2019 Annual Groundwater Monitoring and Corrective Action Report and Semi-Annual Remedy Selection and Design Progress Report

for Compliance with the Coal Combustion Residuals (CCR) Rule

Pawnee Station

Public Service Company of Colorado Energy

January 31, 2020

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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
GPS	Groundwater protection standard
LCS	Laboratory Control Samples
MS/MSD	Matrix spike/ matrix spike duplicate
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
UPL	Upper Prediction Limit

Certification

2019 Groundwater Monitoring and Corrective Action Annual Report and Semi-Annual Remedy Selection and Design Progress Report for Pawnee Station

I hereby certify to the best of my knowledge that this groundwater monitoring annual report and semi-annual remedy selection and design progress 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, 2021

1.0 Introduction

The U.S. Environmental Protection Agency's (EPA) 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. Pawnee Station, located in Morgan County, Colorado (**Figure 1**), is owned and operated by Public Service Company of Colorado (PSCo), an Xcel Energy Company. Pawnee Station has two existing CCR units subject to the CCR Rule: the North CCR Landfill and the East CCR Landfill (**Figure 2**). In addition Pawnee Station has two closed CCR units, the former Bottom Ash Storage Pond (BASP) and the former Ash Water Recovery Pond (AWRP) (**Figure 2**). The BASP and AWRP were both physically closed in 2017 by removal of CCR, with ongoing groundwater monitoring. The East CCR Landfill was constructed in 2018 in the same footprint as the former BASP, and ash was initially placed in the East CCR Landfill on July 8, 2019.

In 2019, groundwater monitoring was conducted at Pawnee to collect assessment monitoring samples at the North CCR Landfill as specified under Part 257.95. The former BASP and AWRP were 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). For the former BASP and AWRP, background samples were collected in 2017 through 2019 and background threshold values (BTVs) were developed. Detection monitoring samples were collected for the BASP and AWRP and compared against the BTVs as specified under CCR Rule Part 257.94 and assessment monitoring was initiated as specified under Part 257.95. The East CCR Landfill was put into operation in July 2019 and detection monitoring was initiated in November 2019. This Annual Groundwater Monitoring Report presents the sampling and analysis completed in 2019:

- The status of the groundwater monitoring program for the North CCR Landfill at the end of 2019 is assessment monitoring, and evaluation of potential remedies.
- The status of the groundwater monitoring program for the (closed) BASP at the end of 2019 is assessment monitoring.
- The status of the groundwater monitoring program for the (closed) AWRP at the end of 2019 is assessment monitoring.
- The status of the groundwater monitoring program for the East Landfill at the end of 2019 is detection monitoring.

2.0 Facility Description

Pawnee Station is a coal-fired, steam turbine electric generating station. The fuel source for the existing coal-fired units is sub-bituminous, low-sulfur coal from the Eagle Butte Mine near Gillette, Wyoming. In 2019 Pawnee Station had one operating unlined landfill unit, the North CCR Landfill, used for storage of CCR that has been in use since operations began in 1981 (**Figure 2).** Landfill operations consist primarily of management of CCR bottom ash and fly ash and disposal of minor amounts of other approved non-CCR waste. The North CCR landfill is operated as a single cell approximately 16 acres in area. A second landfill unit, the East CCR Landfill, was constructed in 2018 with a CCR compliant composite liner system and was put into

operation with the first ash placement July 8, 2019. The East CCR Landfill is located in the footprint of the former BASP (**Figure 2**).

The BASP was located in the southeast portion of the site and was included in the original construction of the Pawnee Station in 1980 and encompasses 13.1 acres. The pond was approximately 950 feet long by 600 feet wide and had a maximum depth of 23 feet. The pond was constructed with a composite liner system consisting of a synthetic liner over approximately 2 feet of clay. Historically, the BASP accepted sluiced bottom ash from the boiler and cooling water blowdown and discharged to the AWRP. The BASP was physically closed by final removal of all CCR and liner material, which was completed in March 2017; completion of CCR removal was certified by a Professional Engineer.

Included in the original site construction, the AWRP was built in 1980, encompasses 0.92 acres, and is located immediately northwest of the former BASP (**Figure 2**). The pond is approximately 400 feet long by 100 feet wide and has a maximum depth of 12 feet. The pond was constructed with a composite liner system consisting of a synthetic liner over approximately 2 feet of clay. Historically, the influent water was from the BASP and the effluent water was recirculated to the plant to sluice bottom ash from the boiler. The AWRP was taken out of service with the construction of the Ash Water Recycle Pond in 2005. The AWRP was physically closed by final removal of all CCR and liner material, which was completed in April 2017; completion of CCR removal was certified by a Professional Engineer.

2.1 Hydrogeology

The stratigraphic units present at the Pawnee Station include bedrock of the Pierre Shale, overlain by residual soil/transition zone bedrock derived from in-situ weathering of the Pierre Shale, which is also referred to as sandy silt deposits. The residual soil is overlain by dune sand deposits at the surface. The residual soil unit is laterally continuous and varies in thickness from approximately 8 to 45 feet. The transition zone bedrock is typically less than 5 feet (1.5 m) thick and consists of friable, blocky siltstone. The transition zone bedrock is confined below by competent bedrock of the Pierre Shale. Dune sand overlies the residual soil and ranges in thickness from 8 to 70 feet (2.4 to 21 m). The lithology is the same under all of the CCR units.

Saturated conditions occur at the base of the residual soil within the transition zone bedrock. The groundwater in this zone is perched on top of competent, low permeability, Pierre Shale. Regional groundwater flow is generally to the northeast across the site towards the South Platte River. Groundwater flow under the CCR units is to the east.

2.2 Monitoring Well Network

2.2.1 North CCR Landfill

Six monitoring wells located around the perimeter of the landfill are monitored for compliance with the CCR Rule. Groundwater flows east under the landfill; therefore, monitoring wells PNMW-2B, PNMW-13, and PNMW-14 are upgradient of the landfill, and wells PNMW-1B, PNMW-15, and PNMW-16 are located downgradient of the landfill waste boundary as described

in the Pawnee Station Groundwater Monitoring System Certification (HDR, 2018). The well locations are shown on **Figure 2**.

Existing monitoring wells P6, P7, and P18B were sampled as part of the assessment of corrective measures for the North CCR Landfill. These wells are not currently part of the certified CCR monitoring network but were sampled to better delineate the extents of the groundwater protection standard (GPS) exceedances and monitor the downgradient station property boundary in compliance with CCR Rule § 257.95(g)(1) (**Figure 2**). No landfill monitoring wells were installed or abandoned in 2019.

2.2.2 Bottom Ash Storage Pond

Four wells are located at the (closed) BASP for CCR compliance. Groundwater flows east under the former pond. Therefore, well PNMW-17 was located upgradient of the BASP and downgradient of the North CCR Landfill. Monitoring wells PNMW-21, PNMW-22, and PNMW-23 were located along the perimeter of the east side of the pond to serve as downgradient wells at the waste boundary (**Figure 2**). While water quality at PNMW-17 does not represent site-wide background water quality because of its location downgradient of the North CCR Landfill, it does represent water quality upgradient of the BASP and therefore the background water quality for that CCR unit. The BASP monitoring wells were installed in 2017, as described in the Groundwater Monitoring System Certification report (HDR, 2018). No monitoring wells were installed or abandoned in 2019 for the BASP.

2.2.3 Ash Water Recovery Pond

Four wells were sited at the (closed) AWRP for CCR compliance. Groundwater flows east under the pond. Therefore, well PNMW-17 serves as the upgradient well for both the BASP and the AWRP. While water quality at PNMW-17 does not represent site-wide background water quality because of its location downgradient of the North CCR Landfill, it does represent water quality upgradient of the AWRP and therefore the background water quality for that CCR unit. Monitoring wells PNMW-18, PNMW-19, and PNMW-20 were located along the perimeter of the east side of the pond to serve as downgradient wells at the waste boundary (**Figure 2**). The AWRP monitoring wells were installed in 2017, as described in the Groundwater Monitoring System Certification report (HDR, 2018). No monitoring wells were installed or abandoned in 2019 for the AWRP.

2.2.4 East CCR Landfill

The East CCR Landfill is within the footprint of the former BASP. Removal of CCR and all areas affected by releases of CCR at the BASP was completed by March 31, 2017. The East CCR Landfill was constructed in 2018 and took first receipt of CCR on July 8, 2019. Therefore, the monitoring wells are the same for the East CCR Landfill as the BASP. Groundwater flows east under the East CCR Landfill. Four wells are located at the East CCR Landfill for CCR compliance. Well MW-17 was located upgradient of the East Landfill and downgradient of the North CCR Landfill. Monitoring wells MW-21, MW-22, and MW-23 were located along the east side of the landfill waste boundary to serve as downgradient wells (**Figure 2**). While water quality at PNMW-17 does not represent site-wide background water quality because of its location downgradient of the North CCR Landfill, it does represent water quality upgradient of

the East CCR Landfill and therefore the background water quality for that CCR unit. The East CCR Landfill monitoring wells were installed in 2017, as described in the Groundwater Monitoring System Certification report (HDR, 2018). In 2019, additional monitoring wells were installed downgradient of the East CCR Landfill for compliance with the state monitoring program. It is anticipated that these wells will be added to the certified CCR monitoring network when Cell 2 of the East CCR Landfill is constructed.

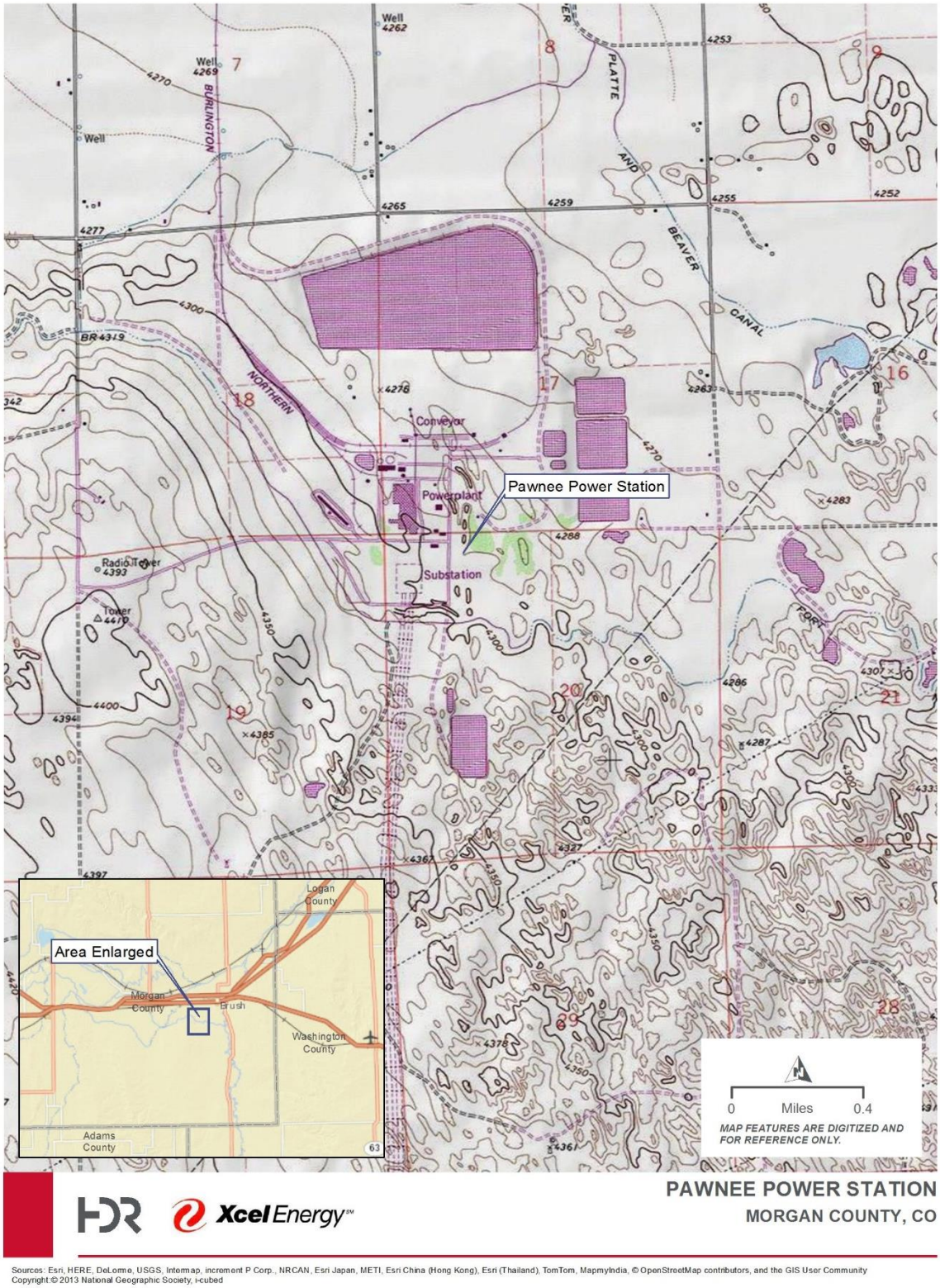


Figure 1. Vicinity map for Pawnee Station.

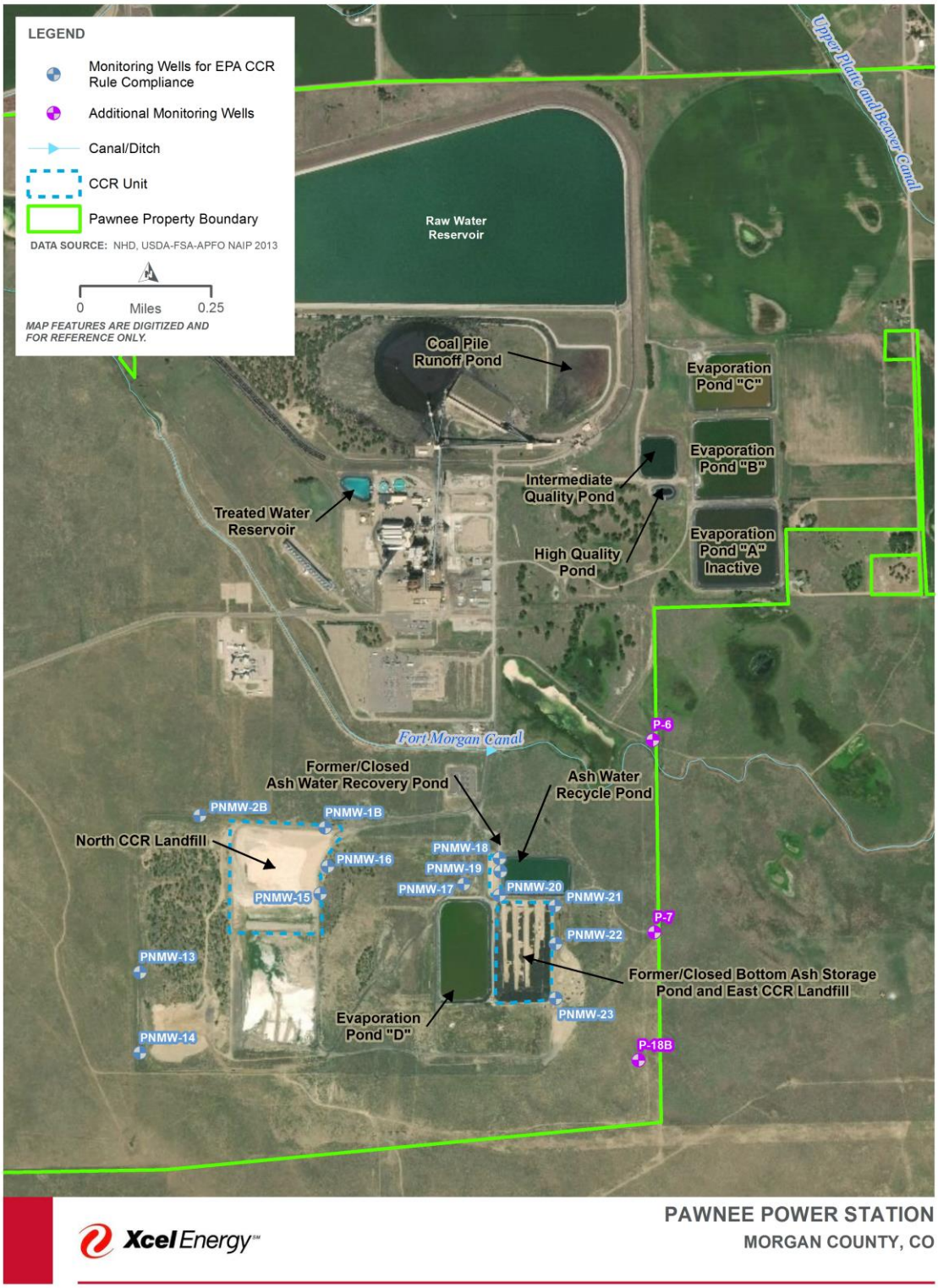


Figure 2. Pawnee Station – CCR units and monitoring well location map.

