sample ID: MW-10** Lab Sample ID: 280-154472-1 Date Collected: 10/19/21 15:30 **Matrix: Water** 

Date Received: 10/21/21 09:34

Date Received. 10/21/21 05.54									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.1	HF	0.1	0.1	SU			10/22/21 15:52	1
Temperature	21.2	HF	1.0	1.0	Degrees C			10/22/21 15:52	1
Chloride	420		60	20	mg/L			11/16/21 00:12	20
Fluoride	2.1		0.50	0.17	mg/L			11/15/21 22:47	1
Sulfate	990		100	21	mg/L			11/16/21 00:12	20
Total Dissolved Solids (TDS)	2100		20	9.4	mg/L			10/25/21 16:20	1
Total Suspended Solids	13		4.0	1.1	mg/L			10/22/21 09:21	1

**Client Sample ID: MW-13** Lab Sample ID: 280-154472-2 Date Collected: 10/20/21 10:15 **Matrix: Water** 

Date Received: 10/21/21 09:34

Date Neceived. 10/21/21 03.34	•								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU			10/22/21 15:59	1
Temperature	20.6	HF	1.0	1.0	Degrees C			10/22/21 15:59	1
Chloride	180		3.0	1.0	mg/L			11/17/21 02:19	1
Fluoride	0.95		0.50	0.17	mg/L			11/17/21 02:19	1
Sulfate	290		50	10	mg/L			11/17/21 02:33	10
Total Dissolved Solids (TDS)	1000		10	4.7	mg/L			10/26/21 10:12	1
Total Suspended Solids	2.8	J	4.0	1.1	mg/L			10/22/21 09:21	1

**Client Sample ID: MW-13EB** Lab Sample ID: 280-154472-3 Date Collected: 10/20/21 10:40 **Matrix: Water** 

Date Received: 10/21/21 09:34

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C		HF ^1+	0.1		SU	- <del>-</del>	Tropulou	10/23/21 18:45	1
Temperature	18.6	HF	1.0	1.0	Degrees C			10/23/21 18:45	1
Chloride	ND		3.0	1.0	mg/L			11/17/21 02:47	1
Fluoride	ND		0.50	0.17	mg/L			11/17/21 02:47	1
Sulfate	ND	F1	5.0	1.0	mg/L			11/17/21 02:47	1
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			10/26/21 10:12	1
Total Suspended Solids	2.0	J	4.0	1.1	mg/L			10/22/21 09:21	1

Client Sample ID: MW-14 Lab Sample ID: 280-154472-4 Date Collected: 10/20/21 11:50 **Matrix: Water** 

Data Pacaiyad: 10/21/21 09:34

	Date Received: 10/21/21 09:34									
1	Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ī	oH adj. to 25 deg C	7.1	HF	0.1	0.1	SU			10/22/21 16:09	1
ŀ	Temperature	20.3	HF	1.0	1.0	Degrees C			10/22/21 16:09	1
(	Chloride	330		60	20	mg/L			11/17/21 05:21	20
H	Fluoride	1.7		0.50	0.17	mg/L			11/17/21 05:07	1
;	Sulfate	330		100	21	mg/L			11/17/21 05:21	20
•	Total Dissolved Solids (TDS)	1400		20	9.4	mg/L			10/26/21 10:12	1
•	Total Suspended Solids	84		4.0	1.1	mg/L			10/22/21 09:21	1

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Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

# **General Chemistry**

Client Sample ID: MW-15 Date Collected: 10/19/21 14:05	Lab Sample ID: 280-154472-5 Matrix: Water
Date Received: 10/21/21 09:34	

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU			10/22/21 16:14	1
Temperature	20.3	HF	1.0	1.0	Degrees C			10/22/21 16:14	1
Chloride	330		60	20	mg/L			11/15/21 18:35	20
Fluoride	1.7		0.50	0.17	mg/L			11/15/21 18:21	1
Sulfate	540		100	21	mg/L			11/15/21 18:35	20
Total Dissolved Solids (TDS)	1600		20	9.4	mg/L			10/26/21 10:12	1
Total Suspended Solids	4.4		4.0	1.1	mg/L			10/22/21 09:21	1

Client Sample ID: MW-16

Date Collected: 10/19/21 10:35

Lab Sample ID: 280-154472-6

Matrix: Water

Date Received: 10/21/21 09:34

Date Received: 10/21/21 09:34									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.3	HF	0.1	0.1	SU			10/22/21 16:18	1
Temperature	20.5	HF	1.0	1.0	Degrees C			10/22/21 16:18	1
Chloride	300		60	20	mg/L			11/16/21 02:04	20
Fluoride	1.7		0.50	0.17	mg/L			11/16/21 01:50	1
Sulfate	470		100	21	mg/L			11/16/21 02:04	20
Total Dissolved Solids (TDS)	1300		20	9.4	mg/L			10/26/21 10:12	1
Total Suspended Solids	1.2	J	4.0	1.1	mg/L			10/22/21 09:21	1

Client Sample ID: MW-16D

Lab Sample ID: 280-154472-7

Date Collected: 10/19/21 10:35

Matrix: Water

Date Received: 10/10/21 09:34

Date Received: 10/21/21 09:34									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.1	HF	0.1	0.1	SU			10/22/21 16:21	1
Temperature	20.5	HF	1.0	1.0	Degrees C			10/22/21 16:21	1
Chloride	300		60	20	mg/L			11/15/21 19:31	20
Fluoride	1.7		0.50	0.17	mg/L			11/15/21 19:17	1
Sulfate	470		100	21	mg/L			11/15/21 19:31	20
Total Dissolved Solids (TDS)	1400		20	9.4	mg/L			10/26/21 10:10	1
Total Suspended Solids	1.2	J	4.0	1.1	mg/L			10/22/21 09:21	1

# Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-10 Lab Sample ID: 280-154472-1
Date Collected: 10/19/21 15:30 Matrix: Water

Date Collected.	10/13/21 13.	<b>,</b> 0		Matrix. Water						
Date Received: 1	0/21/21 09:3	4								
			Count Uncert.	Total Uncert.						
Analyte	Pocult	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Allalyte	ivesuit	Qualifier	(2017-)	(2017-)	INL	WIDC	OTITE	Fiebaleu	Allalyzeu	Dillac
Radium-226	0.917		0.480	0.487	1.00	0.602	pCi/L	10/27/21 14:28	11/18/21 09:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	52.3		40 - 110					10/27/21 14:28	11/18/21 09:46	1

Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: 93	15 - R	adium-	-226	(GFPC)
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Client Sample ID: MW-13	Lab Sample ID: 280-154472-2
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Date Collected: 10/20/21 10:15 **Matrix: Water** 

Date Received: 10/21/21 09:34

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.798		0.333	0.341	1.00	0.386	pCi/L	10/27/21 14:28	11/18/21 09:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	68.5		40 - 110					10/27/21 14:28	11/18/21 09:46	1

Client Sample ID: MW-13EB Lab Sample ID: 280-154472-3 **Matrix: Water** 

Date Collected: 10/20/21 10:40 Date Received: 10/21/21 09:34

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.494		0.233	0.237	1.00	0.274	pCi/L	10/27/21 14:28	11/18/21 09:47	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.0		40 - 110					10/27/21 14:28	11/18/21 09:47	1

Client Sample ID: MW-14 Lab Sample ID: 280-154472-4

Date Collected: 10/20/21 11:50 **Matrix: Water** 

Date Received: 10/21/21 09:34

Date Received.		•	Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	1.28		0.626	0.636	1.00	0.733	pCi/L	10/27/21 14:28	11/18/21 09:47	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	58.3		40 - 110					10/27/21 14:28	11/18/21 09:47	1

Client Sample ID: MW-15 Lab Sample ID: 280-154472-5 **Matrix: Water** 

Date Collected: 10/19/21 14:05

Date Received: 1	1/21/21 09:34	4	Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.362		0.195	0.198	1.00	0.244	pCi/L	10/27/21 14:28	11/18/21 09:48	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	102		40 - 110					10/27/21 14:28	11/18/21 09:48	1

**Client Sample ID: MW-16** Lab Sample ID: 280-154472-6 **Matrix: Water** 

Date Collected: 10/19/21 10:35

Date Received: 1	10/21/21 09:3	4								
			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.485		0.220	0.224	1.00	0.254	pCi/L	10/27/21 14:28	11/18/21 09:48	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	103		40 - 110					10/27/21 14:28	11/18/21 09:48	1

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Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

**Method: 9315 - Radium-226 (GFPC)** 

Client Sample ID: MW-16D Lab Sample ID: 280-154472-7

Date Collected: 10/19/21 10:35

Date Received: 10/21/21 09:34

Matrix: Water

Count Total Uncert. Uncert. Uncert. Analyte Result Qualifier ( $2\sigma$ +/-) RL MDC Unit Prepared Analyzed Dil Fac

Radium-226 0.172 U 0.185 0.185 1.00 0.297 PCi/L 10/27/21 14:28 11/18/21 11:35 1

 Carrier
 %Yield
 Qualifier
 Limits
 Prepared
 Analyzed
 Dil Fac

 Ba Carrier
 100
 40 - 110
 10/27/21 14:28
 11/18/21 11:35
 1

Method: 9320 - Radium-228 (GFPC)

Carrier

Client Sample ID: MW-10 Lab Sample ID: 280-154472-1

Date Collected: 10/19/21 15:30 Matrix: Water Date Received: 10/21/21 09:34

Count Total Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac Radium-228 0.558 Ū 0.516 0.518 1.00 10/27/21 15:00 11/17/21 16:53 0.828 pCi/L

 Ba Carrier
 52.3
 40 - 110
 10/27/21 15:00
 11/17/21 16:53

 Y Carrier
 91.2
 40 - 110
 10/27/21 15:00
 11/17/21 16:53

Client Sample ID: MW-13 Lab Sample ID: 280-154472-2

Date Collected: 10/20/21 10:15

Date Received: 10/21/21 09:34

Matrix: Water

Count Total Uncert. Uncert.