3.0 Monitoring

3.1 Frequency

3.1.1 North CCR Landfill

Assessment monitoring continued in 2019 for the North CCR Landfill. An annual assessment monitoring event was completed February 18-21, 2019 to sample all of the monitoring wells around the landfill for all Appendix III and IV constituents plus TSS (**Table 1**). Samples were collected from the certified monitoring network of wells (PNMW-1B, PNMW-2B, PNMW-13, PNMW-14, PNMW-15, and PNMW-16), plus from wells P6, P7, and P18B. Wells P6, P7, and P18B are not currently part of the certified CCR monitoring network but were sampled as part of the assessment of corrective measures for the North CCR Landfill to better delineate the extents of the groundwater protection standard (GPS) exceedances and monitor the downgradient station property boundary in compliance with CCR Rule § 257.95(g)(1). All Appendix IV constituents were detected in at least one well with the exception of mercury. **Table 2** provides the well identification, number of samples collected, dates samples were collected in 2019, and whether the sample was required by the detection monitoring or assessment monitoring programs (per (257.90(e)(3))). **Appendix A** provides the distinctions for the different types of monitoring events and the CCR Rule Part under which the monitoring event was conducted.

On August 6-8, 2019, semi-annual assessment monitoring samples were collected from the North CCR Landfill monitoring wells. Samples were analyzed for Appendix III and detected Appendix IV COIs plus TSS. Samples were collected from the certified monitoring network of wells (PNMW-1B, PNMW-2B, PNMW-13, PNMW-14, PNMW-15, and PNMW-16), plus from wells P6, P7, and P18B) (**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
pH	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 for each North CCR Landfill well and the required monitoring programs (257.90(e)(3))

Monitoring Well I.D.	Well Location	Dates Monitored	CCR Rule Monitoring Purpose
PNMW-1B	Downgradient	February 21, 2019	Annual Assessment Monitoring
		August 7, 2019	Semi-Annual Assessment Monitoring
PNMW-2B	Upgradient / Background	February 21, 2019	Annual Assessment Monitoring
		August 7, 2019	Semi-Annual Assessment Monitoring
PNMW-13	Upgradient / Background	February 21, 2019	Annual Assessment Monitoring
		August 8, 2019	Semi-Annual Assessment Monitoring
PNMW-14	Upgradient / Background	February 18, 2019	Annual Assessment Monitoring
		August 8, 2019	Semi-Annual Assessment Monitoring
PNMW-15	Downgradient	February 21, 2019	Annual Assessment Monitoring
		August 7, 2019	Semi-Annual Assessment Monitoring
PNMW-16	Downgradient	February 21, 2019	Annual Assessment Monitoring
		August 7, 2019	Semi-Annual Assessment Monitoring
P6*	Downgradient	February 21, 2019	Annual Assessment Monitoring

Table 2. Number and dates of groundwater samples collected for each North CCR Landfill well and the required monitoring programs (257.90(e)(3))			
Monitoring Well I.D.	**Well Location**	**Dates Monitored**	**CCR Rule Monitoring Purpose**
		August 7, 2019	Semi-Annual Assessment Monitoring
P7*	Downgradient	February 21, 2019	Annual Assessment Monitoring
		August 6, 2019	Semi-Annual Assessment Monitoring
P18B*	Downgradient	February 21, 2019	Annual Assessment Monitoring
		August 6, 2019	Semi-Annual Assessment Monitoring

**Currently not included in the certified network of wells. Data from these new wells is useful to guide decision making and are currently being evaluated for inclusion into the certified network.

3.1.2 Bottom Ash Storage Pond

Removal of CCR and all areas affected by releases of CCR at the BASP was completed by March 31, 2017. As stipulated in the Direct Final Rule (Extension Rule), background monitoring and detection monitoring must be completed before April 17, 2019. Eight rounds of background groundwater sampling were completed in 2017 and 2018 for the (closed) BASP from the certified monitoring well network (PNMW-17, PNMW-21, PNMW-22, and PNMW-23). Samples were analyzed for Appendix III and IV COIs plus TSS. Detection monitoring for the former BASP was completed February 17-21, 2019. Samples were analyzed for Appendix III COIs. **Table 3** provides the well identification, number of samples collected, dates samples were collected in 2019, and whether the sample was required by the detection monitoring or assessment monitoring programs (per (257.90(e)(3))).

The detection monitoring concentrations of Appendix III COIs from each downgradient monitoring well at the former BASP were compared against the BTVs and several COIs were shown to have SSIs over BTVs (UPL). These SSIs triggered the assessment monitoring program for the BASP. The initial assessment monitoring event was completed August 6-8, 2019 to sample all of the BASP certified monitoring network wells for Appendix IV constituents (**Table 1 and Table 3**). Results from the initial assessment monitoring sample event identified the detected Appendix IV constituents. All Appendix IV constituents were detected in at least one well except for antimony, beryllium, cadmium, mercury, and thallium.

On November 5-7, 2019, the first semi-annual assessment monitoring samples were collected from all wells in the BASP well network (**Table 3**). Samples were analyzed for Appendix III and detected Appendix IV COIs.

Table 3. Number and dates of groundwater samples collected for each well at the (closed) Bottom Ash Storage Pond and the required monitoring programs (257.90(e)(3))

Monitoring Well I.D.	Well Location	Dates Monitored	CCR Rule Monitoring Purpose
PNMW-17	Upgradient / Background	February 21, 2019	Detection Monitoring
		August 6, 2019	Initial Assessment Monitoring
		November 6, 2019	Semi-Annual Assessment Monitoring
PNMW-21	Downgradient	February 17, 2019	Detection Monitoring
		August 6, 2019	Initial Assessment Monitoring
		November 6, 2019	Semi-Annual Assessment Monitoring
PNMW-22	Downgradient	February 17, 2019	Detection Monitoring
		August 7, 2019	Initial Assessment Monitoring
		November 6, 2019	Semi-Annual Assessment Monitoring
PNMW-23	Downgradient	February 17, 2019	Detection Monitoring
		August 7, 2019	Initial Assessment Monitoring
		November 6, 2019	Semi-Annual Assessment Monitoring

3.1.3 Ash Water Recovery Pond

Removal of CCR and all areas affected by releases of CCR at the AWRP was completed by March 31, 2017. As stipulated in the Direct Final Rule (Extension Rule), background monitoring and detection monitoring must be completed before April 17, 2019. Eight rounds of background groundwater sampling were completed between July 19, 2018 and January 14, 2019 for the (closed) AWRP from the certified monitoring well network (PNMW-17, PNMW-18, PNMW-19, and PNMW-20). Samples were analyzed for Appendix III and IV COIs plus TSS. The first detection monitoring event for the former AWRP was completed February 20-21, 2019. Samples were analyzed for Appendix III COIs. **Table 4** provides the well identification, number of samples collected, dates samples were collected in 2019, and whether the sample was required by the detection monitoring or assessment monitoring programs (per (257.90(e)(3))).

The detection monitoring concentrations of Appendix III COIs from each downgradient monitoring well at the former AWRP were compared against the BTVs and several COIs were shown to have SSIs over BTVs (UPL). These SSIs triggered the assessment monitoring program for the AWRP. The initial assessment monitoring event was completed August 6-8, 2019 to sample all of the AWRP certified monitoring network wells for Appendix IV constituents (**Table 1 and Table 4**). Results from the initial assessment monitoring sample event identified

the detected Appendix IV constituents. All Appendix IV constituents were detected in at least one well except for antimony, beryllium, cadmium, mercury, and thallium.

On November 5-7, 2019, the first semi-annual assessment monitoring samples were collected from all wells in the AWRP well network (**Table 4**). Samples were analyzed for Appendix III and detected Appendix IV COIs.

Table 4. Number and dates of groundwater samples collected for each well at the (closed) Ash Water Recovery Pond and the required monitoring programs (257.90(e)(3))

Monitoring Well I.D.	Well Location	Dates Monitored	CCR Rule Monitoring Purpose
PNMW-17	Upgradient / Background	January 14, 2019	Background Monitoring
		February 21, 2019	Detection Monitoring
		August 6, 2019	Initial Assessment Monitoring
		November 6, 2019	Semi-Annual Assessment Monitoring
PNMW-18	Downgradient	January 14, 2019	Background Monitoring
		February 20, 2019	Detection Monitoring
		August 6, 2019	Initial Assessment Monitoring
		November 6, 2019	Semi-Annual Assessment Monitoring
PNMW-19	Downgradient	January 14, 2019	Background Monitoring
		February 20, 2019	Detection Monitoring
		August 6, 2019	Initial Assessment Monitoring
		November 6, 2019	Semi-Annual Assessment Monitoring
PNMW-20	Downgradient	January 14, 2019	Background Monitoring
		February 20, 2019	Detection Monitoring
		August 6, 2019	Initial Assessment Monitoring
		November 6, 2019	Semi-Annual Assessment Monitoring

3.1.4 East CCR Landfill

The East CCR Landfill is within the footprint of the former BASP. Removal of CCR and all areas affected by releases of CCR at the BASP was completed by March 31, 2017. Seven of the eight sample rounds for background at the East CCR Landfill were completed in 2017 and the eighth background sample event was completed in January 2018. Monitoring was conducted at the East CCR Landfill monitoring well network (PNMW-17, PNMW-21, PNMW-22, and PNMW-23). Samples were analyzed for Appendix III and IV COIs plus TSS. The East CCR Landfill was constructed in 2018 and began operation July 8, 2019. The initial detection monitoring event was conducted on November 5-6, 2019. Samples were analyzed for all Appendix III COIs.

Table 5 provides the well identification, number of samples collected, dates samples were collected in 2019, and the monitoring program (per (257.90(e)(3))).

Table 5. Number and dates of groundwater samples collected for each well at the East CCR Landfill and the required monitoring programs (257.90(e)(3))

Monitoring Well I.D.	Well Location	Dates Monitored	CCR Rule Monitoring Purpose
PNMW-17	Upgradient / Background	November 6, 2019	Detection Monitoring
PNMW-21	Downgradient	November 5, 2019	Detection Monitoring
PNMW-22	Downgradient	November 6, 2019	Detection Monitoring
PNMW-23	Downgradient	November 6, 2019	Detection Monitoring

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 CCR monitoring network wells unless wells were dry. Groundwater sample collection protocols follow the Groundwater Sample Collection Standard Operating Procedure (SOP) (HDR, 2015). The water samples were collected using a submersible Geotech SS Geosub 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, 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 for each type of monitoring were analyzed for the COIs shown in **Appendix A** and listed in **Table 1**. Background monitoring analyses include all of the parameters in Appendices III and IV of CCR Rule Part 257, plus TSS. Detection monitoring samples are analyzed for all Appendix III COIs. Initial assessment monitoring samples are analyzed for Appendix IV COIs to determine what COIs are detected. The semi-annual assessment monitoring samples are analyzed for Appendix III and detected Appendix IV COIs, plus TSS. Which COIs were detected at each facility is described in Section 4.2. Annual assessment monitoring samples are analyzed for all Appendix III and Appendix IV COIs, plus

TSS. The laboratory analyzed matrix spike/matrix spike duplicates at a rate of 5 percent, per laboratory quality control procedures.

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) failures for field duplicate analyses were below the 20 percent limit criteria. Laboratory Control Sample (LCS)/LCS duplicates and MS/MSD duplicates percent RPD recoveries all were within control limits. 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 both upgradient and downgradient monitoring wells were recorded during all monitoring events. The water levels and contour map (**Appendix B**) confirm that monitoring wells PNMW-2B, PNMW-13, and PNMW-14 are all located upgradient of the North CCR Landfill and continue to be appropriate to represent sitewide background water quality. The contour map (**Appendix B**) also confirms that monitoring well PNMW-17 is located upgradient of the BASP, the AWRP, and the East CCR Landfill and is appropriate to represent background water quality for those CCR facilities. The groundwater flow direction is generally east under these facilities. Therefore, the selected downgradient wells continue to be appropriately located to monitor the CCR facilities.

4.2 Water Quality

4.2.1 North CCR Landfill

As stipulated in the CCR Rule, eight rounds of background groundwater sampling and detection monitoring were completed before October 17, 2017 for the North CCR Landfill. The background sampling was described in detail in the *Background Water Quality Statistical Certification* (HDR 2020). The first detection monitoring event was conducted on October 10-11, 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 each downgradient monitoring well at the North CCR Landfill were compared against the BTVs and several COIs were shown to have SSIs over BTVs ((UPL)) at all three downgradient wells (PNMW-1B, PNMW-15, and PNMW-16). Per CCR Rule 257.94(e)(2), within 90 days of completing the SSI determination PSCo conducted a review to determine if a source other than the North CCR Landfill had caused the SSI. The *Pawnee Station North Landfill CCR Unit*

Alternative Source Determination (ASD) of Statistically Significant Increases over Background per CCR Rule 257.93(h)(2) was completed on April 9, 2018 and no alternative source was identified at that time. Therefore, these SSIs triggered the assessment monitoring program for the landfill.

In accordance with CCR Rule 257.95(h), GPS were established for each detected Appendix IV COI and documented in the January 2, 2019 memorandum *Groundwater Protection Standards and Determination of SSLs per 257.95(g)*. For each detected COI, **Table 6** lists the EPA established MCL from 40 CFR 141.62 and 141.66, the BTV (upper tolerance limit) for the North CCR Landfill, and the GPS.

In accordance with CCR Rule 257.95(e), downgradient well concentrations from the August 2018 assessment monitoring event 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 to exceed GPS. Therefore, in accordance with CCR Rule 257.95(g), downgradient well concentrations were statistically evaluated to determine "if one or more constituents in appendix IV to this part are detected at statistically significant levels above the groundwater protection standard." As described in *Groundwater Protection Standards and Determination of SSLs per 257.95(g)* downgradient wells were found to have concentrations of lithium at SSLs above the GPS. This initiated the assessment of corrective measures for the North CCR Landfill.

Table 6. Groundwater Protection Standards for Detected Appendix IV COIs for the North CCR Landfill 257.95(d)(3)

Constituent	Unit	MCL	BTV (UTL)	GPS
Antimony	mg/l	0.006	0.00110	0.00600
Arsenic	mg/l	0.01	0.0140	0.0140
Barium	mg/l	2.0	0.491	2.00
Beryllium	mg/l	0.004	0.00210	0.00400
Cadmium	mg/l	0.005	0.000390	0.00500
Chromium, Total	mg/l	0.10	0.240	0.240
Cobalt	mg/l	0.006*	0.0246	0.0246
Fluoride	mg/l	4.0	1.50	4.00
Lead	mg/l	0.015*	0.0385	0.0385
Lithium	mg/l	0.04*	0.0940	0.0940
Mercury	mg/l	0.002	0.0000270	0.00200
Molybdenum	mg/l	0.1*	0.0260	0.0260
Radium-226-228	pci/l	5.0^	3.46	5.00
Selenium	mg/l	0.05	0.00629	0.0500
Thallium	mg/l	0.002	0.000780	0.00200

*EPA adopted health-based value in place of MCL.
^Colorado Water Quality Regulation

Annual and semiannual assessment monitoring sample collection has continued. Annual assessment monitoring samples were collected and analyzed for all Appendix III and Appendix IV COIs in February 2019. All of the COIs were detected except for mercury. In August 2019 semiannual assessment monitoring samples were collected and analyzed for Appendix III and detected Appendix IV COIs. Laboratory reports for 2019 are provided in **Appendix C**. On August 30, 2019, the *Conceptual Site Model and Assessment of Corrective Measures* report was completed in accordance with CCR Rule 257.96.

In 2020, PSCo will continue to monitor groundwater at the North CCR Landfill in accordance with the assessment monitoring program and consistent with 257.93(e). PSCo will also conduct additional evaluation of the previously assessed corrective measures for the North CCR Landfill in accordance with CCR Rule 257.96, including evaluation of measures through numerical groundwater modeling and contaminant fate and transport modeling. In accordance with 257.97(a), PSCo will complete semi-annual progress reporting in 2020 to document additional work completed towards remedy selection and design.

4.2.2 Bottom Ash Storage Pond

Closure of the BASP was completed by March 31, 2017 per 257.102(e)(i), with removal of CCR and all areas affected by releases of CCR. Therefore, it is important to note that all groundwater monitoring at the BASP reflect post-CCR removal conditions.