Qualifier

Limits

Count

%Yield

Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Analyte Prepared Analyzed Dil Fac Radium-228 0.252 U 0.313 0.314 1.00 0.518 pCi/L 10/27/21 15:00 11/17/21 16:54

 Carrier
 %Yield Ba Carrier
 Qualifier 68.5
 Limits 40 - 110
 Prepared 10/27/21 15:00
 Analyzed 11/17/21 16:54
 Dil Fac 11/17/21 16:54
 1

 Y Carrier
 92.7
 40 - 110
 10/27/21 15:00
 11/17/21 16:54
 1

Client Sample ID: MW-13EB Lab Sample ID: 280-154472-3

Date Collected: 10/20/21 10:40 Matrix: Water Date Received: 10/21/21 09:34

Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac Radium-228 0.159 Ū 0.219 0.220 1.00 0.366 pCi/L 10/27/21 15:00 11/17/21 16:54

Total

 Carrier
 %Yield Qualifier
 Limits
 Prepared
 Analyzed 10/17/21 15:00
 Dil Fac 10/27/21 15:00

 Ba Carrier
 90.0
 40 - 110
 10/27/21 15:00
 11/17/21 16:54
 1

 Y Carrier
 91.6
 40 - 110
 10/27/21 15:00
 11/17/21 16:54
 1

Client Sample ID: MW-14 Lab Sample ID: 280-154472-4

Date Collected: 10/20/21 11:50 Matrix: Water

Date Received: 10/21/21 09:34 Count Total Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Dil Fac Analyzed 0.502 U G Radium-228 0.711 0.713 1.00 1.19 pCi/L 10/27/21 15:00 11/17/21 16:54

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3

4

5

7

0

10

12

13

Dil Fac

Analyzed

Prepared

14

15

11/22/2021

Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: 9320 - Radium-228 (GFPC)

Carrier	%Yield Qualifier	Limits	Prepared Analyzed	Dil Fac
Ba Carrier	58.3	40 - 110	10/27/21 15:00 11/17/21 16:54	1
Y Carrier	91.2	40 - 110	10/27/21 15:00 11/17/21 16:54	1

**Client Sample ID: MW-15** Lab Sample ID: 280-154472-5 Date Collected: 10/19/21 14:05 **Matrix: Water** 

Date Received: 10/21/21 09:34

Client: HDR Inc

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.615		0.257	0.263	1.00	0.364	pCi/L	10/27/21 15:00	11/17/21 17:05	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	102		40 - 110					10/27/21 15:00	11/17/21 17:05	1
Y Carrier	91.6		40 - 110					10/27/21 15:00	11/17/21 17:05	1

Client Sample ID: MW-16 Lab Sample ID: 280-154472-6

Date Collected: Date Received:		-							Matrix	: Water
Data Rossiva.	10/21/21 0010	-	Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.05		0.279	0.295	1.00	0.339	pCi/L	10/27/21 15:00	11/17/21 17:06	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	103		40 - 110					10/27/21 15:00	11/17/21 17:06	1
Y Carrier	91.6		40 - 110					10/27/21 15:00	11/17/21 17:06	1

Client Sample ID: MW-16D Lab Sample ID: 280-154472-7 Date Collected: 10/19/21 10:35 **Matrix: Water** 

Date Received:	10/21/21 09:3	34								
			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.788		0.272	0.282	1.00	0.366	pCi/L	10/27/21 15:00	11/17/21 17:07	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	100		40 - 110					10/27/21 15:00	11/17/21 17:07	1
Y Carrier	92.7		40 - 110					10/27/21 15:00	11/17/21 17:07	1

# Method: Ra226 Ra228 - Combined Radium-226 and Radium-228

**Client Sample ID: MW-10** Lab Sample ID: 280-154472-1 Date Collected: 10/19/21 15:30 **Matrix: Water** 

Date Received: 10/21/21 09:34

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.47		0.705	0.711	5.00	0.828	pCi/L		11/18/21 18:49	1

Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

# Method: Ra226 Ra228 - Combined Radium-226 and Radium-228

**Client Sample ID: MW-13** Lab Sample ID: 280-154472-2 Date Collected: 10/20/21 10:15

**Matrix: Water** 

Date Received: 10/21/21 09:34

			Count	iotai					
			Uncert.	Uncert.					
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC Un	nit Prepared	Analyzed	Dil Fac
Combined Radium	1.05		0.457	0.464	5.00	0.518 pC	Ci/L	11/18/21 18:49	1

226 + 228

Client: HDR Inc

**Client Sample ID: MW-13EB** Lab Sample ID: 280-154472-3 Date Collected: 10/20/21 10:40

**Matrix: Water** 

Date Received: 10/21/21 09:34

			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium	0.653		0.320	0.323	5.00	0.366	pCi/L		11/18/21 18:49	1

**Client Sample ID: MW-14** Lab Sample ID: 280-154472-4 Date Collected: 10/20/21 11:50

**Matrix: Water** 

Date Received: 10/21/21 09:34

			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.78		0.947	0.955	5.00	1.19	pCi/L		11/18/21 18:49	1

**Client Sample ID: MW-15** Lab Sample ID: 280-154472-5

Date Collected: 10/19/21 14:05 **Matrix: Water** 

Date Received: 10/21/21 09:34

			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium	0.977		0.323	0.329	5.00	0.364	pCi/L	_	11/18/21 18:49	1

**Client Sample ID: MW-16** Lab Sample ID: 280-154472-6 Date Collected: 10/19/21 10:35 **Matrix: Water** 

Date Received: 10/21/21 09:34

			Count	Total					
			Uncert.	Uncert.					
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC Unit	Prepared	Analyzed	Dil Fac
Combined Radium	1.53		0.355	0.370	5.00	0.339 pCi/L		11/18/21 18:50	1
226 + 220									

**Client Sample ID: MW-16D** Lab Sample ID: 280-154472-7

Date Collected: 10/19/21 10:35 **Matrix: Water** 

Date Received: 10/21/21 09:34

			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium	0.961		0.329	0.337	5.00	0.366	pCi/L		11/18/21 18:50	1
226 + 228										

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# QC Sample Results

Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-510507/1-A

**Matrix: Water** 

Analysis Batch: 511035

**Client Sample ID: Method Blank Prep Type: Total Recoverable** 

**Prep Batch: 510507** 

Analyte **Result Qualifier** RL **MDL** Unit Analyzed Dil Fac Prepared 0.10 10/29/21 14:00 11/02/21 12:40 Boron ND 0.057 mg/L

LCS LCS

LCS LCS

Lab Sample ID: LCS 240-510507/2-A

**Matrix: Water** 

Analysis Batch: 511035

MB MB

**Client Sample ID: Lab Control Sample Prep Type: Total Recoverable Prep Batch: 510507** 

%Rec.

Limits

Analyte Added Result Qualifier Unit D %Rec 1.00 0.946 80 - 120 Boron mg/L 95

Spike

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-510507/1-A

**Matrix: Water** 

**Analysis Batch: 510947** 

**Client Sample ID: Method Blank Prep Type: Total Recoverable** 

**Prep Batch: 510507** 

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/29/21 14:00	11/01/21 14:34	1
Arsenic	ND		0.0050	0.00075	mg/L		10/29/21 14:00	11/01/21 14:34	1
Barium	ND		0.0050	0.0022	mg/L		10/29/21 14:00	11/01/21 14:34	1
Beryllium	ND		0.0010	0.00062	mg/L		10/29/21 14:00	11/01/21 14:34	1
Cadmium	ND		0.0010	0.00020	mg/L		10/29/21 14:00	11/01/21 14:34	1
Calcium	ND		1.0	0.58	mg/L		10/29/21 14:00	11/01/21 14:34	1
Chromium	ND		0.0025	0.0025	mg/L		10/29/21 14:00	11/01/21 14:34	1
Cobalt	ND		0.0010	0.00019	mg/L		10/29/21 14:00	11/01/21 14:34	1
Lead	ND		0.0010	0.00045	mg/L		10/29/21 14:00	11/01/21 14:34	1
Lithium	ND		0.0080	0.0017	mg/L		10/29/21 14:00	11/01/21 14:34	1
Molybdenum	ND		0.010	0.0011	mg/L		10/29/21 14:00	11/01/21 14:34	1
Selenium	ND		0.0050	0.00089	mg/L		10/29/21 14:00	11/01/21 14:34	1
Thallium	ND		0.0010	0.00020	mg/L		10/29/21 14:00	11/01/21 14:34	1

Lab Sample ID: LCS 240-510507/3-A

**Matrix: Water** 

Analysis Batch: 510947

**Client Sample ID: Lab Control Sample Prep Type: Total Recoverable** Prep Batch: 510507

%Rec.

Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Antimony	0.100	0.107		mg/L		107	80 - 120	
Arsenic	1.00	0.990		mg/L		99	80 - 120	
Barium	1.00	1.01		mg/L		101	80 - 120	
Beryllium	0.500	0.493		mg/L		99	80 - 120	
Cadmium	0.500	0.514		mg/L		103	80 - 120	
Calcium	25.0	25.2		mg/L		101	80 - 120	
Chromium	0.500	0.521		mg/L		104	80 - 120	
Cobalt	0.500	0.525		mg/L		105	80 - 120	
Lead	0.500	0.538		mg/L		108	80 - 120	
Lithium	0.500	0.510		mg/L		102	80 - 120	
Molybdenum	0.500	0.517		mg/L		103	80 - 120	
Selenium	1.00	0.945		mg/L		94	80 - 120	
Thallium	1.00	1.05		ma/L		105	80 - 120	

Spike

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Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 240-510509/1-A

**Matrix: Water** 

Analysis Batch: 510861

MB MB Analyte

Result Qualifier ND

Sample Sample

RL 0.20 **MDL** Unit 0.13 ug/L

Prepared 10/29/21 14:00 11/01/21 13:59

Analyzed

Client Sample ID: Method Blank

Dil Fac

Prep Type: Total/NA

Prep Batch: 510509

Prep Type: Total/NA

**Prep Batch: 510509** 

Prep Type: Total/NA

Client Sample ID: MW-10

Prep Type: Total/NA

Prep Type: Total/NA

Prep Type: Total/NA

Dil Fac

Dil Fac

11/22/2021

RPD

Lab Sample ID: LCS 240-510509/2-A

**Matrix: Water** 

Mercury

Analyte

Mercury

**Analysis Batch: 510861** 

Spike Added 5.00

LCS LCS Result Qualifier 5.22

Unit ug/L

D %Rec 104

80 - 120

**Client Sample ID: Lab Control Sample** 

**Client Sample ID: Lab Control Sample** 

%Rec. Limits

Method: 9040B - pH

Lab Sample ID: LCS 280-554752/4

**Matrix: Water** 

**Analysis Batch: 554752** 

Analyte pH adj. to 25 deg C

Spike Added 7.00

Spike

Added

7.00

LCS LCS Result Qualifier 7.1

DU DU

7.9 F3

LCS LCS

7.0 ^1+

Result Qualifier

20.9

Result Qualifier

Unit SU

Unit

SU

Unit

SU

Degrees C

n %Rec 101 %Rec. Limits 99 - 101

**Client Sample ID: Lab Control Sample** 

%Rec

Prepared

100

%Rec.

Limits

99 - 101

**Client Sample ID: Method Blank** 

Analyzed

11/14/21 19:17

11/14/21 19:17

11/14/21 19:17

Client Sample ID: Method Blank

RPD

Limit

5

10

Lab Sample ID: 280-154472-1 DU

**Matrix: Water** 

**Analysis Batch: 554752** 

Analyte

Result Qualifier pH adj. to 25 deg C 7.1 HF Temperature 21.2 HF

Lab Sample ID: LCS 280-554951/4 **Matrix: Water** 

**Analysis Batch: 554951** 

Analyte

pH adj. to 25 deg C

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-557415/13 **Matrix: Water** 

Analysis Batch: 557415

MB MB

ND

Analyte Result Qualifier Chloride ND Fluoride ND

Sulfate Lab Sample ID: MB 280-557415/63

**Matrix: Water** 

**Analysis Batch: 557415** 

MB MB

Result Qualifier Analyte ND Chloride

**MDL** Unit

1.0 mg/L

**MDL** Unit

1.0 mg/L

0.17 mg/L

1.0 mg/L

D

Prepared Analyzed

11/15/21 21:09

**Prep Type: Total/NA** 

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RL

3.0

0.50

5.0

RI

3.0

Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

### Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: MB 280-557415/63

**Matrix: Water** 

Analysis Batch: 557415

**Client Sample ID: Method Blank** 

Prep Type: Total/NA

-	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.50	0.17	mg/L			11/15/21 21:09	1
Sulfate	ND		5.0	1.0	mg/L			11/15/21 21:09	1

Lab Sample ID: LCS 280-557415/11

**Matrix: Water** 

**Analysis Batch: 557415** 

**Client Sample ID: Lab Control Sample Prep Type: Total/NA** 

%Rec.

Prep Type: Total/NA

Prep Type: Total/NA

Prep Type: Total/NA

Client Sample ID: Lab Control Sample Dup

**Client Sample ID: Lab Control Sample Dup** 

**Client Sample ID: Lab Control Sample** 

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chloride	100	101		mg/L		101	90 - 110	
Fluoride	5.00	5.20		mg/L		104	90 - 110	
Sulfate	100	101		mg/L		101	90 - 110	

Lab Sample ID: LCS 280-557415/61

Client Sample ID: Lab Control Sample **Matrix: Water Prep Type: Total/NA Analysis Batch: 557415** 

LCS LCS

Analyte	Added	Result	Qualifier	Unit D	%Rec	Limits
Chloride	100	101		mg/L	101	90 - 110
Fluoride	5.00	4.87	I	mg/L	97	90 - 110
Sulfate	100	102	I	mg/L	102	90 - 110

Spike

Lab Sample ID: LCSD 280-557415/12

**Matrix: Water** 

Analysis Batch: 557415

Alialysis Datell. 337413								
	Spike	LCSD	LCSD			%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit D	%Rec	Limits	RPD	Limit
Chloride	100	101		mg/L	101	90 - 110	0	10
Fluoride	5.00	5.25		mg/L	105	90 - 110	1	10
Sulfate	100	101		mg/L	101	90 - 110	0	10

Lab Sample ID: LCSD 280-557415/62

**Matrix: Water** 

Analysis Batch: 557415

	Spike	LCSD	LCSD				%Rec.		RPD	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
Chloride	100	101		mg/L		101	90 - 110	0	10	
Fluoride	5.00	4.97		mg/L		99	90 - 110	2	10	
Sulfate	100	102		ma/L		102	90 - 110	0	10	

Lab Sample ID: MRL 280-557415/10

**Matrix: Water** 

Analysis Ratch: E57445

Analysis Batch: 55/415								
	Spike	MRL	MRL				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chloride	5.00	4.98		mg/L		100	50 - 150	
Fluoride	0.500	0.607		mg/L		121	50 - 150	
Sulfate	5.00	4 87	1	ma/l		97	50 150	

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Job ID: 280-154472-1

Client Sample ID: MW-10

Client Sample ID: Method Blank

**Prep Type: Total/NA** 

Prep Type: Total/NA

**Prep Type: Total/NA** 

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: 9056A - Anions, Ion Chromatography (Continued)

**Matrix: Water** 

**Analysis Batch: 557415** 

Sample Sample Spike MS MS %Rec. Result Qualifier Analyte Result Qualifier Added Unit %Rec Limits D Fluoride 5.00 2.1 6.87 mg/L 96 80 - 120

Lab Sample ID: 280-154472-1 MS

Lab Sample ID: 280-154472-1 MS

**Matrix: Water** 

Client: HDR Inc

**Analysis Batch: 557415** 

Sample Sample Spike MS MS %Rec. Analyte Result Qualifier Added Result Qualifier Unit D %Rec Limits Chloride 1000 420 1510 mg/L 109 80 - 120Sulfate 990 1000 2050 mg/L 106 80 - 120

Lab Sample ID: 280-154472-1 MSD

**Matrix: Water** 

**Analysis Batch: 557415** 

MSD MSD RPD Sample Sample Spike %Rec. Analyte Result Qualifier Added %Rec Limits RPD Limit Result Qualifier Unit Fluoride 2.1 5.00 6.47 88 80 - 120 mg/L 6

Lab Sample ID: 280-154472-1 MSD

**Matrix: Water** 

**Analysis Batch: 557415** 

Sample Sample Spike MSD MSD %Rec. **RPD** Result Qualifier Result Qualifier Added %Rec Limits **RPD** Limit Analyte Unit D Chloride 420 1000 1510 109 80 - 120 20 mg/L 0 Sulfate 990 1000 107 80 - 120 2070 mg/L 20

Lab Sample ID: 280-154472-1 DU

**Matrix: Water** 

Analysis Batch: 557415

DU DU Sample Sample **RPD** Analyte Result Qualifier Result Qualifier Unit D RPD Limit Fluoride 2.1 2.08 mg/L 0.09

Lab Sample ID: 280-154472-1 DU

**Matrix: Water** 

**Analysis Batch: 557415** 

DU DU **RPD** Sample Sample Analyte Result Qualifier Result Qualifier Unit D RPD Limit Chloride 420 419 mg/L 0.7 15 Sulfate 990 982 mg/L 0.9 15

Lab Sample ID: MB 280-557605/6

**Matrix: Water** 

**Analysis Batch: 557605** 

	MB N	ИB						
Analyte	Result C	Qualifier F	L MDI	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND	3	.0 1.0	mg/L	<del></del>		11/16/21 12:53	1
Fluoride	ND	0.	0.1	7 mg/L			11/16/21 12:53	1
Sulfate	ND	5	.0 1.0	) mg/L			11/16/21 12:53	1

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11/22/2021

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Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

# Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 280-557605/4

**Matrix: Water** 

**Analysis Batch: 557605** 

**Client Sample ID: Lab Control Sample** Prep Type: Total/NA

LCS LCS Spike %Rec. Analyte Added Result Qualifier Unit D %Rec Limits Chloride 100 101 mg/L 101 90 - 110 Fluoride 5.00 4.85 mg/L 97 90 - 110 Sulfate 100 102 mg/L 90 - 110 102