Eight groundwater sampling events of both upgradient and downgradient wells at the BASP occurred between June 14, 2017 and January 2018 for background water monitoring. All four BASP monitoring wells (PNMW-17, PNMW-21, PNMW-22, and PNMW-23) were sampled during the eight events. Groundwater was analyzed for CCR Rule Appendix III and IV COIs plus TSS. The background sampling was described in detail in the *Background Water Quality Statistical Certification* (HDR 2020). The first detection monitoring event was conducted on February 17-21, 2019. In the June 27, 2019 PSCo memorandum, *Determination of Statistically Significant Increases over Background per 257.93(h)(2)*, concentrations of Appendix III COIs from each downgradient monitoring well at the former BASP were compared against the BTVs and several were shown to have SSIs over BTVs. These SSIs triggered the assessment monitoring program for the former BASP. As stipulated in CCR Rule 257.95(b), within 90 days of the SSI determination an initial assessment monitoring event must be completed. This was completed in August 6-8, 2019 and consisted of sampling the network of BASP monitoring wells for Appendix IV constituents. Laboratory reports are provided in **Appendix C**. All Appendix IV constituents were detected in at least one well with the exception of antimony, beryllium, cadmium, mercury, and thallium.

On November 5-6, 2019, the first semi-annual assessment monitoring samples were collected from all of the former BASP monitoring wells. Samples were analyzed for Appendix III and detected Appendix IV COIs plus TSS. Samples were collected from the monitoring network of wells (PNMW-17, PNMW-21, PNMW-22, and PNMW-23). Laboratory reports are provided in **Appendix C**.

In 2020, downgradient well concentrations from the former BASP November 2019 assessment monitoring event will be compared against background values and against GPS values in

accordance with CCR Rule 257.95(e-g). In 2020, PSCo will continue to monitor groundwater in accordance with the assessment monitoring program and consistent with 257.93(e).

4.2.3 Ash Water Recovery Pond

Removal of CCR and all areas affected by releases of CCR at the AWRP was complete in April 10, 2017. The CCR material has been completely removed from the pond. Therefore, it is important to note that all groundwater monitoring occurring after April 2017 at the AWRP reflect post-CCR removal conditions.

Eight groundwater sampling events of both upgradient and downgradient wells at the AWRP occurred between July 19, 2018 and January 14, 2019 for background water monitoring. All four AWRP monitoring wells (PNMW-17, PNMW-18, PNMW-19, and PNMW-20) were sampled during the eight events. Groundwater was analyzed for CCR Rule Appendix III and IV COIs plus TSS. Laboratory reports for 2019 are provided in **Appendix C**. The background sampling was described in detail in the *Background Water Quality Statistical Certification* (HDR 2020). The first detection monitoring event was conducted on February 17-21, 2019. In the June 27, 2019 PSCo memorandum, *Determination of Statistically Significant Increases over Background per 257.93(h)(2)*, concentrations of Appendix III COIs from downgradient monitoring well at the former AWRP were compared against the BTVs and several were shown to have SSIs over BTVs. These SSIs triggered the assessment monitoring program for the former AWRP. As stipulated in CCR Rule 257.95(b), within 90 days of the SSI determination an initial assessment monitoring event must be completed. This was completed in August 6-8, 2019 and consisted of sampling the network of AWRP monitoring wells for Appendix IV constituents. Laboratory reports are provided in **Appendix C**. All Appendix IV constituents were detected in at least one well with the exception of antimony, beryllium, cadmium, mercury, and thallium.

On November 5-7, 2019, the first semiannual assessment monitoring samples were collected from all of the former AWRP monitoring wells. Samples were analyzed for Appendix III and detected Appendix IV COIs plus TSS. Samples were collected from the monitoring network of wells (PNMW-17, PNMW-18, PNMW-19, and PNMW-20). Laboratory reports are provided in **Appendix C**.

In 2020, downgradient well concentrations from the former AWRP November 2019 assessment monitoring event will be compared against background values and against GPS values in accordance with CCR Rule 257.95(e-g). In 2020, PSCo will continue to monitor groundwater in accordance with the assessment monitoring program and consistent with 257.93(e).

4.2.4 East CCR Landfill

The East CCR Landfill is within the footprint of the former BASP. Removal of CCR and all areas affected by releases of CCR at the BASP was completed by March 31, 2017. The eight rounds for background at the East CCR Landfill were completed between June 2018 and January 2018 at the East CCR Landfill monitoring well network (PNMW-17, PNMW-21, PNMW-22, and PNMW-23). Samples were analyzed for Appendix III and IV COIs plus TSS. The East CCR Landfill was constructed in 2018 and began operation July 8, 2019. The initial detection monitoring event was conducted on November 5-6, 2019. Samples were analyzed for all Appendix III COIs.

In 2020, PSCo will compare the detection monitoring results to the BTVs for the East CCR Landfill to determine if there are any SSIs of any Appendix III COIs. PSCo will continue to monitor groundwater in accordance with the detection monitoring program and consistent with 257.93(e).

5.0 Remedy Selection Progress

This section provides the semi-annual progress report describing the progress towards remedy selection and design for the North CCR Landfill in accordance with 257.97(a). Semi-annual progress reports will be prepared and posted to the CCR website until a remedy is selected and documented in a final report.

As described in *Groundwater Protection Standards and Determination of SSLs per 257.95(g)* downgradient wells were found to have concentrations of lithium at SSLs above the GPS. Therefore, PSCo completed the *Conceptual Site Model and Assessment of Corrective Measures* report on August 30, 2019 in accordance with CCR Rule § 257.96. A groundwater flow and transport model was developed for the North CCR Landfill in the Spring 2019. The groundwater models are described in the *Conceptual Site Model and Assessment of Corrective Measures* report (HDR 2019). The flow model and transport model were both calibrated.

The objectives of the model are to simulate whether constituent of concern (COC) in groundwater may have migrated beyond the property boundary and then evaluate the effectiveness of potential corrective measures in meeting the requirements and objectives of the remedy in accordance with 257.97. Prior to development of the model, additional monitoring wells downgradient of the landfill were monitored, including P6, P7, and P18B, to more thoroughly delineate the extents of the GPS exceedance and monitor the property boundary in compliance with CCR Rule § 257.95(g)(1)(iii). Data from these additional wells was incorporated in the fate and transport model.

As described in *Conceptual Site Model and Assessment of Corrective Measures* development of the model illustrated areas of uncertainty:

1. Potential concentrations of lithium southeast of the North CCR Landfill. These model results could erroneously change the shape of the plume downgradient of the landfill.
2. Potential concentrations of lithium northeast of the North CCR Landfill. These model results could erroneously change the shape of the plume downgradient of the landfill.

These areas of uncertainty could affect the use of the model to evaluate and compare the effectiveness of potential remedies. The uncertainty reflects data gaps between monitoring wells that needed to be filled in order for the model to simulate concentrations in these two areas with a sufficient degree of certainty prior to running predictive simulations of potential remedies. In response to these data gaps, PSCo sampled additional site wells to confirm concentrations in these areas. Monitoring wells PNMW-5B and PNMW-6B were sampled in August 2019 and the results are being incorporated into an updated and recalibrated transport model.

In 2020, predictive simulations will be run using the updated model to further evaluate the effectiveness of corrective measures that were recommended for further consideration in the *Conceptual Site Model and Assessment of Corrective Measures*. Specifically, the model will simulate the extent of the COCs in groundwater, determine the potential for offsite transport, and evaluate the effectiveness of potential corrective measures to reduce groundwater concentrations over time with the goal of selecting the best remedy or combination of measures for implementation.

For each corrective measure alternative simulated, the model will:

- Evaluate concentrations of COCs over time, transport directions, and potential for movement offsite; and
- Evaluate the time required for each alternative to "complete the remedy" (per 257.96(c)(2)).

6.0 Summary

The following observations are based on CCR Rule compliance monitoring data collected during the 2019 and prior sample events:

North CCR Landfill

- Assessment monitoring sampling continued in 2019 to include an annual sample event in February 2019 and analyzed for all Appendix III and IV COIs. All 6 certified well network wells for the North Landfill were sampled, and three additional wells at the eastern property boundary.
- A semi-annual assessment monitoring event was performed in August 2019 and analyzed for all Appendix III and detected IV COIs. All 6 certified well network wells for the landfill were sampled, and three additional wells at the eastern property boundary.
- Assessment monitoring data from the North Landfill is statistically evaluated after each event and compared to background values and GPS.
- The Assessment of Corrective Measures was initiated in 2019 and the report *Conceptual Site Model and Assessment of Corrective Measures* was posted to the operating record on August 30, 2019.
- Pawnee Station North CCR Landfill status at the end of 2019 is assessment monitoring and evaluation of potential remedies. A groundwater flow and transport model were developed as part of the assessment of corrective measures in 2019. In 2020 the updated model will be used to further evaluate the corrective measures that were identified in the *Conceptual Site Model and Assessment of Corrective Measures* report.

(Closed) Bottom Ash Storage Pond

- All CCR waste was removed from the pond by March 2017.
- Groundwater flow direction under the BASP is generally to the east.

- Detection monitoring was completed in February 2019 and data from the former BASP was statistically evaluated and SSIs over background were detected at wells for several COIs.
- All certified well network wells were sampled in August 2019 for the first assessment monitoring event to determine the detected Appendix IV COIs.
- The certified well network wells were sampled in November 2019 for the first semi-annual assessment monitoring event.
- Pawnee Station BASP current status is in assessment monitoring; however, because the pond has been closed all monitoring reflects post-CCR waste removal. Assessment monitoring will continue to evaluate whether clean closure criteria in groundwater have been met.

(Closed) Ash Recovery Pond

- All CCR waste was removed from the pond by April 2017.
- Groundwater flow direction under the AWRP is generally to the east.
- Detection monitoring was completed in February 2019 and data from the former AWRP was statistically evaluated and SSIs over background were detected at wells for several COIs.
- All certified well network wells were sampled in August 2019 for the first assessment monitoring event to determine the detected Appendix IV COIs.
- The certified well network wells were sampled in November 2019 for the first semi-annual assessment monitoring event.
- Pawnee Station AWRP current status is in assessment monitoring; however, because the pond has been closed all monitoring reflects post-CCR waste removal. Assessment monitoring will continue to evaluate whether clean closure criteria in groundwater have been met.

East CCR Landfill

- All CCR waste was removed from the BASP by March 2017. In 2018 the East CCR Landfill was constructed in the footprint of the BASP. PSCo began operation of the East CCR Landfill by placing waste July 8, 2019.
- Groundwater flow direction under the East CCR Landfill is generally to the east.
- Detection monitoring was initiated in November 2019 and in 2020 data from the East CCR Landfill will be statistically evaluated to determine if there are any SSIs over background.
- Pawnee Station East CCR Landfill current status is in detection monitoring.

7.0 References

HDR, 2015. Groundwater Sample Collection Standard Operating Procedure. October 28, 2015.

HDR, 2018. Groundwater Monitoring System Certification - Compliance with the Coal Combustion Residuals Rule Pawnee Station. December, 2018.

HDR, 2018. Data Management and Statistical Procedures Plan for Compliance with the Coal Combustion Residuals Rule. Updated January 15, 2018.

HDR, 2019. Conceptual Site Model and Assessment of Corrective Measures - Compliance with the Coal Combustion Residuals Rule Valmont Station. August 30, 2019.

HDR, 2020. Background Water Quality Statistical Certification. January 31, 2020.

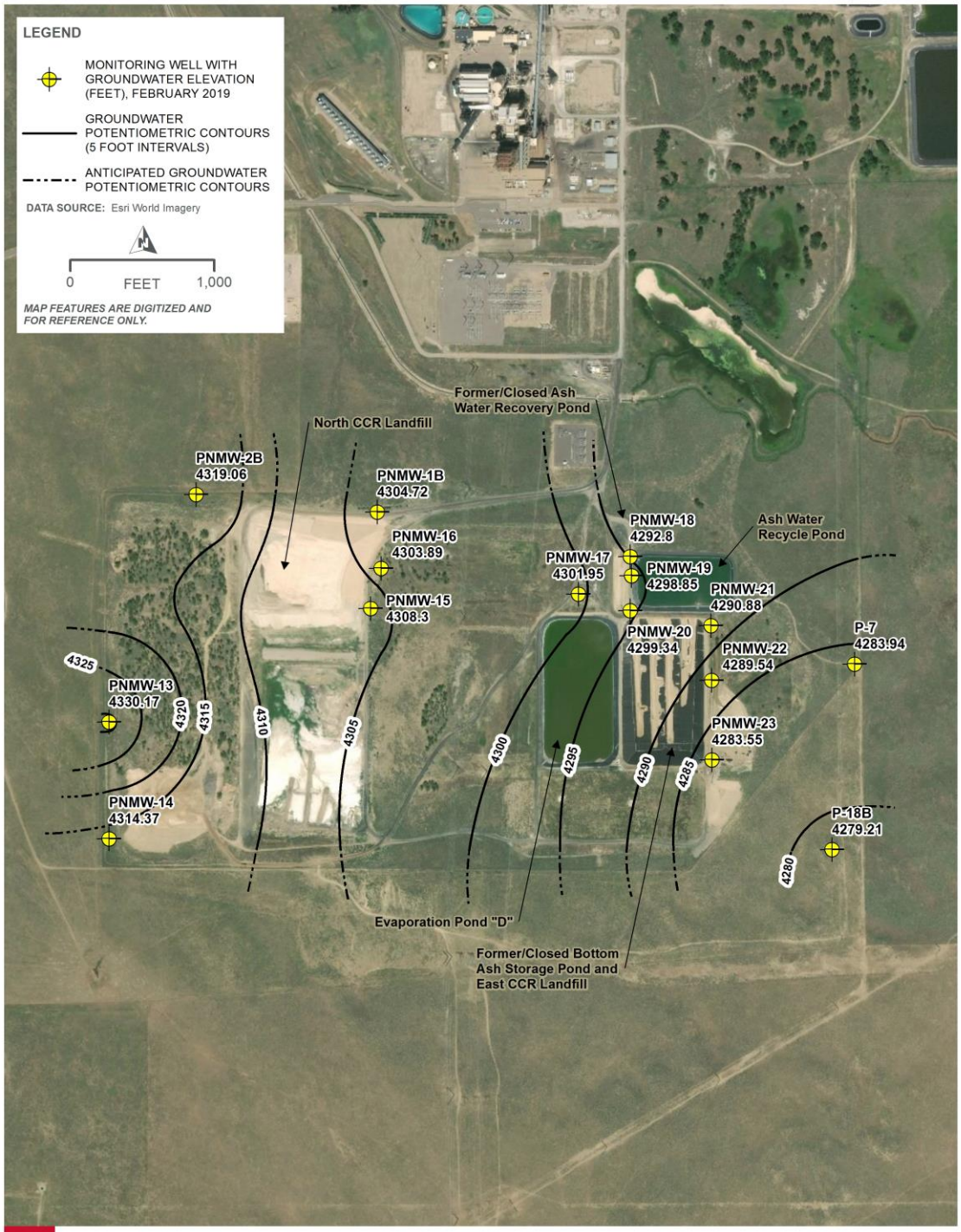
Appendix A

Monitoring types to comply with specific CCR Rule requirements

Monitoring types to comply with specific CCR Rule requirements			
Type of Monitoring	**Description**	**CCR Rule Reference**	**Constituents Analyzed**
Background Monitoring	Development of background water quality conditions for Appendix III and Appendix IV COIs	257.94(b)	Appendix III and IV and TSS
Detection Monitoring	Semi-annual detection monitoring for Appendix III COIs	257.94(c)	Appendix III
Assessment Monitoring	Detailed types below.	257.95	Detailed types below.
➢ Initial Assessment	Determining detected Appendix IV COIs	257.95(b)	Appendix IV
➢ Semi-Annual Assessment	Semi-annual assessment monitoring for Appendix III and detected Appendix IV COIs	257.95(d)	Appendix III and detected Appendix IV plus TSS
➢ Annual Assessment	Determining detected Appendix IV COIs on an annual basis. Starting in 2019 this will also count as the semi-annual sample event.	257.95(b)	Appendix III and all Appendix IV plus TSS
➢ Release Characterization Assessment	Occurs after detection of SSL above the GPS for the purpose of characterizing the nature and extent of the release.	257.95(g)(1)(iv)	Appendix III and detected Appendix IV plus TSS
➢ Corrective Action Assessment	Occurs after a facility has initiated corrective action. This is an PSCo designation (not in the Rule) added to Assessment Monitoring to differentiate that the samples were collected after the corrective action has been implemented.	N/A	Appendix III and detected Appendix IV plus TSS
Post-CCR Removal Monitoring	Occurs after the facility has been physically closed (e.g. all CCR waste removed from the impoundment). This is an PSCo designation added to other types of monitoring (e.g. Background Monitoring or Detection Monitoring.	N/A	Appendix III and/or Appendix IV as applicable plus TSS
Closure Confirmation Monitoring	Occurs after the facility has been physically closed (e.g. all CCR waste removed from the impoundment) in compliance with CCR Rule for certification of Clean Closure.	257.102	Appendix IV

Appendix B

Potentiometric Surface Map



Xcel Energy

PAWNEE POWER STATION
MORGAN COUNTY, CO

PATH: J:\2015\15-115_XCEL_CORE_SAMPLING_TESTING_(WALTHER)\MAP_DOCS\GROUNDWATER_CONTROURS\PAWNEE_GWCONTOUR_2019ANNUALREPORT.MXD - USER: AKAPLE - DATE: 1/30/2020

Appendix C

Laboratory Reports

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

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

TestAmerica Job ID: 280-119116-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

For:
HDR Inc
1670 Broadway, Suite 3400
Denver, Colorado 80202

Attn: Molly Reeves

Darlene Bandy

Authorized for release by:
2/13/2019 6:45:31 PM

Darlene Bandy, Project Manager I
(303)736-0188
darlene.bandy@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 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
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-119116-1

Qualifiers

Metals

Qualifier	Qualifier Description
J	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
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
E	Result exceeded calibration range.
H	Sample was prepped or analyzed beyond the specified holding time

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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Job ID: 280-119116-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Pawnee

Report Number: 280-119116-1

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 1/15/2019 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.1° C and 2.6° C.

Receipt Exceptions

The requested 6010/6020 Metals analyses were performed by TestAmerica's Canton laboratory.

The requested Radiochemistry analyses were performed by TestAmerica's St. Louis laboratory. Results will be reported under a separate cover: (280-119116-2).

1 x 250mL unpreserved plastic container for sample PNMW-20 (280-119116-4) was received without a collection time listed on the container label. The sample was logged per the time listed on the COC. The client was notified on 1/16/19.

TOTAL RECOVERABLE METALS

Samples PNMW-17 (280-119116-1), PNMW-18 (280-119116-2), PNMW-19 (280-119116-3), PNMW-20 (280-119116-4), PNMW18DUP (280-119116-5) and PNMW17-EB (280-119116-6) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 01/21/2019 and analyzed on 01/22/2019.

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

TOTAL RECOVERABLE METALS (ICPMS)

Samples PNMW-17 (280-119116-1), PNMW-18 (280-119116-2), PNMW-19 (280-119116-3), PNMW-20 (280-119116-4), PNMW18DUP (280-119116-5) and PNMW17-EB (280-119116-6) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 01/21/2019 and analyzed on 01/23/2019.

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

TOTAL MERCURY

Samples PNMW-17 (280-119116-1), PNMW-18 (280-119116-2), PNMW-19 (280-119116-3), PNMW-20 (280-119116-4), PNMW18DUP (280-119116-5) and PNMW17-EB (280-119116-6) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared on 01/23/2019 and analyzed on 01/24/2019.

Job ID: 280-119116-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

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

TOTAL DISSOLVED SOLIDS

Samples PNMW-17 (280-119116-1), PNMW-18 (280-119116-2), PNMW-19 (280-119116-3), PNMW-20 (280-119116-4), PNMW18DUP (280-119116-5) and PNMW17-EB (280-119116-6) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 01/18/2019, 01/24/2019 and 02/05/2019.

Total Dissolved Solids (TDS) was detected in method blank MB 280-444705/1 at a level exceeding the reporting limit. All samples reported from this batch had results greater than 10X the value found in the method blank; therefore, reanalysis was not performed for these samples. All associated results have been flagged "B". Refer to the QC report for details.

Reanalysis of the following sample was performed outside of the analytical holding time due to a high bias evidenced by the method blank exceeding the reporting limit in the original analysis: PNMW17-EB (280-119116-6). The sample was collected on 1/14/2019, initially analyzed on 1/18/2019, and reanalyzed out of hold on 1/24/2019, 3 days after the 7 day hold time expired.

The TDS result for sample PNMW-20 (280-119116-4) had a residue greater than 200mg. The result has been flagged "E". The sample was reanalyzed out of hold and the result confirmed the initial result; therefore, the in hold result has been qualified and reported.

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

TOTAL SUSPENDED SOLIDS

Samples PNMW-17 (280-119116-1), PNMW-18 (280-119116-2), PNMW-19 (280-119116-3), PNMW-20 (280-119116-4), PNMW18DUP (280-119116-5) and PNMW17-EB (280-119116-6) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 01/19/2019.

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

CORROSIVITY (PH)

Samples PNMW-17 (280-119116-1), PNMW-18 (280-119116-2), PNMW-19 (280-119116-3), PNMW-20 (280-119116-4), PNMW18DUP (280-119116-5) and PNMW17-EB (280-119116-6) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 01/16/2019.

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

ANIONS (28 DAYS)

Samples PNMW-17 (280-119116-1), PNMW-18 (280-119116-2), PNMW-19 (280-119116-3), PNMW-20 (280-119116-4), PNMW18DUP (280-119116-5) and PNMW17-EB (280-119116-6) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 01/15/2019 and 01/16/2019.

Samples PNMW-17 (280-119116-1)[5X], PNMW-18 (280-119116-2)[10X], PNMW-20 (280-119116-4)[5X], PNMW-20 (280-119116-4)[50X] and PNMW18DUP (280-119116-5)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

Fluoride was detected in method blank MB 280-444268/6 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. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

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

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-119116-1

Client Sample ID: PNMW-17 — Lab Sample ID: 280-119116-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.19		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.080		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	260		1.0	0.58	mg/L	1		6020A	Total Recoverable
Chromium	0.0048		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Selenium	0.019		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.035		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.2	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	320		15	1.3	mg/L	5		9056A	Total/NA
Fluoride	0.22	J B	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	560		25	1.2	mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	1400	B	20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	2.0	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-18 — Lab Sample ID: 280-119116-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.15		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.053		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	250		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.00020	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0012	J	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0012	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0023	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.031		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	330		30	2.5	mg/L	10		9056A	Total/NA
Fluoride	0.28	J B	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	920		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	2000	B	20	9.4	mg/L	1		SM 2540C	Total/NA

Client Sample ID: PNMW-19 — Lab Sample ID: 280-119116-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.023	J	0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.20		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	68		1.0	0.58	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-119116-1

Client Sample ID: PNMW-19 (Continued) — Lab Sample ID: 280-119116-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.0011	J	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0013	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0018	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.022		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.9	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	31		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.33	J B	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	77		5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	430	B	10	4.7	mg/L	1		SM 2540C	Total/NA

Client Sample ID: PNMW-20 — Lab Sample ID: 280-119116-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.7		0.10	0.023	mg/L	1		6010C	Total Recoverable
Arsenic	0.0021	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.046		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	450		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.0015		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0061		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Lead	0.0025		0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.0082		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.066		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.9	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	660		15	1.3	mg/L	5		9056A	Total/NA
Sulfate	5000		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	7400	B E	10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	4.8		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW18DUP — Lab Sample ID: 280-119116-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.16		0.10	0.023	mg/L	1		6010C	Total Recoverable
Arsenic	0.00076	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.051		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	250		1.0	0.58	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: PNMW18DUP (Continued)

Lab Sample ID: 280-119116-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.0010	J	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0012	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0021	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.034		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.2	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	320		30	2.5	mg/L	10		9056A	Total/NA
Fluoride	0.29	J B	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	920		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	2000	B	20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	4.0		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW17-EB

Lab Sample ID: 280-119116-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
pH adj. to 25 deg C	6.3	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.5	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Sulfate	0.25	J	5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	9.0	J H	10	4.7	mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-119116-1

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
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN
7470A	Preparation, Mercury	SW846	TAL CAN

Protocol References:

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

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

Sample Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-119116-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-119116-1	PNMW-17	Water	01/14/19 17:00	01/15/19 09:30
280-119116-2	PNMW-18	Water	01/14/19 11:45	01/15/19 09:30
280-119116-3	PNMW-19	Water	01/14/19 13:45	01/15/19 09:30
280-119116-4	PNMW-20	Water	01/14/19 15:25	01/15/19 09:30
280-119116-5	PNMW18DUP	Water	01/14/19 11:45	01/15/19 09:30
280-119116-6	PNMW17-EB	Water	01/14/19 15:50	01/15/19 09:30

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

Client Sample ID: PNMW-17
Date Collected: 01/14/19 17:00
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.19**		0.10	0.023	mg/L		01/21/19 14:00	01/22/19 16:47	1

Client Sample ID: PNMW-18
Date Collected: 01/14/19 11:45
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.15**		0.10	0.023	mg/L		01/21/19 14:00	01/22/19 16:51	1

Client Sample ID: PNMW-19
Date Collected: 01/14/19 13:45
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.023**	**J**	0.10	0.023	mg/L		01/21/19 14:00	01/22/19 16:55	1

Client Sample ID: PNMW-20
Date Collected: 01/14/19 15:25
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**1.7**		0.10	0.023	mg/L		01/21/19 14:00	01/22/19 17:00	1

Client Sample ID: PNMW18DUP
Date Collected: 01/14/19 11:45
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.16**		0.10	0.023	mg/L		01/21/19 14:00	01/22/19 17:04	1

Client Sample ID: PNMW17-EB
Date Collected: 01/14/19 15:50
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		01/21/19 14:00	01/22/19 17:09	1

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

Client Sample ID: PNMW-17
Date Collected: 01/14/19 17:00
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		01/21/19 14:00	01/23/19 10:54	1
Arsenic	ND		0.0050	0.00075	mg/L		01/21/19 14:00	01/23/19 10:54	1
Barium	**0.080**		0.0050	0.0022	mg/L		01/21/19 14:00	01/23/19 10:54	1
Beryllium	ND		0.0010	0.00031	mg/L		01/21/19 14:00	01/23/19 10:54	1
Calcium	**260**		1.0	0.58	mg/L		01/21/19 14:00	01/23/19 10:54	1
Cadmium	ND		0.0010	0.00021	mg/L		01/21/19 14:00	01/23/19 10:54	1
Cobalt	ND		0.0010	0.00019	mg/L		01/21/19 14:00	01/23/19 10:54	1
Chromium	**0.0048**		0.0020	0.00098	mg/L		01/21/19 14:00	01/23/19 10:54	1
Molybdenum	ND		0.010	0.0011	mg/L		01/21/19 14:00	01/23/19 10:54	1
Lead	ND		0.0010	0.00045	mg/L		01/21/19 14:00	01/23/19 10:54	1
Selenium	**0.019**		0.0050	0.00089	mg/L		01/21/19 14:00	01/23/19 10:54	1
Thallium	ND		0.0010	0.00020	mg/L		01/21/19 14:00	01/23/19 10:54	1
Lithium	**0.035**		0.0080	0.0017	mg/L		01/21/19 14:00	01/23/19 10:54	1

Client Sample ID: PNMW-18
Date Collected: 01/14/19 11:45
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		01/21/19 14:00	01/23/19 13:13	1
Arsenic	ND		0.0050	0.00075	mg/L		01/21/19 14:00	01/23/19 13:13	1
Barium	**0.053**		0.0050	0.0022	mg/L		01/21/19 14:00	01/23/19 13:13	1
Beryllium	ND		0.0010	0.00031	mg/L		01/21/19 14:00	01/23/19 13:13	1
Calcium	**250**		1.0	0.58	mg/L		01/21/19 14:00	01/23/19 13:13	1
Cadmium	ND		0.0010	0.00021	mg/L		01/21/19 14:00	01/23/19 13:13	1
Cobalt	**0.00020**	**J**	0.0010	0.00019	mg/L		01/21/19 14:00	01/23/19 13:13	1
Chromium	**0.0012**	**J**	0.0020	0.00098	mg/L		01/21/19 14:00	01/23/19 13:13	1
Molybdenum	**0.0012**	**J**	0.010	0.0011	mg/L		01/21/19 14:00	01/23/19 13:13	1
Lead	ND		0.0010	0.00045	mg/L		01/21/19 14:00	01/23/19 13:13	1
Selenium	**0.0023**	**J**	0.0050	0.00089	mg/L		01/21/19 14:00	01/23/19 13:13	1
Thallium	ND		0.0010	0.00020	mg/L		01/21/19 14:00	01/23/19 13:13	1
Lithium	**0.031**		0.0080	0.0017	mg/L		01/21/19 14:00	01/23/19 13:13	1

Client Sample ID: PNMW-19
Date Collected: 01/14/19 13:45
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		01/21/19 14:00	01/23/19 13:16	1
Arsenic	ND		0.0050	0.00075	mg/L		01/21/19 14:00	01/23/19 13:16	1
Barium	**0.20**		0.0050	0.0022	mg/L		01/21/19 14:00	01/23/19 13:16	1
Beryllium	ND		0.0010	0.00031	mg/L		01/21/19 14:00	01/23/19 13:16	1
Calcium	**68**		1.0	0.58	mg/L		01/21/19 14:00	01/23/19 13:16	1
Cadmium	ND		0.0010	0.00021	mg/L		01/21/19 14:00	01/23/19 13:16	1
Cobalt	ND		0.0010	0.00019	mg/L		01/21/19 14:00	01/23/19 13:16	1
Chromium	**0.0011**	**J**	0.0020	0.00098	mg/L		01/21/19 14:00	01/23/19 13:16	1
Molybdenum	**0.0013**	**J**	0.010	0.0011	mg/L		01/21/19 14:00	01/23/19 13:16	1
Lead	ND		0.0010	0.00045	mg/L		01/21/19 14:00	01/23/19 13:16	1
Selenium	**0.0018**	**J**	0.0050	0.00089	mg/L		01/21/19 14:00	01/23/19 13:16	1
Thallium	ND		0.0010	0.00020	mg/L		01/21/19 14:00	01/23/19 13:16	1
Lithium	**0.022**		0.0080	0.0017	mg/L		01/21/19 14:00	01/23/19 13:16	1

Client Sample ID: PNMW-20
Date Collected: 01/14/19 15:25
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		01/21/19 14:00	01/23/19 13:18	1
Arsenic	**0.0021**	**J**	0.0050	0.00075	mg/L		01/21/19 14:00	01/23/19 13:18	1
Barium	**0.046**		0.0050	0.0022	mg/L		01/21/19 14:00	01/23/19 13:18	1
Beryllium	ND		0.0010	0.00031	mg/L		01/21/19 14:00	01/23/19 13:18	1
Calcium	**450**		1.0	0.58	mg/L		01/21/19 14:00	01/23/19 13:18	1
Cadmium	ND		0.0010	0.00021	mg/L		01/21/19 14:00	01/23/19 13:18	1
Cobalt	**0.0015**		0.0010	0.00019	mg/L		01/21/19 14:00	01/23/19 13:18	1
Chromium	**0.0061**		0.0020	0.00098	mg/L		01/21/19 14:00	01/23/19 13:18	1
Molybdenum	ND		0.010	0.0011	mg/L		01/21/19 14:00	01/23/19 13:18	1
Lead	**0.0025**		0.0010	0.00045	mg/L		01/21/19 14:00	01/23/19 13:18	1
Selenium	**0.0082**		0.0050	0.00089	mg/L		01/21/19 14:00	01/23/19 13:18	1
Thallium	ND		0.0010	0.00020	mg/L		01/21/19 14:00	01/23/19 13:18	1
Lithium	**0.066**		0.0080	0.0017	mg/L		01/21/19 14:00	01/23/19 13:18	1

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

Client Sample ID: PNMW18DUP
Date Collected: 01/14/19 11:45
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		01/21/19 14:00	01/23/19 13:20	1
Arsenic	**0.00076**	**J**	0.0050	0.00075	mg/L		01/21/19 14:00	01/23/19 13:20	1
Barium	**0.051**		0.0050	0.0022	mg/L		01/21/19 14:00	01/23/19 13:20	1
Beryllium	ND		0.0010	0.00031	mg/L		01/21/19 14:00	01/23/19 13:20	1
Calcium	**250**		1.0	0.58	mg/L		01/21/19 14:00	01/23/19 13:20	1
Cadmium	ND		0.0010	0.00021	mg/L		01/21/19 14:00	01/23/19 13:20	1
Cobalt	ND		0.0010	0.00019	mg/L		01/21/19 14:00	01/23/19 13:20	1
Chromium	**0.0010**	**J**	0.0020	0.00098	mg/L		01/21/19 14:00	01/23/19 13:20	1
Molybdenum	**0.0012**	**J**	0.010	0.0011	mg/L		01/21/19 14:00	01/23/19 13:20	1
Lead	ND		0.0010	0.00045	mg/L		01/21/19 14:00	01/23/19 13:20	1
Selenium	**0.0021**	**J**	0.0050	0.00089	mg/L		01/21/19 14:00	01/23/19 13:20	1
Thallium	ND		0.0010	0.00020	mg/L		01/21/19 14:00	01/23/19 13:20	1
Lithium	**0.034**		0.0080	0.0017	mg/L		01/21/19 14:00	01/23/19 13:20	1