Lab Sample ID: LCSD 280-557605/5

**Matrix: Water** 

Analysis Batch: 557605

Client Sample ID: Lab Control Sample Dup **Prep Type: Total/NA** 

**Client Sample ID: Lab Control Sample** 

**Prep Type: Total/NA** 

Prep Type: Total/NA

Client Sample ID: MW-13EB

	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Chloride	100	101		mg/L		101	90 - 110	0	10
Fluoride	5.00	4.89		mg/L		98	90 - 110	1	10
Sulfate	100	102		mg/L		102	90 - 110	0	10

Lab Sample ID: MRL 280-557605/3

**Matrix: Water** 

Analysis Batch: 557605

	Spike	MRL	MRL				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chloride	5.00	4.95		mg/L		99	50 - 150	
Fluoride	0.500	0.448	J	mg/L		90	50 - 150	
Sulfate	5.00	5.13		mg/L		103	50 - 150	

Lab Sample ID: 280-154472-3 MS

**Matrix: Water** 

Analysis Batch: 557605

7 maryolo Batom cor coc										
	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chloride	ND		50.0	59.7		mg/L		119	80 - 120	
Fluoride	ND		5.00	4.84		mg/L		97	80 - 120	
Sulfate	ND	F1	50.0	60.6	F1	mg/L		121	80 - 120	

Lab Sample ID: 280-154472-3 MSD

**Matrix: Water** 

**Analysis Batch: 557605** 

•	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
Chloride	ND		50.0	55.7		mg/L		111	80 - 120	7	20	
Fluoride	ND		5.00	4.61		mg/L		92	80 - 120	5	20	
Sulfate	ND	F1	50.0	56.5		mg/L		113	80 - 120	7	20	

Lab Sample ID: 280-154472-3 DU

**Matrix: Water** 

Analysis Batch: 55/605								
	Sample	Sample	DU	DU				RPD
Analyte	Result	Qualifier	Result	Qualifier	Unit	D	RPD	Limit
Chloride	ND		ND		mg/L		NC	15
Fluoride	ND		ND		mg/L		NC	15
Sulfate	ND	F1	ND		mg/L		NC	15

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Client Sample ID: MW-13EB

Prep Type: Total/NA

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**Client Sample ID: MW-13EB** 

Prep Type: Total/NA

**Prep Type: Total/NA** 

Client: HDR Inc Job ID: 280-154472-1 Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: SM 2540C - Solids,	Total Dissolved (TDS)
----------------------------	-----------------------

Lab Sample ID: MB 280-554892/1 Client Sample ID: Method Blank

**Matrix: Water** 

Analysis Batch: 554892

MB MB

Result Qualifier RL **MDL** Unit Analyzed Dil Fac Analyte Prepared 10 10/25/21 15:20 Total Dissolved Solids (TDS) ND 4.7 mg/L

Lab Sample ID: LCS 280-554892/2 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 554892** 

Spike LCS LCS %Rec. Added Result Qualifier Unit D %Rec Limits 506 88 - 114 Total Dissolved Solids (TDS) 513 mg/L 101

Lab Sample ID: 280-154472-1 DU Client Sample ID: MW-10 **Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 554892** 

Sample Sample DU DU **RPD** Result Qualifier Result Qualifier **RPD** Limit Analyte Unit Total Dissolved Solids (TDS) 2100 2150 mg/L

Lab Sample ID: MB 280-554972/1 Client Sample ID: Method Blank **Prep Type: Total/NA** 

**Matrix: Water** 

**Analysis Batch: 554972** 

MB MB

Analyte Result Qualifier RL MDL Unit Prepared Analyzed Dil Fac Total Dissolved Solids (TDS) 10 4.7 mg/L 10/26/21 09:10 ND

Lab Sample ID: LCS 280-554972/2 **Client Sample ID: Lab Control Sample** Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 554972** 

LCS LCS Spike %Rec. Added Limits Analyte Result Qualifier Unit %Rec Total Dissolved Solids (TDS) 506 485 96 88 - 114 mg/L

Lab Sample ID: LCSD 280-554972/3

**Matrix: Water** 

**Analysis Batch: 554972** 

%Rec. Spike LCSD LCSD **RPD** Added Result Qualifier Limits **RPD** Limit Analyte Unit D %Rec 506 481 Total Dissolved Solids (TDS) mg/L 95 88 - 114

Lab Sample ID: MB 280-554973/1 Client Sample ID: Method Blank Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 554973** 

MB MB

Result Qualifier RL MDL Unit Prepared Dil Fac Analyzed Total Dissolved Solids (TDS) 10 10/26/21 09:12 ND 4.7 mg/L

Lab Sample ID: LCS 280-554973/2 **Client Sample ID: Lab Control Sample** Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 554973** 

Spike LCS LCS %Rec. Added Limits Analyte Result Qualifier Unit %Rec Total Dissolved Solids (TDS) 506 88 - 114 497 mg/L 98

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Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 280-554594/1 Client Sample ID: Method Blank

**Matrix: Water** 

Analysis Batch: 554594

MB MB

Result Qualifier RL **MDL** Unit Analyzed Dil Fac Analyte D Prepared 4.0 10/22/21 09:21 **Total Suspended Solids** ND 1.1 mg/L

Lab Sample ID: LCS 280-554594/2 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 554594** 

Spike LCS LCS %Rec. Added Result Qualifier D %Rec Limits Analyte Unit 100 **Total Suspended Solids** 83.2 mg/L 83 79 - 114

Lab Sample ID: LCSD 280-554594/3 Client Sample ID: Lab Control Sample Dup **Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 554594** 

Spike LCSD LCSD %Rec. RPD Added Result Qualifier Limits RPD Analyte Unit %Rec Limit Total Suspended Solids 100 90.0 90 79 - 114 20 mg/L

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-533887/23-A Client Sample ID: Method Blank

**Matrix: Water** 

**Analysis Batch: 537292** 

Count Total MB MB Uncert. Uncert. Result Qualifier Analyte  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac Radium-226 0.2064 U 0.210 0.211 1.00 0.335 pCi/L 10/27/21 14:28 11/18/21 11:35

MR MB

Carrier %Yield Qualifier Limits Prepared Analyzed Dil Fac Ba Carrier 89.8 40 - 110 10/27/21 14:28 11/18/21 11:35

Lab Sample ID: LCS 160-533887/1-A

**Analysis Batch: 537292** 

**Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

**Prep Batch: 533887** Total

Spike LCS LCS Uncert. %Rec. Added Result Qual RL Limits Analyte  $(2\sigma + / -)$ **MDC** Unit %Rec Radium-226 11.3 1.34 1.00 0.335 pCi/L 93 75 - 125 10.58

LCS LCS Carrier %Yield Qualifier Limits Ba Carrier 81.0 40 - 110

Lab Sample ID: LCSD 160-533887/2-A **Client Sample ID: Lab Control Sample Dup Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 537292** 

			Total						
	Spike	LCSD LCSD	Uncert.				%Rec.		RER
Analyte	Added	Result Qual	(2σ+/-)	RL	MDC Unit	%Rec	Limits	RER	Limit
Radium-226	11.3	11.96	1.46	1.00	0.344 pCi/L	105	75 - 125	0.49	1

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**Prep Batch: 533887** 

**Prep Type: Total/NA** 

Prep Type: Total/NA

Prep Batch: 533887

Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: 9315 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCSD 160-533887/2-A

**Matrix: Water** 

**Analysis Batch: 537292** 

LCSD LCSD

%Yield Qualifier Carrier Limits Ba Carrier 82.3 40 - 110 **Client Sample ID: Lab Control Sample Dup** 

Prep Type: Total/NA

**Prep Batch: 533887** 

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-533889/23-A **Client Sample ID: Method Blank** 

**Matrix: Water** 

**Analysis Batch: 537097** 

Prep Type: Total/NA

**Prep Batch: 533889** 

Count Total MB MB Uncert. Uncert. Analyte RL **MDC** Unit Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ Prepared Analyzed Dil Fac Radium-228 0.298 0.303 1.00 0.436 pCi/L 10/27/21 15:00 11/17/21 17:07 0.6196

MB MB

Carrier **%Yield Qualifier** Limits Prepared Dil Fac Analyzed Ba Carrier 40 - 110 10/27/21 15:00 11/17/21 17:07 89.8 40 - 110 10/27/21 15:00 11/17/21 17:07 Y Carrier 89.3

Lab Sample ID: LCS 160-533889/1-A

**Matrix: Water** 

**Analysis Batch: 537255** 

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

Prep Batch: 533889

Total

	Spike	LCS LCS	Uncert.				%Rec.	
Analyte	Added	Result Qual	(2σ+/-)	RL	MDC Unit	%Rec	Limits	
Radium-228	9.14	8.324	1.04	1.00	0.483 pCi/L	91	75 - 125	

LCS LCS Carrier %Yield Qualifier Limits 40 - 110 Ba Carrier 81.0 Y Carrier 90.1 40 - 110

Lab Sample ID: LCSD 160-533889/2-A

**Matrix: Water** 

**Analysis Batch: 537255** 

**Client Sample ID: Lab Control Sample Dup** 

Prep Type: Total/NA

**Prep Batch: 533889** 

Total

	Spike	LCSD LCSD	Uncert.				%Rec.		RER
Analyte	Added	Result Qual	(2σ+/-)	RL	MDC Unit	%Rec	Limits	RER	Limit
Radium-228	9.14	8.814	1.07	1.00	0.423 pCi/L	96	75 - 125	0.23	

	LCSD	LCSD	
Carrier	%Yield	Qualifier	Limits
Ba Carrier	82.3		40 - 110
Y Carrier	90.8		40 - 110

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Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