Client Sample ID: PNMW17-EB
Date Collected: 01/14/19 15:50
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		01/21/19 14:00	01/23/19 13:23	1
Arsenic	ND		0.0050	0.00075	mg/L		01/21/19 14:00	01/23/19 13:23	1
Barium	ND		0.0050	0.0022	mg/L		01/21/19 14:00	01/23/19 13:23	1
Beryllium	ND		0.0010	0.00031	mg/L		01/21/19 14:00	01/23/19 13:23	1
Calcium	ND		1.0	0.58	mg/L		01/21/19 14:00	01/23/19 13:23	1
Cadmium	ND		0.0010	0.00021	mg/L		01/21/19 14:00	01/23/19 13:23	1
Cobalt	ND		0.0010	0.00019	mg/L		01/21/19 14:00	01/23/19 13:23	1
Chromium	ND		0.0020	0.00098	mg/L		01/21/19 14:00	01/23/19 13:23	1
Molybdenum	ND		0.010	0.0011	mg/L		01/21/19 14:00	01/23/19 13:23	1
Lead	ND		0.0010	0.00045	mg/L		01/21/19 14:00	01/23/19 13:23	1
Selenium	ND		0.0050	0.00089	mg/L		01/21/19 14:00	01/23/19 13:23	1
Thallium	ND		0.0010	0.00020	mg/L		01/21/19 14:00	01/23/19 13:23	1
Lithium	ND		0.0080	0.0017	mg/L		01/21/19 14:00	01/23/19 13:23	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: PNMW-17
Date Collected: 01/14/19 17:00
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		01/23/19 12:00	01/24/19 11:41	1

Client Sample ID: PNMW-18
Date Collected: 01/14/19 11:45
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		01/23/19 12:00	01/24/19 11:47	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: PNMW-19
Date Collected: 01/14/19 13:45
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		01/23/19 12:00	01/24/19 11:49	1

Client Sample ID: PNMW-20
Date Collected: 01/14/19 15:25
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		01/23/19 12:00	01/24/19 11:51	1

Client Sample ID: PNMW18DUP
Date Collected: 01/14/19 11:45
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		01/23/19 12:00	01/24/19 11:53	1

Client Sample ID: PNMW17-EB
Date Collected: 01/14/19 15:50
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		01/23/19 12:00	01/24/19 11:55	1

General Chemistry

Client Sample ID: PNMW-17
Date Collected: 01/14/19 17:00
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-1
Matrix: Water

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			01/16/19 18:07	1
Temperature	21.2	HF	1.0	1.0	Degrees C			01/16/19 18:07	1
Chloride	320		15	1.3	mg/L			01/15/19 22:58	5
Fluoride	0.22	J B	0.50	0.060	mg/L			01/15/19 22:40	1
Sulfate	560		25	1.2	mg/L			01/15/19 22:58	5
Total Dissolved Solids (TDS)	1400	B	20	9.4	mg/L			01/18/19 11:04	1
Total Suspended Solids	2.0	J	4.0	1.1	mg/L			01/19/19 14:36	1

Client Sample ID: PNMW-18
Date Collected: 01/14/19 11:45
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU			01/16/19 18:10	1
Temperature	20.6	HF	1.0	1.0	Degrees C			01/16/19 18:10	1
Chloride	330		30	2.5	mg/L			01/15/19 23:36	10
Fluoride	0.28	J B	0.50	0.060	mg/L			01/15/19 23:17	1
Sulfate	920		50	2.3	mg/L			01/15/19 23:36	10
Total Dissolved Solids (TDS)	2000	B	20	9.4	mg/L			01/18/19 11:04	1
Total Suspended Solids	ND		4.0	1.1	mg/L			01/19/19 14:36	1

Client Sample ID: PNMW-19
Date Collected: 01/14/19 13:45
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-3
Matrix: Water

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			01/16/19 18:15	1

General Chemistry (Continued)

Client Sample ID: PNMW-19
Date Collected: 01/14/19 13:45
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Temperature	**20.7**	**HF**	1.0	1.0	Degrees C			01/16/19 18:15	1
Chloride	**31**		3.0	0.25	mg/L			01/15/19 23:55	1
Fluoride	**0.33**	**J B**	0.50	0.060	mg/L			01/15/19 23:55	1
Sulfate	**77**		5.0	0.23	mg/L			01/15/19 23:55	1
Total Dissolved Solids (TDS)	**430**	**B**	10	4.7	mg/L			01/18/19 11:04	1
Total Suspended Solids	ND		4.0	1.1	mg/L			01/19/19 14:36	1

Client Sample ID: PNMW-20
Date Collected: 01/14/19 15:25
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-4
Matrix: Water

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			01/16/19 18:19	1
Temperature	**20.9**	**HF**	1.0	1.0	Degrees C			01/16/19 18:19	1
Chloride	**660**		15	1.3	mg/L			01/16/19 00:51	5
Fluoride	ND		2.5	0.30	mg/L			01/16/19 00:51	5
Sulfate	**5000**		250	12	mg/L			01/16/19 01:09	50
Total Dissolved Solids (TDS)	**7400**	**B E**	10	4.7	mg/L			01/18/19 11:04	1
Total Suspended Solids	**4.8**		4.0	1.1	mg/L			01/19/19 14:36	1

Client Sample ID: PNMW18DUP
Date Collected: 01/14/19 11:45
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	**7.8**	**HF**	0.1	0.1	SU			01/16/19 18:23	1
Temperature	**21.2**	**HF**	1.0	1.0	Degrees C			01/16/19 18:23	1
Chloride	**320**		30	2.5	mg/L			01/16/19 01:47	10
Fluoride	**0.29**	**J B**	0.50	0.060	mg/L			01/16/19 01:28	1
Sulfate	**920**		50	2.3	mg/L			01/16/19 01:47	10
Total Dissolved Solids (TDS)	**2000**	**B**	20	9.4	mg/L			01/18/19 11:04	1
Total Suspended Solids	**4.0**		4.0	1.1	mg/L			01/19/19 14:36	1

Client Sample ID: PNMW17-EB
Date Collected: 01/14/19 15:50
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	**6.3**	**HF**	0.1	0.1	SU			01/16/19 18:27	1
Temperature	**21.5**	**HF**	1.0	1.0	Degrees C			01/16/19 18:27	1
Chloride	ND		3.0	0.25	mg/L			01/16/19 02:06	1
Fluoride	ND		0.50	0.060	mg/L			01/16/19 02:06	1
Sulfate	**0.25**	**J**	5.0	0.23	mg/L			01/16/19 02:06	1
Total Dissolved Solids (TDS)	**9.0**	**J H**	10	4.7	mg/L			01/24/19 13:06	1
Total Suspended Solids	ND		4.0	1.1	mg/L			01/19/19 14:36	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-364770/1-A
Matrix: Water
Analysis Batch: 365121

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 364770

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		01/21/19 14:00	01/22/19 15:02	1

Lab Sample ID: LCS 240-364770/2-A
Matrix: Water
Analysis Batch: 365121

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 364770

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	0.970		mg/L		97	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-364770/1-A
Matrix: Water
Analysis Batch: 365197

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 364770

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		01/21/19 14:00	01/23/19 10:33	1
Arsenic	ND		0.0050	0.00075	mg/L		01/21/19 14:00	01/23/19 10:33	1
Barium	ND		0.0050	0.0022	mg/L		01/21/19 14:00	01/23/19 10:33	1
Beryllium	ND		0.0010	0.00031	mg/L		01/21/19 14:00	01/23/19 10:33	1
Calcium	ND		1.0	0.58	mg/L		01/21/19 14:00	01/23/19 10:33	1
Cadmium	ND		0.0010	0.00021	mg/L		01/21/19 14:00	01/23/19 10:33	1
Cobalt	ND		0.0010	0.00019	mg/L		01/21/19 14:00	01/23/19 10:33	1
Chromium	ND		0.0020	0.00098	mg/L		01/21/19 14:00	01/23/19 10:33	1
Molybdenum	ND		0.010	0.0011	mg/L		01/21/19 14:00	01/23/19 10:33	1
Lead	ND		0.0010	0.00045	mg/L		01/21/19 14:00	01/23/19 10:33	1
Selenium	ND		0.0050	0.00089	mg/L		01/21/19 14:00	01/23/19 10:33	1
Thallium	ND		0.0010	0.00020	mg/L		01/21/19 14:00	01/23/19 10:33	1
Lithium	ND		0.0080	0.0017	mg/L		01/21/19 14:00	01/23/19 10:33	1

Lab Sample ID: LCS 240-364770/3-A
Matrix: Water
Analysis Batch: 365197

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 364770

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.104		mg/L		104	80 - 120
Arsenic	1.00	1.07		mg/L		107	80 - 120
Barium	1.00	1.11		mg/L		111	80 - 120
Beryllium	1.00	0.985		mg/L		99	80 - 120
Calcium	10.0	11.0		mg/L		110	80 - 120
Cadmium	1.00	1.11		mg/L		111	80 - 120
Cobalt	1.00	1.09		mg/L		109	80 - 120
Chromium	1.00	1.09		mg/L		109	80 - 120
Molybdenum	0.100	0.107		mg/L		107	80 - 120
Lead	1.00	1.14		mg/L		114	80 - 120
Selenium	1.00	1.06		mg/L		106	80 - 120
Thallium	0.250	0.285		mg/L		114	80 - 120
Lithium	0.100	0.0928		mg/L		93	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 240-365187/1-A
Matrix: Water
Analysis Batch: 365352

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 365187

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		01/23/19 12:00	01/24/19 11:32	1

Lab Sample ID: LCS 240-365187/2-A
Matrix: Water
Analysis Batch: 365352

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 365187

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	4.81		ug/L		96	80 - 120

Lab Sample ID: 280-119116-1 MS
Matrix: Water
Analysis Batch: 365352

Client Sample ID: PNMW-17
Prep Type: Total/NA
Prep Batch: 365187

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		1.00	1.08		ug/L		108	80 - 120

Lab Sample ID: 280-119116-1 MSD
Matrix: Water
Analysis Batch: 365352

Client Sample ID: PNMW-17
Prep Type: Total/NA
Prep Batch: 365187

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		1.00	1.09		ug/L		109	80 - 120	1	20

Method: 9040B - pH

Lab Sample ID: LCS 280-444540/4
Matrix: Water
Analysis Batch: 444540

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		101	99 - 101

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-444268/6
Matrix: Water
Analysis Batch: 444268

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			01/15/19 11:44	1
Fluoride	0.0666	J	0.50	0.060	mg/L			01/15/19 11:44	1
Sulfate	ND		5.0	0.23	mg/L			01/15/19 11:44	1

Lab Sample ID: LCS 280-444268/4
Matrix: Water
Analysis Batch: 444268

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	97.8		mg/L		98	90 - 110

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

Lab Sample ID: LCS 280-444268/4
Matrix: Water
Analysis Batch: 444268

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	5.00	5.09		mg/L		102	90 - 110
Sulfate	100	100		mg/L		100	90 - 110

Lab Sample ID: LCSD 280-444268/5
Matrix: Water
Analysis Batch: 444268

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	96.8		mg/L		97	90 - 110	1	10
Fluoride	5.00	5.04		mg/L		101	90 - 110	1	10
Sulfate	100	100		mg/L		100	90 - 110	0	10

Lab Sample ID: MRL 280-444268/3
Matrix: Water
Analysis Batch: 444268

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.78	J	mg/L		111	50 - 150
Fluoride	0.200	0.206	J	mg/L		103	50 - 150
Sulfate	2.50	2.11	J	mg/L		84	50 - 150

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

Lab Sample ID: MB 280-444705/1
Matrix: Water
Analysis Batch: 444705

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	18.0		10	4.7	mg/L			01/18/19 11:04	1

Lab Sample ID: LCS 280-444705/2
Matrix: Water
Analysis Batch: 444705

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	500	508		mg/L		102	93 - 110

Lab Sample ID: MB 280-445348/1
Matrix: Water
Analysis Batch: 445348

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			01/24/19 13:06	1

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

Lab Sample ID: LCS 280-445348/2
Matrix: Water
Analysis Batch: 445348

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	500	537		mg/L		107	93 - 110

Lab Sample ID: MB 280-446597/1
Matrix: Water
Analysis Batch: 446597

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			02/05/19 14:50	1

Lab Sample ID: LCS 280-446597/2
Matrix: Water
Analysis Batch: 446597

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	500	481		mg/L		96	93 - 110

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

Lab Sample ID: MB 280-444820/1
Matrix: Water
Analysis Batch: 444820

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			01/19/19 14:36	1

Lab Sample ID: LCS 280-444820/2
Matrix: Water
Analysis Batch: 444820

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	102		mg/L		102	79 - 114

Metals

Prep Batch: 364770

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-119116-1	PNMW-17	Total Recoverable	Water	3005A	
280-119116-2	PNMW-18	Total Recoverable	Water	3005A	
280-119116-3	PNMW-19	Total Recoverable	Water	3005A	
280-119116-4	PNMW-20	Total Recoverable	Water	3005A	
280-119116-5	PNMW18DUP	Total Recoverable	Water	3005A	
280-119116-6	PNMW17-EB	Total Recoverable	Water	3005A	
MB 240-364770/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-364770/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-364770/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 365121

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-119116-1	PNMW-17	Total Recoverable	Water	6010C	364770
280-119116-2	PNMW-18	Total Recoverable	Water	6010C	364770
280-119116-3	PNMW-19	Total Recoverable	Water	6010C	364770
280-119116-4	PNMW-20	Total Recoverable	Water	6010C	364770
280-119116-5	PNMW18DUP	Total Recoverable	Water	6010C	364770
280-119116-6	PNMW17-EB	Total Recoverable	Water	6010C	364770
MB 240-364770/1-A	Method Blank	Total Recoverable	Water	6010C	364770
LCS 240-364770/2-A	Lab Control Sample	Total Recoverable	Water	6010C	364770

Prep Batch: 365187

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-119116-1	PNMW-17	Total/NA	Water	7470A	
280-119116-2	PNMW-18	Total/NA	Water	7470A	
280-119116-3	PNMW-19	Total/NA	Water	7470A	
280-119116-4	PNMW-20	Total/NA	Water	7470A	
280-119116-5	PNMW18DUP	Total/NA	Water	7470A	
280-119116-6	PNMW17-EB	Total/NA	Water	7470A	
MB 240-365187/1-A	Method Blank	Total/NA	Water	7470A	
LCS 240-365187/2-A	Lab Control Sample	Total/NA	Water	7470A	
280-119116-1 MS	PNMW-17	Total/NA	Water	7470A	
280-119116-1 MSD	PNMW-17	Total/NA	Water	7470A	

Analysis Batch: 365197

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-119116-1	PNMW-17	Total Recoverable	Water	6020A	364770
MB 240-364770/1-A	Method Blank	Total Recoverable	Water	6020A	364770
LCS 240-364770/3-A	Lab Control Sample	Total Recoverable	Water	6020A	364770

Analysis Batch: 365240

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-119116-2	PNMW-18	Total Recoverable	Water	6020A	364770
280-119116-3	PNMW-19	Total Recoverable	Water	6020A	364770
280-119116-4	PNMW-20	Total Recoverable	Water	6020A	364770
280-119116-5	PNMW18DUP	Total Recoverable	Water	6020A	364770
280-119116-6	PNMW17-EB	Total Recoverable	Water	6020A	364770

Analysis Batch: 365352

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-119116-1	PNMW-17	Total/NA	Water	7470A	365187

Metals (Continued)

Analysis Batch: 365352 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-119116-2	PNMW-18	Total/NA	Water	7470A	365187
280-119116-3	PNMW-19	Total/NA	Water	7470A	365187
280-119116-4	PNMW-20	Total/NA	Water	7470A	365187
280-119116-5	PNMW18DUP	Total/NA	Water	7470A	365187
280-119116-6	PNMW17-EB	Total/NA	Water	7470A	365187
MB 240-365187/1-A	Method Blank	Total/NA	Water	7470A	365187
LCS 240-365187/2-A	Lab Control Sample	Total/NA	Water	7470A	365187
280-119116-1 MS	PNMW-17	Total/NA	Water	7470A	365187
280-119116-1 MSD	PNMW-17	Total/NA	Water	7470A	365187

General Chemistry

Analysis Batch: 444268

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-119116-1	PNMW-17	Total/NA	Water	9056A	
280-119116-1	PNMW-17	Total/NA	Water	9056A	
280-119116-2	PNMW-18	Total/NA	Water	9056A	
280-119116-2	PNMW-18	Total/NA	Water	9056A	
280-119116-3	PNMW-19	Total/NA	Water	9056A	
280-119116-4	PNMW-20	Total/NA	Water	9056A	
280-119116-4	PNMW-20	Total/NA	Water	9056A	
280-119116-5	PNMW18DUP	Total/NA	Water	9056A	
280-119116-5	PNMW18DUP	Total/NA	Water	9056A	
280-119116-6	PNMW17-EB	Total/NA	Water	9056A	
MB 280-444268/6	Method Blank	Total/NA	Water	9056A	
LCS 280-444268/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-444268/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-444268/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 444540

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-119116-1	PNMW-17	Total/NA	Water	9040B	
280-119116-2	PNMW-18	Total/NA	Water	9040B	
280-119116-3	PNMW-19	Total/NA	Water	9040B	
280-119116-4	PNMW-20	Total/NA	Water	9040B	
280-119116-5	PNMW18DUP	Total/NA	Water	9040B	
280-119116-6	PNMW17-EB	Total/NA	Water	9040B	
LCS 280-444540/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 444705

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-119116-1	PNMW-17	Total/NA	Water	SM 2540C	
280-119116-2	PNMW-18	Total/NA	Water	SM 2540C	
280-119116-3	PNMW-19	Total/NA	Water	SM 2540C	
280-119116-4	PNMW-20	Total/NA	Water	SM 2540C	
280-119116-5	PNMW18DUP	Total/NA	Water	SM 2540C	
MB 280-444705/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-444705/2	Lab Control Sample	Total/NA	Water	SM 2540C	

General Chemistry (Continued)

Analysis Batch: 444820

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-119116-1	PNMW-17	Total/NA	Water	SM 2540D	
280-119116-2	PNMW-18	Total/NA	Water	SM 2540D	
280-119116-3	PNMW-19	Total/NA	Water	SM 2540D	
280-119116-4	PNMW-20	Total/NA	Water	SM 2540D	
280-119116-5	PNMW18DUP	Total/NA	Water	SM 2540D	
280-119116-6	PNMW17-EB	Total/NA	Water	SM 2540D	
MB 280-444820/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-444820/2	Lab Control Sample	Total/NA	Water	SM 2540D	

Analysis Batch: 445348

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-119116-6	PNMW17-EB	Total/NA	Water	SM 2540C	
MB 280-445348/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-445348/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 446597

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 280-446597/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-446597/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-119116-1

Client Sample ID: PNMW-17

Date Collected: 01/14/19 17:00
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-1

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	364770	01/21/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			365121	01/22/19 16:47	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	364770	01/21/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			365197	01/23/19 10:54	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	365187	01/23/19 12:00	SLD	TAL CAN
Total/NA	Analysis	7470A		1			365352	01/24/19 11:41	AJC	TAL CAN
Total/NA	Analysis	9040B		1			444540	01/16/19 18:07	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	444268	01/15/19 22:40	JAP	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	444268	01/15/19 22:58	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	444705	01/18/19 11:04	LMD	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	444820	01/19/19 14:36	LMD	TAL DEN

Client Sample ID: PNMW-18

Date Collected: 01/14/19 11:45
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-2

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	364770	01/21/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			365121	01/22/19 16:51	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	364770	01/21/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			365240	01/23/19 13:13	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	365187	01/23/19 12:00	SLD	TAL CAN
Total/NA	Analysis	7470A		1			365352	01/24/19 11:47	AJC	TAL CAN
Total/NA	Analysis	9040B		1			444540	01/16/19 18:10	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	444268	01/15/19 23:17	JAP	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	444268	01/15/19 23:36	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	444705	01/18/19 11:04	LMD	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	444820	01/19/19 14:36	LMD	TAL DEN

Client Sample ID: PNMW-19

Date Collected: 01/14/19 13:45
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-3

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	364770	01/21/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			365121	01/22/19 16:55	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	364770	01/21/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			365240	01/23/19 13:16	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	365187	01/23/19 12:00	SLD	TAL CAN
Total/NA	Analysis	7470A		1			365352	01/24/19 11:49	AJC	TAL CAN
Total/NA	Analysis	9040B		1			444540	01/16/19 18:15	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	444268	01/15/19 23:55	JAP	TAL DEN

Client Sample ID: PNMW-19

Date Collected: 01/14/19 13:45
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	444705	01/18/19 11:04	LMD	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	444820	01/19/19 14:36	LMD	TAL DEN

Client Sample ID: PNMW-20

Date Collected: 01/14/19 15:25
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-4

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	364770	01/21/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			365121	01/22/19 17:00	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	364770	01/21/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			365240	01/23/19 13:18	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	365187	01/23/19 12:00	SLD	TAL CAN
Total/NA	Analysis	7470A		1			365352	01/24/19 11:51	AJC	TAL CAN
Total/NA	Analysis	9040B		1			444540	01/16/19 18:19	SGB	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	444268	01/16/19 00:51	JAP	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	444268	01/16/19 01:09	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	444705	01/18/19 11:04	LMD	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	444820	01/19/19 14:36	LMD	TAL DEN

Client Sample ID: PNMW18DUP

Date Collected: 01/14/19 11:45
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-5

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	364770	01/21/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			365121	01/22/19 17:04	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	364770	01/21/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			365240	01/23/19 13:20	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	365187	01/23/19 12:00	SLD	TAL CAN
Total/NA	Analysis	7470A		1			365352	01/24/19 11:53	AJC	TAL CAN
Total/NA	Analysis	9040B		1			444540	01/16/19 18:23	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	444268	01/16/19 01:28	JAP	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	444268	01/16/19 01:47	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	444705	01/18/19 11:04	LMD	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	444820	01/19/19 14:36	LMD	TAL DEN

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-119116-1

Client Sample ID: PNMW17-EB

Date Collected: 01/14/19 15:50
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-6

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	364770	01/21/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			365121	01/22/19 17:09	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	364770	01/21/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			365240	01/23/19 13:23	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	365187	01/23/19 12:00	SLD	TAL CAN
Total/NA	Analysis	7470A		1			365352	01/24/19 11:55	AJC	TAL CAN
Total/NA	Analysis	9040B		1			444540	01/16/19 18:27	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	444268	01/16/19 02:06	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	445348	01/24/19 13:06	LMD	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	444820	01/19/19 14:36	LMD	TAL DEN

Laboratory References:

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

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

Accreditation/Certification Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-119116-1

Laboratory: TestAmerica Denver

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

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD / DOE		2907.01	10-31-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
9040B		Water	Temperature
9056A		Water	Chloride
9056A		Water	Fluoride
9056A		Water	Sulfate

Laboratory: TestAmerica Canton

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

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19 *
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	04-30-19
Kentucky (UST)	State Program	4	58	02-23-19 *
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19 *
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-19 *
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State Program	3	210	12-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

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

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: Molly Reeves	Site Contact: Kaitlin Fishburn	Date: 1-14-19	COC No:
HDR Inc	Tel/Fax: 907-644-2078	Lab Contact:	Carrier:	____ of ____ COCs
1670 Broadway, Suite 3400	**Analysis Turnaround Time**			Sampler:
Denver, CO 80202	☐ CALENDAR DAYS ☐ WORKING DAYS			**For Lab Use Only:**
(907) 644-2078 Phone	TAT if different from Below ____			Walk-in Client:
Molly.Reeves@hdrinc.com Email	☐ 2 weeks			Lab Sampling:
Project Name: Xcel Energy GW CCR	☐ 1 week			
Site: PAWNEE	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Total Dissolved Solids	App III - Total Metals: Calcium, Boron	pH, Fluoride, Chloride, Sulfate	Ra226/Ra228 combined	Total Suspended Solids	App IV Total Metals (see list)	App IV Metals: Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Tl, F
PNMW-17	1·14·19	1700	G	W	6	N	N	✓	✓	✓	✓	✓	✓	
PNMW-18	1·14·19	1145	G	W	6	N	N	✓	✓	✓	✓	✓	✓	
PNMW-19	1·14·19	1345	G	W	6	N	N	✓	✓	✓	✓	✓	✓	
PNMW-20	1·14·19	1525	G	W	6	N	N	✓	✓	✓	✓	✓	✓	
PNMW18 DUP	1·14·19	1145	G	W	6	N	N	✓	✓	✓	✓	✓	✓	
PNMW17-EB	1·14·19	1550	G	W	6	N	N	✓	✓	✓	✓	✓	✓	

280-119116 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:	Cooler Temp. (°C): Obs'd: 1.6, -0.9 Corr'd: 2.6, 0.1	Therm ID No.: 5

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kaitlin Fishburn	HDR	1·15·19		UPEN	1/15/19 0930
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: ~~1.6, -0.9~~ AP 1/15/19	Company:	Date/Time:

1.6, -0.9, +1.0, IR #5
Labeled AP 1/15/19

Form No. CA-C-WI-002, Rev. 4.15, dated 9/27/2017

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

1.8/C1.8

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-469323.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: darlene.bandy@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-119116-1
Address: 4101 Shuffel Street NW,	Due Date Requested: 1/23/2019			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Pawnee	Project #: 28014378			
Site: Xcel Energy - Pawnee	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

539

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A/3005A (MOD) 13 Total Metals (w/collision cell)	6010C/3005A (MOD) Boron	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
PNMW-17 (280-119116-1)	1/14/19	17:00 Mountain		Water			X	X	1	Use Collision Cell
PNMW-18 (280-119116-2)	1/14/19	11:45 Mountain		Water			X	X	1	Use Collision Cell
PNMW-19 (280-119116-3)	1/14/19	13:45 Mountain		Water			X	X	1	Use Collision Cell
PNMW-20 (280-119116-4)	1/14/19	15:25 Mountain		Water			X	X	1	Use Collision Cell
PNMW18DUP (280-119116-5)	1/14/19	11:45 Mountain		Water			X	X	1	Use Collision Cell
PNMW17-EB (280-119116-6)	1/14/19	15:50 Mountain		Water			X	X	1	Use Collision Cell

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. 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/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification Unconfirmed	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)* ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Christina Baca	1-17-19 1500	TA Den		1-18-19 0920	TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** _____
Canton Facility

Client TA Denver Site Name _____ Cooler unpacked by: Ryan Cribley

Cooler Received on 1-18-19 Opened on 1-18-19 0920

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA 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 Form
   IR GUN# IR-8 (CF **-0.2** °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #36 (CF **+0**°C) Observed Cooler Temp. 1.8 °C Corrected Cooler Temp. 1.8 °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes (No)
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels be reconciled with the COC? (Yes) No
9. Were correct bottle(s) used for the test(s) indicated? (Yes) No
10. Sufficient quantity received to perform indicated analyses? (Yes) No
11. Are these work share samples? (Yes) No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC854592**
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No
16. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-119116-1

Login Number: 119116
List Number: 1
Creator: Staack, KiAundra A

List Source: TestAmerica Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
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?	N/A	
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").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

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

TestAmerica Job ID: 280-119116-2
Client Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

For:
HDR Inc
1670 Broadway, Suite 3400
Denver, Colorado 80202

Attn: Molly Reeves

Darlene Bandy

Authorized for release by:
2/18/2019 4:12:12 PM

Darlene Bandy, Project Manager I
(303)736-0188
darlene.bandy@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 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
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-119116-2

Qualifiers

Rad

Qualifier	Qualifier Description
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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Job ID: 280-119116-2

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Pawnee

Report Number: 280-119116-2

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 1/15/2019 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.1° C and 2.6° C.

Receipt Exceptions

The requested Radiochemistry analysis were performed by TestAmerica's St. Louis laboratory. The Radiochemistry analysis are reported here in job 280-119116-2. All other analyses requested on the chain of custody are reported under a separate cover: (280-119116-1).

RADIUM-226 (GFPC)

Samples PNMW-17 (280-119116-1), PNMW-18 (280-119116-2), PNMW-19 (280-119116-3), PNMW-20 (280-119116-4), PNMW18DUP (280-119116-5) and PNMW17-EB (280-119116-6) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 01/21/2019 and analyzed on 02/12/2019.

Insufficient sample volume was available to perform a sample duplicate for the following samples: PNMW-17 (280-119116-1), PNMW-18 (280-119116-2), PNMW-19 (280-119116-3), PNMW-20 (280-119116-4), PNMW18DUP (280-119116-5) and PNMW17-EB (280-119116-6). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

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

RADIUM-228

Samples PNMW-17 (280-119116-1), PNMW-18 (280-119116-2), PNMW-19 (280-119116-3), PNMW-20 (280-119116-4), PNMW18DUP (280-119116-5) and PNMW17-EB (280-119116-6) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 01/21/2019 and analyzed on 01/30/2019.

Insufficient sample volume was available to perform a sample duplicate for the following samples: PNMW-17 (280-119116-1), PNMW-18 (280-119116-2), PNMW-19 (280-119116-3), PNMW-20 (280-119116-4), PNMW18DUP (280-119116-5) and PNMW17-EB (280-119116-6). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

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

RADIUM-226/RADIUM-228 (GFPC)

Job ID: 280-119116-2 (Continued)

Laboratory: TestAmerica Denver (Continued)

Samples PNMW-17 (280-119116-1), PNMW-18 (280-119116-2), PNMW-19 (280-119116-3), PNMW-20 (280-119116-4), PNMW18DUP (280-119116-5) and PNMW17-EB (280-119116-6) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 02/18/2019.

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

Method Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-119116-2

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

Sample Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-119116-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-119116-1	PNMW-17	Water	01/14/19 17:00	01/15/19 09:30
280-119116-2	PNMW-18	Water	01/14/19 11:45	01/15/19 09:30
280-119116-3	PNMW-19	Water	01/14/19 13:45	01/15/19 09:30
280-119116-4	PNMW-20	Water	01/14/19 15:25	01/15/19 09:30
280-119116-5	PNMW18DUP	Water	01/14/19 11:45	01/15/19 09:30
280-119116-6	PNMW17-EB	Water	01/14/19 15:50	01/15/19 09:30

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: PNMW-17
Date Collected: 01/14/19 17:00
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.170		0.0769	0.0784	1.00	0.0816	pCi/L	01/21/19 08:55	02/12/19 13:15	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*90.3*		*40 - 110*	*01/21/19 08:55*	*02/12/19 13:15*	*1*

Client Sample ID: PNMW-18
Date Collected: 01/14/19 11:45
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0673	U	0.0610	0.0613	1.00	0.0923	pCi/L	01/21/19 08:55	02/12/19 13:15	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*89.4*		*40 - 110*	*01/21/19 08:55*	*02/12/19 13:15*	*1*

Client Sample ID: PNMW-19
Date Collected: 01/14/19 13:45
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.219		0.0829	0.0852	1.00	0.0799	pCi/L	01/21/19 08:55	02/12/19 13:14	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.2*		*40 - 110*	*01/21/19 08:55*	*02/12/19 13:14*	*1*

Client Sample ID: PNMW-20
Date Collected: 01/14/19 15:25
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.138		0.0702	0.0713	1.00	0.0865	pCi/L	01/21/19 08:55	02/12/19 13:14	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*99.1*		*40 - 110*	*01/21/19 08:55*	*02/12/19 13:14*	*1*

Client Sample ID: PNMW18DUP
Date Collected: 01/14/19 11:45
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0849	U	0.0616	0.0620	1.00	0.0852	pCi/L	01/21/19 08:55	02/12/19 13:14	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.9*		*40 - 110*	*01/21/19 08:55*	*02/12/19 13:14*	*1*

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: PNMW17-EB
Date Collected: 01/14/19 15:50
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0186	U	0.0435	0.0435	1.00	0.0803	pCi/L	01/21/19 08:55	02/12/19 13:15	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*103*		*40 - 110*	*01/21/19 08:55*	*02/12/19 13:15*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: PNMW-17
Date Collected: 01/14/19 17:00
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.435	U	0.319	0.321	1.00	0.501	pCi/L	01/21/19 11:01	01/30/19 16:36	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*90.3*		*40 - 110*	*01/21/19 11:01*	*01/30/19 16:36*	*1*
Y Carrier	*80.4*		*40 - 110*	*01/21/19 11:01*	*01/30/19 16:36*	*1*

Client Sample ID: PNMW-18
Date Collected: 01/14/19 11:45
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.259	U	0.294	0.295	1.00	0.483	pCi/L	01/21/19 11:01	01/30/19 16:36	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*89.4*		*40 - 110*	*01/21/19 11:01*	*01/30/19 16:36*	*1*
Y Carrier	*77.4*		*40 - 110*	*01/21/19 11:01*	*01/30/19 16:36*	*1*

Client Sample ID: PNMW-19
Date Collected: 01/14/19 13:45
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.209	U	0.251	0.252	1.00	0.415	pCi/L	01/21/19 11:01	01/30/19 16:36	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.2*		*40 - 110*	*01/21/19 11:01*	*01/30/19 16:36*	*1*
Y Carrier	*78.9*		*40 - 110*	*01/21/19 11:01*	*01/30/19 16:36*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: PNMW-20
Date Collected: 01/14/19 15:25
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.491**		0.256	0.260	1.00	0.374	pCi/L	01/21/19 11:01	01/30/19 16:36	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*99.1*		*40 - 110*	*01/21/19 11:01*	*01/30/19 16:36*	*1*
Y Carrier	*80.4*		*40 - 110*	*01/21/19 11:01*	*01/30/19 16:36*	*1*

Client Sample ID: PNMW18DUP
Date Collected: 01/14/19 11:45
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.305	U	0.288	0.290	1.00	0.466	pCi/L	01/21/19 11:01	01/30/19 16:36	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.9*		*40 - 110*	*01/21/19 11:01*	*01/30/19 16:36*	*1*
Y Carrier	*78.9*		*40 - 110*	*01/21/19 11:01*	*01/30/19 16:36*	*1*