### **Metals**

### **Prep Batch: 510507**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-154472-1	MW-10	Total Recoverable	Water	3005A	
280-154472-2	MW-13	Total Recoverable	Water	3005A	
280-154472-3	MW-13EB	Total Recoverable	Water	3005A	
280-154472-4	MW-14	Total Recoverable	Water	3005A	
280-154472-5	MW-15	Total Recoverable	Water	3005A	
280-154472-6	MW-16	Total Recoverable	Water	3005A	
280-154472-7	MW-16D	Total Recoverable	Water	3005A	
MB 240-510507/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-510507/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-510507/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

### **Prep Batch: 510509**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-154472-1	MW-10	Total/NA	Water	7470A	
280-154472-2	MW-13	Total/NA	Water	7470A	
280-154472-3	MW-13EB	Total/NA	Water	7470A	
280-154472-4	MW-14	Total/NA	Water	7470A	
280-154472-5	MW-15	Total/NA	Water	7470A	
280-154472-6	MW-16	Total/NA	Water	7470A	
280-154472-7	MW-16D	Total/NA	Water	7470A	
MB 240-510509/1-A	Method Blank	Total/NA	Water	7470A	
LCS 240-510509/2-A	Lab Control Sample	Total/NA	Water	7470A	

### **Analysis Batch: 510861**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-154472-1	MW-10	Total/NA	Water	7470A	510509
280-154472-2	MW-13	Total/NA	Water	7470A	510509
280-154472-3	MW-13EB	Total/NA	Water	7470A	510509
280-154472-4	MW-14	Total/NA	Water	7470A	510509
280-154472-5	MW-15	Total/NA	Water	7470A	510509
280-154472-6	MW-16	Total/NA	Water	7470A	510509
280-154472-7	MW-16D	Total/NA	Water	7470A	510509
MB 240-510509/1-A	Method Blank	Total/NA	Water	7470A	510509
LCS 240-510509/2-A	Lab Control Sample	Total/NA	Water	7470A	510509

### Analysis Batch: 510947

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-154472-1	MW-10	Total Recoverable	Water	6020A	510507
280-154472-2	MW-13	Total Recoverable	Water	6020A	510507
280-154472-3	MW-13EB	Total Recoverable	Water	6020A	510507
280-154472-4	MW-14	Total Recoverable	Water	6020A	510507
280-154472-5	MW-15	Total Recoverable	Water	6020A	510507
280-154472-6	MW-16	Total Recoverable	Water	6020A	510507
280-154472-7	MW-16D	Total Recoverable	Water	6020A	510507
MB 240-510507/1-A	Method Blank	Total Recoverable	Water	6020A	510507
LCS 240-510507/3-A	Lab Control Sample	Total Recoverable	Water	6020A	510507

### **Analysis Batch: 511035**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-154472-1	MW-10	Total Recoverable	Water	6010C	510507
280-154472-2	MW-13	Total Recoverable	Water	6010C	510507

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Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

# **Metals (Continued)**

### **Analysis Batch: 511035 (Continued)**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-154472-3	MW-13EB	Total Recoverable	Water	6010C	510507
280-154472-4	MW-14	Total Recoverable	Water	6010C	510507
280-154472-5	MW-15	Total Recoverable	Water	6010C	510507
280-154472-6	MW-16	Total Recoverable	Water	6010C	510507
280-154472-7	MW-16D	Total Recoverable	Water	6010C	510507
MB 240-510507/1-A	Method Blank	Total Recoverable	Water	6010C	510507
LCS 240-510507/2-A	Lab Control Sample	Total Recoverable	Water	6010C	510507

# **General Chemistry**

### Analysis Batch: 554594

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-154472-1	MW-10	Total/NA	Water	SM 2540D	
280-154472-2	MW-13	Total/NA	Water	SM 2540D	
280-154472-3	MW-13EB	Total/NA	Water	SM 2540D	
280-154472-4	MW-14	Total/NA	Water	SM 2540D	
280-154472-5	MW-15	Total/NA	Water	SM 2540D	
280-154472-6	MW-16	Total/NA	Water	SM 2540D	
280-154472-7	MW-16D	Total/NA	Water	SM 2540D	
MB 280-554594/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-554594/2	Lab Control Sample	Total/NA	Water	SM 2540D	
LCSD 280-554594/3	Lab Control Sample Dup	Total/NA	Water	SM 2540D	

### **Analysis Batch: 554752**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-154472-1	MW-10	Total/NA	Water	9040B	
280-154472-2	MW-13	Total/NA	Water	9040B	
280-154472-4	MW-14	Total/NA	Water	9040B	
280-154472-5	MW-15	Total/NA	Water	9040B	
280-154472-6	MW-16	Total/NA	Water	9040B	
280-154472-7	MW-16D	Total/NA	Water	9040B	
LCS 280-554752/4	Lab Control Sample	Total/NA	Water	9040B	
280-154472-1 DU	MW-10	Total/NA	Water	9040B	

### **Analysis Batch: 554892**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-154472-1	MW-10	Total/NA	Water	SM 2540C	
MB 280-554892/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-554892/2	Lab Control Sample	Total/NA	Water	SM 2540C	
280-154472-1 DU	MW-10	Total/NA	Water	SM 2540C	

### **Analysis Batch: 554951**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-154472-3	MW-13EB	Total/NA	Water	9040B	
LCS 280-554951/4	Lab Control Sample	Total/NA	Water	9040B	

### **Analysis Batch: 554972**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-154472-7	MW-16D	Total/NA	Water	SM 2540C	
MB 280-554972/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-554972/2	Lab Control Sample	Total/NA	Water	SM 2540C	

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Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

# **General Chemistry (Continued)**

<b>Analysis</b>	Batch: 554972	(Continued)
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Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 280-554972/3	Lab Control Sample Dup	Total/NA	Water	SM 2540C	

### **Analysis Batch: 554973**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-154472-2	MW-13	Total/NA	Water	SM 2540C	
280-154472-3	MW-13EB	Total/NA	Water	SM 2540C	
280-154472-4	MW-14	Total/NA	Water	SM 2540C	
280-154472-5	MW-15	Total/NA	Water	SM 2540C	
280-154472-6	MW-16	Total/NA	Water	SM 2540C	
MB 280-554973/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-554973/2	Lab Control Sample	Total/NA	Water	SM 2540C	

### **Analysis Batch: 557415**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-154472-1	MW-10	Total/NA	Water	9056A	
280-154472-1	MW-10	Total/NA	Water	9056A	
280-154472-5	MW-15	Total/NA	Water	9056A	
280-154472-5	MW-15	Total/NA	Water	9056A	
280-154472-6	MW-16	Total/NA	Water	9056A	
280-154472-6	MW-16	Total/NA	Water	9056A	
280-154472-7	MW-16D	Total/NA	Water	9056A	
280-154472-7	MW-16D	Total/NA	Water	9056A	
MB 280-557415/13	Method Blank	Total/NA	Water	9056A	
MB 280-557415/63	Method Blank	Total/NA	Water	9056A	
LCS 280-557415/11	Lab Control Sample	Total/NA	Water	9056A	
LCS 280-557415/61	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-557415/12	Lab Control Sample Dup	Total/NA	Water	9056A	
LCSD 280-557415/62	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-557415/10	Lab Control Sample	Total/NA	Water	9056A	
280-154472-1 MS	MW-10	Total/NA	Water	9056A	
280-154472-1 MS	MW-10	Total/NA	Water	9056A	
280-154472-1 MSD	MW-10	Total/NA	Water	9056A	

### **Analysis Batch: 557605**

MW-10

MW-10

MW-10

280-154472-1 MSD

280-154472-1 DU

280-154472-1 DU

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-154472-2	MW-13	Total/NA	Water	9056A	<u> </u>
280-154472-2	MW-13	Total/NA	Water	9056A	
280-154472-3	MW-13EB	Total/NA	Water	9056A	
280-154472-4	MW-14	Total/NA	Water	9056A	
280-154472-4	MW-14	Total/NA	Water	9056A	
MB 280-557605/6	Method Blank	Total/NA	Water	9056A	
LCS 280-557605/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-557605/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-557605/3	Lab Control Sample	Total/NA	Water	9056A	
280-154472-3 MS	MW-13EB	Total/NA	Water	9056A	
280-154472-3 MSD	MW-13EB	Total/NA	Water	9056A	
280-154472-3 DU	MW-13EB	Total/NA	Water	9056A	

Total/NA

Total/NA

Total/NA

Water

Water

Water

9056A

9056A

9056A

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Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

### Rac

### **Prep Batch: 533887**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-154472-1	MW-10	Total/NA	Water	PrecSep-21	
280-154472-2	MW-13	Total/NA	Water	PrecSep-21	
280-154472-3	MW-13EB	Total/NA	Water	PrecSep-21	
280-154472-4	MW-14	Total/NA	Water	PrecSep-21	
280-154472-5	MW-15	Total/NA	Water	PrecSep-21	
280-154472-6	MW-16	Total/NA	Water	PrecSep-21	
280-154472-7	MW-16D	Total/NA	Water	PrecSep-21	
MB 160-533887/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-533887/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-533887/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

### **Prep Batch: 533889**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-154472-1	MW-10	Total/NA	Water	PrecSep_0	
280-154472-2	MW-13	Total/NA	Water	PrecSep_0	
280-154472-3	MW-13EB	Total/NA	Water	PrecSep_0	
280-154472-4	MW-14	Total/NA	Water	PrecSep_0	
280-154472-5	MW-15	Total/NA	Water	PrecSep_0	
280-154472-6	MW-16	Total/NA	Water	PrecSep_0	
280-154472-7	MW-16D	Total/NA	Water	PrecSep_0	
MB 160-533889/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-533889/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-533889/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep 0	