Client Sample ID: PNMW17-EB
Date Collected: 01/14/19 15:50
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.162	U	0.217	0.218	1.00	0.362	pCi/L	01/21/19 11:01	01/30/19 16:37	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*103*		*40 - 110*	*01/21/19 11:01*	*01/30/19 16:37*	*1*
Y Carrier	*80.0*		*40 - 110*	*01/21/19 11:01*	*01/30/19 16:37*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: PNMW-17
Date Collected: 01/14/19 17:00
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.605**		0.328	0.330	5.00	0.501	pCi/L		02/18/19 15:43	1

Client Sample ID: PNMW-18
Date Collected: 01/14/19 11:45
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.326	U	0.300	0.301	5.00	0.483	pCi/L		02/18/19 15:43	1

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: PNMW-19
Date Collected: 01/14/19 13:45
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.428		0.264	0.266	5.00	0.415	pCi/L		02/18/19 15:43	1

Client Sample ID: PNMW-20
Date Collected: 01/14/19 15:25
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.629		0.265	0.270	5.00	0.374	pCi/L		02/18/19 15:43	1

Client Sample ID: PNMW18DUP
Date Collected: 01/14/19 11:45
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.390	U	0.295	0.297	5.00	0.466	pCi/L		02/18/19 15:43	1

Client Sample ID: PNMW17-EB
Date Collected: 01/14/19 15:50
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.181	U	0.221	0.222	5.00	0.362	pCi/L		02/18/19 15:43	1

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-411372/22-A
Matrix: Water
Analysis Batch: 414506

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 411372

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.01759	U	0.0846	0.0846	1.00	0.170	pCi/L	01/21/19 08:55	02/12/19 13:13	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.9*		*40 - 110*	*01/21/19 08:55*	*02/12/19 13:13*	*1*

Lab Sample ID: LCS 160-411372/1-A
Matrix: Water
Analysis Batch: 414509

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 411372

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			22.7	20.31		2.09	1.00	0.156	pCi/L	89	68 - 137		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*102*		*40 - 110*

Lab Sample ID: LCSD 160-411372/2-A
Matrix: Water
Analysis Batch: 414509

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 411372

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			22.7	19.67		2.02	1.00	0.148	pCi/L	87	68 - 137	0.16	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*103*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-411395/22-A
Matrix: Water
Analysis Batch: 412927

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 411395

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.3666	U	0.481	0.483	1.00	0.802	pCi/L	01/21/19 11:01	01/30/19 16:37	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.9*		*40 - 110*	*01/21/19 11:01*	*01/30/19 16:37*	*1*
Y Carrier	*77.4*		*40 - 110*	*01/21/19 11:01*	*01/30/19 16:37*	*1*

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

Lab Sample ID: LCS 160-411395/1-A
Matrix: Water
Analysis Batch: 412916

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 411395

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			19.1	18.71		2.31	1.00	1.15	pCi/L	98	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*102*		*40 - 110*
Y Carrier	*72.1*		*40 - 110*

Lab Sample ID: LCSD 160-411395/2-A
Matrix: Water
Analysis Batch: 412916

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 411395

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			19.1	18.76		2.25	1.00	0.923	pCi/L	98	56 - 140	0.01	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*103*		*40 - 110*
Y Carrier	*76.6*		*40 - 110*

QC Association Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-119116-2

Rad

Prep Batch: 411372

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-119116-1	PNMW-17	Total/NA	Water	PrecSep-21	
280-119116-2	PNMW-18	Total/NA	Water	PrecSep-21	
280-119116-3	PNMW-19	Total/NA	Water	PrecSep-21	
280-119116-4	PNMW-20	Total/NA	Water	PrecSep-21	
280-119116-5	PNMW18DUP	Total/NA	Water	PrecSep-21	
280-119116-6	PNMW17-EB	Total/NA	Water	PrecSep-21	
MB 160-411372/22-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-411372/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-411372/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 411395

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-119116-1	PNMW-17	Total/NA	Water	PrecSep_0	
280-119116-2	PNMW-18	Total/NA	Water	PrecSep_0	
280-119116-3	PNMW-19	Total/NA	Water	PrecSep_0	
280-119116-4	PNMW-20	Total/NA	Water	PrecSep_0	
280-119116-5	PNMW18DUP	Total/NA	Water	PrecSep_0	
280-119116-6	PNMW17-EB	Total/NA	Water	PrecSep_0	
MB 160-411395/22-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-411395/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-411395/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-119116-2

Client Sample ID: PNMW-17
Date Collected: 01/14/19 17:00
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			999.66 mL	1.0 g	411372	01/21/19 08:55	JLC	TAL SL
Total/NA	Analysis	9315		1			414507	02/12/19 13:15	KLS	TAL SL
Total/NA	Prep	PrecSep_0			999.66 mL	1.0 g	411395	01/21/19 11:01	JLC	TAL SL
Total/NA	Analysis	9320		1			412927	01/30/19 16:36	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			415535	02/18/19 15:43	CDR	TAL SL

Client Sample ID: PNMW-18
Date Collected: 01/14/19 11:45
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			999.81 mL	1.0 g	411372	01/21/19 08:55	JLC	TAL SL
Total/NA	Analysis	9315		1			414507	02/12/19 13:15	KLS	TAL SL
Total/NA	Prep	PrecSep_0			999.81 mL	1.0 g	411395	01/21/19 11:01	JLC	TAL SL
Total/NA	Analysis	9320		1			412927	01/30/19 16:36	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			415535	02/18/19 15:43	CDR	TAL SL

Client Sample ID: PNMW-19
Date Collected: 01/14/19 13:45
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			999.87 mL	1.0 g	411372	01/21/19 08:55	JLC	TAL SL
Total/NA	Analysis	9315		1			414507	02/12/19 13:14	KLS	TAL SL
Total/NA	Prep	PrecSep_0			999.87 mL	1.0 g	411395	01/21/19 11:01	JLC	TAL SL
Total/NA	Analysis	9320		1			412927	01/30/19 16:36	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			415535	02/18/19 15:43	CDR	TAL SL

Client Sample ID: PNMW-20
Date Collected: 01/14/19 15:25
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.00 mL	1.0 g	411372	01/21/19 08:55	JLC	TAL SL
Total/NA	Analysis	9315		1			414507	02/12/19 13:14	KLS	TAL SL
Total/NA	Prep	PrecSep_0			1000.00 mL	1.0 g	411395	01/21/19 11:01	JLC	TAL SL
Total/NA	Analysis	9320		1			412927	01/30/19 16:36	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			415535	02/18/19 15:43	CDR	TAL SL

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-119116-2

Client Sample ID: PNMW18DUP

Date Collected: 01/14/19 11:45
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.03 mL	1.0 g	411372	01/21/19 08:55	JLC	TAL SL
Total/NA	Analysis	9315		1			414507	02/12/19 13:14	KLS	TAL SL
Total/NA	Prep	PrecSep_0			1000.03 mL	1.0 g	411395	01/21/19 11:01	JLC	TAL SL
Total/NA	Analysis	9320		1			412927	01/30/19 16:36	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			415535	02/18/19 15:43	CDR	TAL SL

Client Sample ID: PNMW17-EB

Date Collected: 01/14/19 15:50
Date Received: 01/15/19 09:30

Lab Sample ID: 280-119116-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.42 mL	1.0 g	411372	01/21/19 08:55	JLC	TAL SL
Total/NA	Analysis	9315		1			414507	02/12/19 13:15	KLS	TAL SL
Total/NA	Prep	PrecSep_0			1000.42 mL	1.0 g	411395	01/21/19 11:01	JLC	TAL SL
Total/NA	Analysis	9320		1			412927	01/30/19 16:37	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			415535	02/18/19 15:43	CDR	TAL SL

Laboratory References:

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

Accreditation/Certification Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-119116-2

Laboratory: TestAmerica Denver

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD / DOE		2907.01	10-31-19

Laboratory: TestAmerica St. Louis

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	DoD / DOE		L2305	04-06-19 *
Arizona	State Program	9	AZ0813	12-08-19
California	State Program	9	2886	06-30-19
Connecticut	State Program	1	PH-0241	03-31-19 *
Florida	NELAP	4	E87689	06-30-19
Illinois	NELAP	5	200023	11-30-19
Iowa	State Program	7	373	12-01-20
Kansas	NELAP	7	E-10236	10-31-19
Kentucky (DW)	State Program	4	KY90125	12-31-19
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA011	12-31-19
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-19
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19
New York	NELAP	2	11616	03-31-19 *
North Dakota	State Program	8	R207	06-30-19
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-19 *
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-12	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542018-10	07-31-19
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	08-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

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

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: Molly Reeves	Site Contact: Kaitlin Fishburn	Date: 1-14-19	COC No:
HDR Inc	Tel/Fax: 907-644-2078	Lab Contact:	Carrier:	____ of ____ COCs
1670 Broadway, Suite 3400	Analysis Turnaround Time			Sampler:
Denver, CO 80202	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(907) 644-2078 Phone	TAT if different from Below ____			Walk-in Client:
Molly.Reeves@hdrinc.com Email	☐ 2 weeks			Lab Sampling:
Project Name: Xcel Energy GW CCR	☐ 1 week			
Site: PAWNEE	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Total Dissolved Solids	App III - Total Metals: Calcium, Boron	pH, Fluoride, Chloride, Sulfate	Ra226/Ra228 combined	Total Suspended Solids	App IV Total Metals (see list)
PNMW-17	1·14·19	1700	G	W	6	N	N	✓	✓	✓	✓	✓	✓
PNMW-18	1·14·19	1145	G	W	6	N	N	✓	✓	✓	✓	✓	✓
PNMW-19	1·14·19	1345	G	W	6	N	N	✓	✓	✓	✓	✓	✓
PNMW-20	1·14·19	1525	G	W	6	N	N	✓	✓	✓	✓	✓	✓
PNMW18 DUP	1·14·19	1145	G	W	6	N	N	✓	✓	✓	✓	✓	✓
PNMW17-EB	1·14·19	1550	G	W	6	N	N	✓	✓	✓	✓	✓	✓

App IV Metals: Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Tl, F

280-119116 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☐ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: 1.6, -0.9 Corr'd: 2.6, 0.1 | Therm ID No.: 5

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kaitlin Fishburn	HDR	1·15·19		UPEN	1/15/19 0930
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: ~~1.6, -0.9~~ AP 1/15/19	Company:	Date/Time:

1.6, -0.9, +1.0, IR #5 transfer to AP 1/15/19

Form No. CA-C-WI-002, Rev. 4.15, dated 9/27/2017

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-469322.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: darlene.bandy@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-119116-2
Address: 13715 Rider Trail North,	Due Date Requested: 1/23/2019			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Pawnee	Project #: 28014378			
Site: Xcel Energy - Pawnee	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Ra226Ra228_GFPC/ Ra-226/Ra-228 (3/3)	9315_Ra226/PrecSep_21 Radium-226 (1/3)	9320_Ra228/PrecSep_0 Radium-228 (2/3)	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
PNMW-17 (280-119116-1)	1/14/19	17:00 Mountain		Water			X	X	X	2	
PNMW-18 (280-119116-2)	1/14/19	11:45 Mountain		Water			X	X	X	2	
PNMW-19 (280-119116-3)	1/14/19	13:45 Mountain		Water			X	X	X	2	
PNMW-20 (280-119116-4)	1/14/19	15:25 Mountain		Water			X	X	X	2	
PNMW18DUP (280-119116-5)	1/14/19	11:45 Mountain		Water			X	X	X	2	
PNMW17-EB (280-119116-6)	1/14/19	15:50 Mountain		Water			X	X	X	2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. 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/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification
Unconfirmed

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:
Relinquished by: Christina Baca	Date/Time: 1-17-19 1415	Company TA Den	Received by: Michael Fleum
Relinquished by:	Date/Time:	Company	Received by:
Relinquished by:	Date/Time:	Company	Received by:

Date/Time:	Company
1-18-19 0845	TA STL

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-119116-2

Login Number: 119116
List Number: 1
Creator: Staack, KiAundra A

List Source: TestAmerica Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
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?	N/A	
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").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-119116-2

Login Number: 119116
List Number: 2
Creator: Hellm, Michael

List Source: TestAmerica St. Louis
List Creation: 01/18/19 12:34 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
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	0.1, 0.3, 17.0
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?	N/A	
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.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-119116-2

Method: 9315 - Radium-226 (GFPC)

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

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)
280-119116-1	PNMW-17	90.3
280-119116-2	PNMW-18	89.4
280-119116-3	PNMW-19	96.2
280-119116-4	PNMW-20	99.1
280-119116-5	PNMW18DUP	92.9
280-119116-6	PNMW17-EB	103
LCS 160-411372/1-A	Lab Control Sample	102
LCSD 160-411372/2-A	Lab Control Sample Dup	103
MB 160-411372/22-A	Method Blank	95.9

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

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

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
280-119116-1	PNMW-17	90.3	80.4
280-119116-2	PNMW-18	89.4	77.4
280-119116-3	PNMW-19	96.2	78.9
280-119116-4	PNMW-20	99.1	80.4
280-119116-5	PNMW18DUP	92.9	78.9
280-119116-6	PNMW17-EB	103	80.0
LCS 160-411395/1-A	Lab Control Sample	102	72.1
LCSD 160-411395/2-A	Lab Control Sample Dup	103	76.6
MB 160-411395/22-A	Method Blank	95.9	77.4

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

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

TestAmerica Job ID: 280-120557-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

For:
HDR Inc
1670 Broadway, Suite 3400
Denver, Colorado 80202

Attn: Molly Reeves

Darlene Bandy

Authorized for release by:
3/28/2019 5:15:40 PM

Darlene Bandy, Project Manager I
(303)736-0188
darlene.bandy@testamericainc.com

LINKS

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Have a Question? Ask The Expert

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The test results in this report meet all 2003 NELAC and 2009 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
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-120557-1

Qualifiers

Metals

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

General Chemistry

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
F1	MS and/or MSD Recovery is outside acceptance limits.
B	Compound was found in the blank and sample.
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
E	Result exceeded calibration range.
F5	Duplicate RPD exceeds limit, and one or both sample results are less than 5 times RL. The data are considered valid because the absolute difference is less than the RL.
H	Sample was prepped or analyzed beyond the specified holding time

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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Job ID: 280-120557-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Pawnee

Report Number: 280-120557-1

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 2/25/2019 2:15 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 4.9º C and 5.8º C.

Receipt Exceptions

Samples PNMW-21 (280-120557-5), PNMW-22 (280-120557-6), PNMW-23 (280-120557-7), PNMW-23-DUP (280-120557-8) and PNMW-23-EB (280-120557-9) were collected on 2/17/19 and submitted to the lab on 2/25/19. Holding time for TSS and TDS analysis expired on 2/24/19 at 11:59PM. As such, the samples were received after the holding times had expired. The laboratory proceeded with analysis outside of hold per client instruction on 2/26/19.

The Chain-of-Custody (COC) was incomplete as received. No analyses are marked for any of the samples listed. The samples were logged for TDS, TSS, 6010C Boron, 6020A Calcium, pH, and Anions (Cl, Fl, S) per the predetermined scope of work for App III.

The requested App III Total Metals were performed by TestAmerica's Canton laboratory.

TOTAL RECOVERABLE METALS

Samples PNMW-17 (280-120557-1), PNMW-18 (280-120557-2), PNMW-19 (280-120557-3), PNMW-20 (280-120557-4), PNMW-21 (280-120557-5), PNMW-22 (280-120557-6), PNMW-23 (280-120557-7), PNMW-23-DUP (280-120557-8) and PNMW-23-EB (280-120557-9) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 02/28/2019 and analyzed on 03/01/2019.

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

TOTAL RECOVERABLE METALS (ICPMS)

Samples PNMW-17 (280-120557-1), PNMW-18 (280-120557-2), PNMW-19 (280-120557-3), PNMW-20 (280-120557-4), PNMW-21 (280-120557-5), PNMW-22 (280-120557-6), PNMW-23 (280-120557-7), PNMW-23-DUP (280-120557-8) and PNMW-23-EB (280-120557-9) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 02/28/2019 and analyzed on 03/01/2019.

Calcium failed the recovery criteria low for the MS/MSD of sample PNMW-23 (280-120557-7) in batch 240-369965. Refer to the QC report for details. The presence of the '4' qualifier indicates analytes where the concentration in the unspiked sample exceeded four times the

Job ID: 280-120557-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

spiking amount; therefore, control limits are not applicable. The acceptable LCS data indicate that the analytical system was operating within control.

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

TOTAL DISSOLVED SOLIDS

Samples PNMW-17 (280-120557-1), PNMW-18 (280-120557-2), PNMW-19 (280-120557-3), PNMW-20 (280-120557-4), PNMW-21 (280-120557-5), PNMW-22 (280-120557-6), PNMW-23 (280-120557-7), PNMW-23-DUP (280-120557-8) and PNMW-23-EB (280-120557-9) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 02/26/2019.

Samples PNMW-21 (280-120557-5), PNMW-22 (280-120557-6), PNMW-23 (280-120557-7), PNMW-23-DUP (280-120557-8) and PNMW-23-EB (280-120557-9) were collected on 2/17/19 and submitted to the lab on 2/25/19. Holding time for TDS analysis expired on 2/24/19 at 11:59PM. As such, the samples were received after the holding times had expired. The laboratory proceeded with analysis outside of hold per client instruction on 2/26/19.