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Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

**Client Sample ID: MW-10** 

Date Collected: 10/19/21 15:30 Date Received: 10/21/21 09:34 Lab Sample ID: 280-154472-1

Matrix: Water

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	510507	10/29/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6010C		1			511035	11/02/21 14:25	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	510507	10/29/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6020A		1			510947	11/01/21 15:09	AJC	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	510509	10/29/21 14:00	SHB	TAL CAN
Total/NA	Analysis	7470A		1			510861	11/01/21 14:46	MRL	TAL CAN
Total/NA	Analysis	9040B		1			554752	10/22/21 15:52	ECC	TAL DEN
Total/NA	Analysis	9056A		1	10 mL	10 mL	557415	11/15/21 22:47	SPG	TAL DEN
Total/NA	Analysis	9056A		20	10 mL	10 mL	557415	11/16/21 00:12	SPG	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	554892	10/25/21 16:20	ABW	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	554594	10/22/21 09:21	ABW	TAL DEN
Total/NA	Prep	PrecSep-21			750.62 mL	1.0 g	533887	10/27/21 14:28	BMP	TAL SL
Total/NA	Analysis	9315		1			537291	11/18/21 09:46	FLC	TAL SL
Total/NA	Prep	PrecSep_0			750.62 mL	1.0 g	533889	10/27/21 15:00	BMP	TAL SL
Total/NA	Analysis	9320		1			537057	11/17/21 16:53	FLC	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			537488	11/18/21 18:49	MLK	TAL SL

Client Sample ID: MW-13

Date Collected: 10/20/21 10:15

Lab Sample ID: 280-154472-2

Matrix: Water

Date Received: 10/21/21 09:34

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	510507	10/29/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6010C		1			511035	11/02/21 14:30	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	510507	10/29/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6020A		1			510947	11/01/21 15:11	AJC	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	510509	10/29/21 14:00	SHB	TAL CAN
Total/NA	Analysis	7470A		1			510861	11/01/21 14:48	MRL	TAL CAN
Total/NA	Analysis	9040B		1			554752	10/22/21 15:59	ECC	TAL DEN
Total/NA	Analysis	9056A		1	10 mL	10 mL	557605	11/17/21 02:19	CJ	TAL DEN
Total/NA	Analysis	9056A		10	10 mL	10 mL	557605	11/17/21 02:33	CJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	554973	10/26/21 10:12	ABW	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	554594	10/22/21 09:21	ABW	TAL DEN
Total/NA	Prep	PrecSep-21			1000.40 mL	1.0 g	533887	10/27/21 14:28	BMP	TAL SL
Total/NA	Analysis	9315		1			537291	11/18/21 09:46	FLC	TAL SL
Total/NA	Prep	PrecSep_0			1000.40 mL	1.0 g	533889	10/27/21 15:00	BMP	TAL SL
Total/NA	Analysis	9320		1			537057	11/17/21 16:54	FLC	TAL SL
Total/NA	Analysis	Ra226 Ra228		1			537488	11/18/21 18:49	MLK	TAL SL

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Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

**Client Sample ID: MW-13EB** 

Date Collected: 10/20/21 10:40 Date Received: 10/21/21 09:34 Lab Sample ID: 280-154472-3

**Matrix: Water** 

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	510507	10/29/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6010C		1			511035	11/02/21 14:42	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	510507	10/29/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6020A		1			510947	11/01/21 15:14	AJC	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	510509	10/29/21 14:00	SHB	TAL CAN
Total/NA	Analysis	7470A		1			510861	11/01/21 14:50	MRL	TAL CAN
Total/NA	Analysis	9040B		1			554951	10/23/21 18:45	ECC	TAL DEN
Total/NA	Analysis	9056A		1	10 mL	10 mL	557605	11/17/21 02:47	CJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	554973	10/26/21 10:12	ABW	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	554594	10/22/21 09:21	ABW	TAL DEN
Total/NA	Prep	PrecSep-21			1000.80 mL	1.0 g	533887	10/27/21 14:28	BMP	TAL SL
Total/NA	Analysis	9315		1			537291	11/18/21 09:47	FLC	TAL SL
Total/NA	Prep	PrecSep_0			1000.80 mL	1.0 g	533889	10/27/21 15:00	BMP	TAL SL
Total/NA	Analysis	9320		1			537057	11/17/21 16:54	FLC	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			537488	11/18/21 18:49	MLK	TAL SL

Client Sample ID: MW-14

Date Collected: 10/20/21 11:50 Date Received: 10/21/21 09:34 Lab Sample ID: 280-154472-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	510507	10/29/21 14:00		TAL CAN
Total Recoverable	Analysis	6010C		1			511035	11/02/21 14:47	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	510507	10/29/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6020A		1			510947	11/01/21 15:16	AJC	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	510509	10/29/21 14:00	SHB	TAL CAN
Total/NA	Analysis	7470A		1			510861	11/01/21 14:52	MRL	TAL CAN
Total/NA	Analysis	9040B		1			554752	10/22/21 16:09	ECC	TAL DEN
Total/NA	Analysis	9056A		1	10 mL	10 mL	557605	11/17/21 05:07	CJ	TAL DEN
Total/NA	Analysis	9056A		20	10 mL	10 mL	557605	11/17/21 05:21	CJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	554973	10/26/21 10:12	ABW	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	554594	10/22/21 09:21	ABW	TAL DEN
Total/NA	Prep	PrecSep-21			500.62 mL	1.0 g	533887	10/27/21 14:28	BMP	TAL SL
Total/NA	Analysis	9315		1			537291	11/18/21 09:47	FLC	TAL SL
Total/NA	Prep	PrecSep_0			500.62 mL	1.0 g	533889	10/27/21 15:00	BMP	TAL SL
Total/NA	Analysis	9320		1			537057	11/17/21 16:54	FLC	TAL SL
Total/NA	Analysis	Ra226 Ra228		1			537488	11/18/21 18:49	MLK	TAL SL

Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

**Client Sample ID: MW-15** 

Date Collected: 10/19/21 14:05 Date Received: 10/21/21 09:34

Lab Sample ID: 280-154472-5

**Matrix: Water** 

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	510507	10/29/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6010C		1			511035	11/02/21 14:51	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	510507	10/29/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6020A		1			510947	11/01/21 15:19	AJC	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	510509	10/29/21 14:00	SHB	TAL CAN
Total/NA	Analysis	7470A		1			510861	11/01/21 14:54	MRL	TAL CAN
Total/NA	Analysis	9040B		1			554752	10/22/21 16:14	ECC	TAL DEN
Total/NA	Analysis	9056A		1	10 mL	10 mL	557415	11/15/21 18:21	SPG	TAL DEN
Total/NA	Analysis	9056A		20	10 mL	10 mL	557415	11/15/21 18:35	SPG	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	554973	10/26/21 10:12	ABW	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	554594	10/22/21 09:21	ABW	TAL DEN
Total/NA	Prep	PrecSep-21			1000.18 mL	1.0 g	533887	10/27/21 14:28	BMP	TAL SL
Total/NA	Analysis	9315		1			537291	11/18/21 09:48	FLC	TAL SL
Total/NA	Prep	PrecSep_0			1000.18 mL	1.0 g	533889	10/27/21 15:00	BMP	TAL SL
Total/NA	Analysis	9320		1			537097	11/17/21 17:05	ANW	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			537488	11/18/21 18:49	MLK	TAL SL

Lab Sample ID: 280-154472-6 **Client Sample ID: MW-16** Date Collected: 10/19/21 10:35 **Matrix: Water** 

Date Received: 10/21/21 09:34

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	510507	10/29/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6010C		1			511035	11/02/21 14:55	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	510507	10/29/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6020A		1			510947	11/01/21 15:21	AJC	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	510509	10/29/21 14:00	SHB	TAL CAN
Total/NA	Analysis	7470A		1			510861	11/01/21 14:56	MRL	TAL CAN
Total/NA	Analysis	9040B		1			554752	10/22/21 16:18	ECC	TAL DEN
Total/NA	Analysis	9056A		1	10 mL	10 mL	557415	11/16/21 01:50	SPG	TAL DEN
Total/NA	Analysis	9056A		20	10 mL	10 mL	557415	11/16/21 02:04	SPG	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	554973	10/26/21 10:12	ABW	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	554594	10/22/21 09:21	ABW	TAL DEN
Total/NA	Prep	PrecSep-21			1000.26 mL	1.0 g	533887	10/27/21 14:28	BMP	TAL SL
Total/NA	Analysis	9315		1			537291	11/18/21 09:48	FLC	TAL SL
Total/NA	Prep	PrecSep_0			1000.26 mL	1.0 g	533889	10/27/21 15:00	BMP	TAL SL
Total/NA	Analysis	9320		1			537097	11/17/21 17:06	ANW	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			537488	11/18/21 18:50	MLK	TAL SL

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Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

**Client Sample ID: MW-16D** 

Date Collected: 10/19/21 10:35 Date Received: 10/21/21 09:34 Lab Sample ID: 280-154472-7

**Matrix: Water** 

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	510507	10/29/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6010C		1			511035	11/02/21 15:00	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	510507	10/29/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6020A		1			510947	11/01/21 15:24	AJC	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	510509	10/29/21 14:00	SHB	TAL CAN
Total/NA	Analysis	7470A		1			510861	11/01/21 14:58	MRL	TAL CAN
Total/NA	Analysis	9040B		1			554752	10/22/21 16:21	ECC	TAL DEN
Total/NA	Analysis	9056A		1	10 mL	10 mL	557415	11/15/21 19:17	SPG	TAL DEN
Total/NA	Analysis	9056A		20	10 mL	10 mL	557415	11/15/21 19:31	SPG	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	554972	10/26/21 10:10	ABW	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	554594	10/22/21 09:21	ABW	TAL DEN
Total/NA	Prep	PrecSep-21			1000.60 mL	1.0 g	533887	10/27/21 14:28	BMP	TAL SL
Total/NA	Analysis	9315		1			537292	11/18/21 11:35	FLC	TAL SL
Total/NA	Prep	PrecSep_0			1000.60 mL	1.0 g	533889	10/27/21 15:00	BMP	TAL SL
Total/NA	Analysis	9320		1			537097	11/17/21 17:07	ANW	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			537488	11/18/21 18:50	MLK	TAL SL

### **Laboratory References:**

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Eurofins TestAmerica, Denver

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# **Accreditation/Certification Summary**

Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

### Laboratory: Eurofins TestAmerica, Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Pro	ogram	Identification Number	Expiration Date
Oregon	NE	ELAP	4025-011	01-08-22
,	•	ort, but the laboratory is r	not certified by the governing authority.	This list may include analytes for
the agency does not o	offer certification.	•	, , ,	This list may include analytes fo
,	•	ort, but the laboratory is r Matrix	not certified by the governing authority.  Analyte	This list may include analytes for

### **Laboratory: Eurofins TestAmerica, Canton**

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-22
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22
Illinois	NELAP	200004	07-31-22
lowa	State	421	06-01-23
Kansas	NELAP	E-10336	04-30-22
Kentucky (UST)	State	112225	02-23-22
Kentucky (WW)	State	KY98016	12-31-21
Minnesota	NELAP	OH00048	12-31-21
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-22
New York	NELAP	10975	03-31-22
Ohio VAP	State	CL0024	12-21-23
Oregon	NELAP	4062	02-23-22
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-18-10	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-22
West Virginia DEP	State	210	12-31-21

### Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-001	05-06-22
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-21
California	Los Angeles County Sanitation Districts	10259	06-30-22
California	State	2886	06-30-21 *
Connecticut	State	PH-0241	03-31-23
Florida	NELAP	E87689	06-30-22
HI - RadChem Recognition	State	n/a	06-30-22
Illinois	NELAP	200023	11-30-22
lowa	State	373	12-01-22
Kansas	NELAP	E-10236	10-31-22
Kentucky (DW)	State	KY90125	01-01-22

<sup>\*</sup> Accreditation/Certification renewal pending - accreditation/certification considered valid.

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# **Accreditation/Certification Summary**

Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

### Laboratory: Eurofins TestAmerica, St. Louis (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	<b>Expiration Date</b>
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-21
Louisiana	NELAP	04080	06-30-22
Louisiana (DW)	State	LA011	12-31-21
Maryland	State	310	09-30-22
MI - RadChem Recognition	State	9005	06-30-22
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-22
New Jersey	NELAP	MO002	06-30-22
New York	NELAP	11616	04-01-22
North Dakota	State	R-207	06-30-22
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-22
Oregon	NELAP	4157	09-01-22
Pennsylvania	NELAP	68-00540	03-01-22
South Carolina	State	85002001	06-30-22
Texas	NELAP	T104704193	07-31-22
US Fish & Wildlife	US Federal Programs	058448	07-31-22
USDA	US Federal Programs	P330-17-00028	03-11-23
Utah	NELAP	MO000542021-14	08-01-22
Virginia	NELAP	10310	06-14-22
Washington	State	C592	08-30-22
West Virginia DEP	State	381	10-31-22

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Phone (303) 736-0100 Fax (303) 431-7171						
Client Information	Sampler: Tava Kent	Lab PM: Harringt	Lab PM: Harrington, Danielle	Carrier Tracking No(s):	COC No:	
Client Contact: Molly Reeves	Phone: 237496		E-Mail: danielle.harrington@eurofinset.com		Page: $lof$	/
Company: HDR Inc			Analysis Requested	uested	Job #:	
Address: 9781 S. Meridian Blvd Suite 400	Due Date Requested:			-      -      - 28	je	,
City. Englewood State, Zip: CO, 80112	TAT Requested (days): Stanctord TAT			30-154472	B - NaOH C - Zn Acetate D - Nitric Acid F - NaHSO4	M - nexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3
Phone: 734-263-7138(Tel)	Po#: DEN-018	<b>(</b> 0	S ,ebino			- Nazszos - H2SO4 - TSP Dodecahydrate
Email: molly.reeves@hdrinc.com	WO#:	M 10 S	qqA \ II	216		U - Acetone V - MCAA W - pH 4-5
Project Name: Xcel Energy GW CCR Monitoring - Cherokee	Project #: 28014371	ЭД) ə]	- App II			Z - other (specify)
Site: Colorado Groundwater AP III + AP IV + TSS	SSOW#:	Samp	A0747 ) anoin 87_028 ban		Other:	
Sample Identification	Sample Type Sample Date Time G=grab)	Matrix ed (W=water, EF = S== old, O=waste/olf, EF = Tissue, A=Air)	Perform MSM 6010C, 6020A, 9056A_28D - A 9315_Ra226, 93 and 228 combil 2540C_Calc - T 2540D - TSS	edmuN letoT	Special Instr	Special Instructions/Note:
	Presen	Preservation Code:	z z z z D z D X	X		
MW -10	5) 0551 12-31-01	N	メメメメスス	2	*Sea Radchem to St. Louis / Metals to Canton	Louis / Metals to
MW-13	1020-4 1015 B	N	NXXXXX	7	\{	141
MW-13 EB	10-12-41 1040 3	N	メメメ メ メス ユ	L	きて	
Mw-It	5) 0511112-02-01	N	メメメメメメル			1 4 4
MW-15	10-19-21 1755 B	3	メメメメメソン	7	P	
MW-16	10.19.21 1035 6	3	メメメメイン	7		
MW-16D	10-19-21 1035 (5	3	X X X X X X X X	7	7	
			ee may t	ssessed if samples are retaine	ed longer than 1 m	onth)
Non-Hazard Flammable Skin Irritant Poison E Deliverable Requested: I, II, III, IV, Other (specify)	~ l	al	Special Instructions/QC Requirements:	oosal by Lab	Alcilive rol	MOTUIS
Empty Kit Relinquished by:	Date:	ΪΪ	Time:	Method of Shipment:		
Relinquished by:	Date/Time: 0934	Company	Received by:	Date/Time:	° 4≷¢0	Chipany DEN
Relinquished by:	Date/Time:	Company	Rec <b>eive</b> d by:	Date/Fime:	0	Сотрапу
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	0	Сотрапу
Custody Seals Intact: Custody Seal No.:			Cooler Temperature(s) °C and Other Remarks:	marks: 0.9 , 6.6,2	1.2 1Ru	Jet. o
11						Ver: 01/16/2019

**Chain of Custody Record** 

Eurofins TestAmerica, Denver

4955 Yarrow Street Arvada, CO 80002 Phone (303) 736-0100 Fax (303) 431-7171

# **Chain of Custody Record**

Eurofins TestAmerica, Denver

4955 Yarrow Street Arvada, CO 80002 Phone: 303-736-0100 Fax: 303-431-7171	Chain of Custody Record	Record		eurofins Environment Testing America
Client Information (Sub Contract Lab)	Sampler Lab Har	ab PM. Harrington, Danielle M	Carrier Tracking No(s):	COC No: 280-590693.1
Client Contact. Shipping/Receiving	Phone. E-Mail: Danie	E-Mail: Danielle: Harrington@Eurofinset.com	State of Origin: Colorado	Page: Page 1 of 1

Client Information (Sub Contract Lab)				Harri	Harrington Danielle M	Danie	2			_				280 500602 4	•
Client Contact	Drong			100						1				200-0300	J
Shipping/Receiving				Dani	elle.Ha	rringte	in@Et	E-mail. Danielle Harrington@Eurofinset.com	mos	n O	State of Origin Colorado			Page: Page 1 of 1	
Company. TestAmerica Laboratories, Inc.					Accreditations Requir	ations	Requirec	Accreditations Required (See note)		1				Job #	4
Address	Due Date Requested:	ŧ												200-1344	1-7
13715 Rider Trail North,	11/21/2021	į						Ana	<b>Analysis Requested</b>	Redu	ested			Preservation Codes:	n Codes:
City. Earth City	TAT Requested (days):	ys):												A - HCL B - NaOH	
State, Zip: MO, 63045						aus.	ans					<b></b>		D - Nitric Acid	G - Na2O4S C - Na2O4S Q - Na2SO3
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	#Od#				(	٤/١ - 9		porm						F - MeOH G - Amchlor	3
Email:	WO#:					7Z-Wn									
Project Name. Xcel Energy GW CCR Monitoring - Cherokee	Project #: 28014371					ibsA 19		07/55		-					W - pH 4-5 Z - other (specify)
Site: Xcel Energy CCR - Cherokee Station	SSOW#:					_dəgɔ		m) .c. :				-		of con	
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp,	Matrix (wewater, Sweelid, Owwateroil, BTETISSUE, ARAIT)	Field Filtered MS/M mroha9	9315_Ra226/Pre	9320_Ra228/Pre	10_0222010						19dmuM lstoT	Special Instructions Note
		X	Preservation Code:	ion Code:	$\stackrel{\times}{\times}$									×	
MW-10 (280-154472-1)	10/19/21	15:30 Mountain		Water		×	×			+-			X	2	
MW-13 (280-154472-2)	10/20/21	10:15 Mountain		Water		×	×			+			2	2	
MW-13EB (280-154472-3)	10/20/21	10:40 Mountain		Water		×	×						<	2	
MW-14 (280-154472-4)	10/20/21	11:50 Mountain		Water		×	×	_					X	2	
MW-15 (280-154472-5)	10/19/21	14:05 Mountain		Water		×	×							2	
MW-16 (280-154472-6)	10/19/21	10:35 Mountain		Water		×	×						X	2	
MW-16D (280-154472-7)	10/19/21	10:35 Mountain		Water		×	×						X	77	
												\			
														100	

Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)

Return To Client Disposal By Lab Archive For Mon Test/America attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compiliance to Eurofina Test/merica. Possible Hazard Identification

Oncommined		Return to Client Disposal By Lab	Lab Archive For	Months
Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliverable Rank: 4	Require		Simon
Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:	
Relinquished by	12 (154) (154) (154) (154) (154) (154) (154) (154)	Received by: FED EX	Date/Time;	Company
Relinquished by: FED EX	Date/Time: Company	Regerved by:	000 26 2021 1335	Company STL
Relinquished by:	Date/Time: Company	Recently	Date/Time:	Company
Custody Seals Intact: Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:		

Ver: 06/08/2021

Cooler Temperature(s) °C and Other Remarks

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Eurofins TestAmerica, Denver

4955 Yarrow Street Arvada, CO 80002 Phone: 303-736-0100 Fax: 303-431-717

N - None
O - AsNaO2
P - Na2O4S
O - Na2SO3
R - Na2SO4
S - H2SO4 Special Instructions/Note: Z - other (specify) U - Acetone V - MCAA W - pH 4-5 Preservation Codes Use Collision Cell 2 Use Collision Cell 2 Use Collision Cell Use Collision Cell Use Collision Cell Use Collision Cell H - Ascorbic Acid 280-154472-1 COC No. 280-590674.1 A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 Page 1 of 1 J - DI Water K - EDTA L - EDA F - MeOH G - Amchlor I - Ice 2 ~ Total Number of containers Carrier Tracking No(s) State of Origin. **Analysis Requested** Danielle Harrington@Eurofinset.com Accreditations Required (See note) NELAP - Oregon × × × × × × 470A/7470A\_Prep Mercury Lab PM. Harrington, Danielle M × × × × × × 5010C/3005A Boron × × × 6020A/3005A 13 T. Metals (w/collision cell) × MS/MSD (Yes of No) E-Mail. BT=Tissue, Audir (Wawater, Sasolid, Oawaste/oil, Preservation Code: Water Matrix Water Water Water Water Water (C=comp, G=grab) Sample Type Mountain 10:15 Mountain 10:40 Mountain 11:50 Mountain 14:05 Mountain 10:35 Mountain 10:35 Sample Time 15:30 TAT Requested (days) Due Date Requested: 11/21/2021 Sample Date 10/20/21 10/19/21 10/20/21 10/20/21 10/19/21 10/19/2 Project # 28014371 #MOSS \* ON (Sub Contract Lab) Xcel Energy GW CCR Monitoring - Cherokee Sample Identification - Client ID (Lab ID) 330-497-9396(Tel) 330-497-0772(Fax) Xcel Energy CCR - Cherokee Station TestAmerica Laboratories, Inc. MW-13EB (280-154472-3) Client Information 4101 Shuffel Street NW MW-10 (280-154472-1) MW-13 (280-154472-2) WW-14 (280-154472-4) MW-15 (280-154472-5) MW-16 (280-154472-6) Shipping/Receiving North Canton State, Zip: OH, 44720

Note Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This samples them of custody if the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/lests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica. Company Months Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)

Return To Client Disposal By Lab Archive For Mon 1620 Date/Time Method of Shipment 0 Special Instructions/QC Requirements Return To Client Rebeived by Received by Ime ETG DEN Company で三二 Primary Deliverable Rank: 4 Date: 15.96-21 Date/Time Deliverable Requested: I, II, IV, Other (specify) Possible Hazard Identification mpty Kit Relinquished by: linduished by Unconfirmed nquished by inquished by

Use Collision Cell

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Water

Mountain

10/19/21

MW-16D (280-154472-7)

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Custody Seal No.

Custody Seals Intact:

A Yes A No

Eurofins TestAmerica Canton Sa	mple Receipt Form/Narrative		Login # :_	
Canton Facility			C1	111
Client ERA	Site Name		Cooler unp	acked by:
Cooler Received on /6/28/21	Opened on /6 /	28/21	Trent	
FedEx: 1st Grd (Exp UPS FAS		TestAmerica Courier	Other	
Receipt After-hours: Drop-off Date		Storage Location		
TestAmerica Cooler #	Foam Box Client Cooler			
Packing material used: Rubble COOLANT: Wet the  1. Cooler temperature upon receipt	Blue Ice Dry Ice Water	None  See Multiple Cooler For	m	
IR GUN #IR-15 (CF + <b>0.2</b> °C)	Observed Cooler Temp. // & Observed Cooler Temp.	°C Corrected Cooler	Гетр	°C °C
-Were tamper/custody seals on -Were tamper/custody seals into 3. Shippers' packing slip attached to 4. Did custody papers accompany th 5. Were the custody papers relinquis 6. Was/were the person(s) who colle 7. Did all bottles arrive in good cond 8. Could all bottle labels (ID/Date/T 9. For each sample, does the COC sp 10. Were correct bottle(s) used for the 11. Sufficient quantity received to per 12. Are these work share samples and 15 yes, Questions 13-17 have been 13. Were all preserved sample(s) at th 14. Were VOAs on the COC? 15. Were air bubbles >6 mm in any N 16. Was a VOA trip blank present in	of the cooler(s) signed & dated? the bottle(s) or bottle kits (LLHg/ act and uncompromised? the cooler(s)? the cooler(s)? the sample(s)? thed & signed in the appropriate p octed the samples clearly identified lition (Unbroken)? time) be reconciled with the COC? the ceify preservatives (Y(N)), # of cole test(s) indicated? form indicated analyses? the correct pH upon receipt?  YOA vials?  Larger tha the cooler(s)? Trip Blank Lot #_	MeHg)? Yes  Ves  Ves  Ves  Ves  Ves  Ves  Ves	No NA No	Tests that are not checked for pH by Receiving:  VOAs Oil and Grease TOC  rab/comp(Y/N)  Strip Lot# HC157842
17. Was a LL Hg or Me Hg trip blank			No	
Contacted PM Date	by	via Verbal V	oice Mail Othe	er
Concerning				
18. CHAIN OF CUSTODY & SAM	PLE DISCREPANCIES 2	additional next page	Samples proc	essed by:
19. SAMPLE CONDITION Sample(s) Sample(s) Sample(s)		were received	in a broken con	ntainer.
20. SAMPLE PRESERVATION				
Sample(s)		were fur	ther preserved i	in the laboratory.
Sample(s)Prese	rvative(s) added/Lot number(s):_			
VOA Sample Preservation - Date/Tin	ne VOAs Frozen:			

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Client: HDR Inc Job Number: 280-154472-1

Login Number: 154472 List Source: Eurofins TestAmerica, Denver

List Number: 1

Creator: Roehsner, Karen P

oreator. Noelistier, Naren F		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

**Eurofins TestAmerica, Denver** 

Client: HDR Inc Job Number: 280-154472-1

Login Number: 154472

List Number: 2

Creator: Johnson, Autumn R

List Source: Eurofins TestAmerica, St. Louis

List Creation:	10/26/21 02:56 PM

Creator: Johnson, Autumn R		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# **Tracer/Carrier Summary**

Client: HDR Inc Job ID: 280-154472-1

Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Method: 9315 - Radium-226 (GFPC)

**Matrix: Water Prep Type: Total/NA** 

			Percent Yield (Acceptance Limits)
		Ва	
Lab Sample ID	Client Sample ID	(40-110)	
280-154472-1	MW-10	52.3	
280-154472-2	MW-13	68.5	
280-154472-3	MW-13EB	90.0	
280-154472-4	MW-14	58.3	
280-154472-5	MW-15	102	
280-154472-6	MW-16	103	
280-154472-7	MW-16D	100	
LCS 160-533887/1-A	Lab Control Sample	81.0	
LCSD 160-533887/2-A	Lab Control Sample Dup	82.3	
MB 160-533887/23-A	Method Blank	89.8	
Tracer/Carrier Legenc	I		
Ba = Ba Carrier			

Method: 9320 - Radium-228 (GFPC)

**Matrix: Water** Prep Type: Total/NA

_				Percent Yield (Acceptance Limits)
		Ва	Υ	
Lab Sample ID	Client Sample ID	(40-110)	(40-110)	
280-154472-1	MW-10	52.3	91.2	
280-154472-2	MW-13	68.5	92.7	
280-154472-3	MW-13EB	90.0	91.6	
280-154472-4	MW-14	58.3	91.2	
280-154472-5	MW-15	102	91.6	
280-154472-6	MW-16	103	91.6	
280-154472-7	MW-16D	100	92.7	
LCS 160-533889/1-A	Lab Control Sample	81.0	90.1	
LCSD 160-533889/2-A	Lab Control Sample Dup	82.3	90.8	
MB 160-533889/23-A	Method Blank	89.8	89.3	

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

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