Total Dissolved Solids (TDS) was detected in method blank MB 280-448918/1 at a level exceeding the reporting limit. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. The following samples were not re-analyzed because results were greater than 10X the value found in the method blank: Samples PNMW-17 (280-120557-1), PNMW-18 (280-120557-2), PNMW-19 (280-120557-3), PNMW-20 (280-120557-4), PNMW-21 (280-120557-5), PNMW-22 (280-120557-6), PNMW-23 (280-120557-7), PNMW-23-DUP (280-120557-8). Sample PNMW-23-EB (280-120557-9) was reanalyzed, and the results confirmed. As instructed by the client, the initial analysis has been qualified and reported.

Initial analyses are flagged “E” for the following samples because the residue was greater than 200mg: PNMW-18 (280-120557-2), PNMW-20 (280-120557-4) and PNMW-21 (280-120557-5). The samples were reanalyzed using appropriate sample volumes that yielded residue results less than 200mg, and the results confirmed. As instructed by the client, the initial analyses have been qualified and reported.

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

TOTAL SUSPENDED SOLIDS

Samples PNMW-17 (280-120557-1), PNMW-18 (280-120557-2), PNMW-19 (280-120557-3), PNMW-20 (280-120557-4), PNMW-21 (280-120557-5), PNMW-22 (280-120557-6), PNMW-23 (280-120557-7), PNMW-23-DUP (280-120557-8) and PNMW-23-EB (280-120557-9) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 02/26/2019.

Samples PNMW-21 (280-120557-5), PNMW-22 (280-120557-6), PNMW-23 (280-120557-7), PNMW-23-DUP (280-120557-8) and PNMW-23-EB (280-120557-9) were collected on 2/17/19 and submitted to the lab on 2/25/19. Holding time for TSS analysis expired on 2/24/19 at 11:59PM. As such, the samples were received after the holding times had expired. The laboratory proceeded with analysis outside of hold per client instruction on 2/26/19.

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

CORROSIVITY (PH)

Samples PNMW-17 (280-120557-1), PNMW-18 (280-120557-2), PNMW-19 (280-120557-3), PNMW-20 (280-120557-4), PNMW-21 (280-120557-5), PNMW-22 (280-120557-6), PNMW-23 (280-120557-7), PNMW-23-DUP (280-120557-8) and PNMW-23-EB (280-120557-9) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 02/26/2019.

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

ANIONS (28 DAYS)

Samples PNMW-17 (280-120557-1), PNMW-18 (280-120557-2), PNMW-19 (280-120557-3), PNMW-20 (280-120557-4), PNMW-21 (280-120557-5), PNMW-22 (280-120557-6), PNMW-23 (280-120557-7), PNMW-23-DUP (280-120557-8) and PNMW-23-EB (280-120557-9) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 02/26/2019 and 02/27/2019.

Job ID: 280-120557-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

Samples PNMW-17 (280-120557-1)[10X], PNMW-18 (280-120557-2)[10X], PNMW-20 (280-120557-4)[5X], PNMW-20 (280-120557-4)[50X], PNMW-21 (280-120557-5)[2X], PNMW-21 (280-120557-5)[20X], PNMW-22 (280-120557-6)[10X], PNMW-23 (280-120557-7)[10X] and PNMW-23-DUP (280-120557-8)[10X] required dilution prior to analysis due to the Matrix Conductivity Threshold (MCT) of the instrument . The reporting limits have been adjusted accordingly.

Sulfate failed the recovery criteria low for the MS/MSD of sample PNMW-17 (280-120557-1) in batch 280-448877. Refer to the QC report for details. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Fluoride exceeded the RPD limit for the duplicate of sample PNMW-19DU (280-120557-3). Refer to the QC report for details. The results for the sample and sample duplicate were below the RL; therefore, control limits are not applicable.

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

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-120557-1

Client Sample ID: PNMW-17 — Lab Sample ID: 280-120557-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.24		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	240		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	23.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	430		30	10	mg/L	10		9056A	Total/NA
Fluoride	0.20	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	650	F1	50	10	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	1600	B	20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	31		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-18 — Lab Sample ID: 280-120557-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.23		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	280		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.2	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	380		30	10	mg/L	10		9056A	Total/NA
Fluoride	0.27	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1300		50	10	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	2700	E B	10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	68		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-19 — Lab Sample ID: 280-120557-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.032	J	0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	84		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.3	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	32		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	0.31	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	72		5.0	1.0	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	440	B	10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	52		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-20 — Lab Sample ID: 280-120557-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.7		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	430		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.4	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	580		150	51	mg/L	50		9056A	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Client Sample ID: PNMW-20 (Continued) — Lab Sample ID: 280-120557-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	4800		250	52	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	8100	E B	10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	64		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-21 — Lab Sample ID: 280-120557-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.60		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	300		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.7	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	580		60	20	mg/L	20		9056A	Total/NA
Fluoride	0.34	J	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	1800		100	21	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	4000	H E B	10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	5.2	H	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-22 — Lab Sample ID: 280-120557-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.095	J	0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	250		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	230		30	10	mg/L	10		9056A	Total/NA
Fluoride	0.41	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	820		50	10	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	1700	H B	20	9.4	mg/L	1		SM 2540C	Total/NA

Client Sample ID: PNMW-23 — Lab Sample ID: 280-120557-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.13		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	330		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.2	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	110		30	10	mg/L	10		9056A	Total/NA
Fluoride	0.17	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1400		50	10	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	2400	H B	20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	4.8	H	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-23-DUP — Lab Sample ID: 280-120557-8

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-120557-1

Client Sample ID: PNMW-23-DUP (Continued) — Lab Sample ID: 280-120557-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.12		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	320		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	110		30	10	mg/L	10		9056A	Total/NA
Fluoride	0.17	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1400		50	10	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	2500	H B	20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	16	H	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-23-EB — Lab Sample ID: 280-120557-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
pH adj. to 25 deg C	6.2	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Total Dissolved Solids (TDS)	27	H B	10	4.7	mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-120557-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	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
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN

Protocol References:

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

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

Sample Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-120557-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-120557-1	PNMW-17	Water	02/21/19 11:00	02/25/19 14:15
280-120557-2	PNMW-18	Water	02/20/19 10:55	02/25/19 14:15
280-120557-3	PNMW-19	Water	02/20/19 13:45	02/25/19 14:15
280-120557-4	PNMW-20	Water	02/20/19 15:40	02/25/19 14:15
280-120557-5	PNMW-21	Water	02/17/19 17:25	02/25/19 14:15
280-120557-6	PNMW-22	Water	02/17/19 15:20	02/25/19 14:15
280-120557-7	PNMW-23	Water	02/17/19 13:15	02/25/19 14:15
280-120557-8	PNMW-23-DUP	Water	02/17/19 13:15	02/25/19 14:15
280-120557-9	PNMW-23-EB	Water	02/17/19 12:00	02/25/19 14:15

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

Client Sample ID: PNMW-17
Date Collected: 02/21/19 11:00
Date Received: 02/25/19 14:15
Lab Sample ID: 280-120557-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.24		0.10	0.023	mg/L		02/28/19 14:00	03/01/19 12:05	1

Client Sample ID: PNMW-18
Date Collected: 02/20/19 10:55
Date Received: 02/25/19 14:15
Lab Sample ID: 280-120557-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.23		0.10	0.023	mg/L		02/28/19 14:00	03/01/19 12:09	1

Client Sample ID: PNMW-19
Date Collected: 02/20/19 13:45
Date Received: 02/25/19 14:15
Lab Sample ID: 280-120557-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.032	J	0.10	0.023	mg/L		02/28/19 14:00	03/01/19 12:14	1

Client Sample ID: PNMW-20
Date Collected: 02/20/19 15:40
Date Received: 02/25/19 14:15
Lab Sample ID: 280-120557-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1.7		0.10	0.023	mg/L		02/28/19 14:00	03/01/19 12:19	1

Client Sample ID: PNMW-21
Date Collected: 02/17/19 17:25
Date Received: 02/25/19 14:15
Lab Sample ID: 280-120557-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.60		0.10	0.023	mg/L		02/28/19 14:00	03/01/19 12:24	1

Client Sample ID: PNMW-22
Date Collected: 02/17/19 15:20
Date Received: 02/25/19 14:15
Lab Sample ID: 280-120557-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.095	J	0.10	0.023	mg/L		02/28/19 14:00	03/01/19 12:28	1

Client Sample ID: PNMW-23
Date Collected: 02/17/19 13:15
Date Received: 02/25/19 14:15
Lab Sample ID: 280-120557-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.13		0.10	0.023	mg/L		02/28/19 14:00	03/01/19 10:55	1

Client Sample ID: PNMW-23-DUP
Date Collected: 02/17/19 13:15
Date Received: 02/25/19 14:15
Lab Sample ID: 280-120557-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.12		0.10	0.023	mg/L		02/28/19 14:00	03/01/19 12:33	1

Client Sample ID: PNMW-23-EB
Date Collected: 02/17/19 12:00
Date Received: 02/25/19 14:15
Lab Sample ID: 280-120557-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		02/28/19 14:00	03/01/19 12:38	1

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

Client Sample ID: PNMW-17
Date Collected: 02/21/19 11:00
Date Received: 02/25/19 14:15
Lab Sample ID: 280-120557-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	240		1.0	0.58	mg/L		02/28/19 14:00	03/01/19 11:01	1

Client Sample ID: PNMW-18
Date Collected: 02/20/19 10:55
Date Received: 02/25/19 14:15
Lab Sample ID: 280-120557-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	280		1.0	0.58	mg/L		02/28/19 14:00	03/01/19 11:03	1

Client Sample ID: PNMW-19
Date Collected: 02/20/19 13:45
Date Received: 02/25/19 14:15
Lab Sample ID: 280-120557-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	84		1.0	0.58	mg/L		02/28/19 14:00	03/01/19 11:10	1

Client Sample ID: PNMW-20
Date Collected: 02/20/19 15:40
Date Received: 02/25/19 14:15
Lab Sample ID: 280-120557-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	430		1.0	0.58	mg/L		02/28/19 14:00	03/01/19 11:12	1

Client Sample ID: PNMW-21
Date Collected: 02/17/19 17:25
Date Received: 02/25/19 14:15
Lab Sample ID: 280-120557-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	300		1.0	0.58	mg/L		02/28/19 14:00	03/01/19 11:15	1

Client Sample ID: PNMW-22
Date Collected: 02/17/19 15:20
Date Received: 02/25/19 14:15
Lab Sample ID: 280-120557-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	250		1.0	0.58	mg/L		02/28/19 14:00	03/01/19 11:17	1

Client Sample ID: PNMW-23
Date Collected: 02/17/19 13:15
Date Received: 02/25/19 14:15
Lab Sample ID: 280-120557-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	330		1.0	0.58	mg/L		02/28/19 14:00	03/01/19 10:49	1

Client Sample ID: PNMW-23-DUP
Date Collected: 02/17/19 13:15
Date Received: 02/25/19 14:15
Lab Sample ID: 280-120557-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	320		1.0	0.58	mg/L		02/28/19 14:00	03/01/19 11:19	1

Client Sample ID: PNMW-23-EB
Date Collected: 02/17/19 12:00
Date Received: 02/25/19 14:15
Lab Sample ID: 280-120557-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		1.0	0.58	mg/L		02/28/19 14:00	03/01/19 11:22	1

General Chemistry

Client Sample ID: PNMW-17
Date Collected: 02/21/19 11:00
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120557-1
Matrix: Water

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			02/26/19 16:23	1
Temperature	23.0	HF	1.0	1.0	Degrees C			02/26/19 16:23	1
Chloride	430		30	10	mg/L			02/26/19 01:34	10
Fluoride	0.20	J	0.50	0.060	mg/L			02/26/19 01:17	1
Sulfate	650	F1	50	10	mg/L			02/26/19 22:21	10
Total Dissolved Solids (TDS)	1600	B	20	9.4	mg/L			02/26/19 12:21	1
Total Suspended Solids	31		4.0	1.1	mg/L			02/26/19 12:28	1

Client Sample ID: PNMW-18
Date Collected: 02/20/19 10:55
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120557-2
Matrix: Water

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			02/26/19 16:31	1
Temperature	22.2	HF	1.0	1.0	Degrees C			02/26/19 16:31	1
Chloride	380		30	10	mg/L			02/26/19 23:36	10
Fluoride	0.27	J	0.50	0.060	mg/L			02/26/19 01:50	1
Sulfate	1300		50	10	mg/L			02/26/19 23:36	10
Total Dissolved Solids (TDS)	2700	E B	10	4.7	mg/L			02/26/19 12:21	1
Total Suspended Solids	68		4.0	1.1	mg/L			02/26/19 12:28	1

Client Sample ID: PNMW-19
Date Collected: 02/20/19 13:45
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120557-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU			02/26/19 16:36	1
Temperature	22.3	HF	1.0	1.0	Degrees C			02/26/19 16:36	1
Chloride	32		3.0	1.0	mg/L			02/26/19 23:55	1
Fluoride	0.31	J	0.50	0.060	mg/L			02/26/19 02:23	1
Sulfate	72		5.0	1.0	mg/L			02/26/19 23:55	1
Total Dissolved Solids (TDS)	440	B	10	4.7	mg/L			02/26/19 12:21	1
Total Suspended Solids	52		4.0	1.1	mg/L			02/26/19 12:28	1

Client Sample ID: PNMW-20
Date Collected: 02/20/19 15:40
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120557-4
Matrix: Water

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			02/26/19 16:40	1
Temperature	22.4	HF	1.0	1.0	Degrees C			02/26/19 16:40	1
Chloride	580		150	51	mg/L			02/27/19 00:51	50
Fluoride	ND		2.5	0.30	mg/L			02/26/19 03:28	5
Sulfate	4800		250	52	mg/L			02/27/19 00:51	50
Total Dissolved Solids (TDS)	8100	E B	10	4.7	mg/L			02/26/19 12:21	1
Total Suspended Solids	64		4.0	1.1	mg/L			02/26/19 12:28	1

Client Sample ID: PNMW-21
Date Collected: 02/17/19 17:25
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120557-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU			02/26/19 16:44	1
Temperature	22.7	HF	1.0	1.0	Degrees C			02/26/19 16:44	1

General Chemistry (Continued)

Client Sample ID: PNMW-21
Date Collected: 02/17/19 17:25
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120557-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	580		60	20	mg/L			02/27/19 01:10	20
Fluoride	0.34	J	1.0	0.12	mg/L			02/26/19 04:34	2
Sulfate	1800		100	21	mg/L			02/27/19 01:10	20
Total Dissolved Solids (TDS)	4000	H E B	10	4.7	mg/L			02/26/19 12:21	1
Total Suspended Solids	5.2	H	4.0	1.1	mg/L			02/26/19 12:28	1

Client Sample ID: PNMW-22
Date Collected: 02/17/19 15:20
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120557-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU			02/26/19 16:48	1
Temperature	22.6	HF	1.0	1.0	Degrees C			02/26/19 16:48	1
Chloride	230		30	10	mg/L			02/27/19 01:29	10
Fluoride	0.41	J	0.50	0.060	mg/L			02/26/19 05:07	1
Sulfate	820		50	10	mg/L			02/27/19 01:29	10
Total Dissolved Solids (TDS)	1700	H B	20	9.4	mg/L			02/26/19 12:21	1
Total Suspended Solids	ND	H	4.0	1.1	mg/L			02/26/19 12:28	1

Client Sample ID: PNMW-23
Date Collected: 02/17/19 13:15
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120557-7
Matrix: Water

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			02/26/19 16:53	1
Temperature	22.2	HF	1.0	1.0	Degrees C			02/26/19 16:53	1
Chloride	110		30	10	mg/L			02/27/19 01:47	10
Fluoride	0.17	J	0.50	0.060	mg/L			02/26/19 05:40	1
Sulfate	1400		50	10	mg/L			02/27/19 01:47	10
Total Dissolved Solids (TDS)	2400	H B	20	9.4	mg/L			02/26/19 12:21	1
Total Suspended Solids	4.8	H	4.0	1.1	mg/L			02/26/19 12:28	1

Client Sample ID: PNMW-23-DUP
Date Collected: 02/17/19 13:15
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120557-8
Matrix: Water

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			02/26/19 16:57	1
Temperature	22.1	HF	1.0	1.0	Degrees C			02/26/19 16:57	1
Chloride	110		30	10	mg/L			02/27/19 02:06	10
Fluoride	0.17	J	0.50	0.060	mg/L			02/26/19 06:13	1
Sulfate	1400		50	10	mg/L			02/27/19 02:06	10
Total Dissolved Solids (TDS)	2500	H B	20	9.4	mg/L			02/26/19 12:21	1
Total Suspended Solids	16	H	4.0	1.1	mg/L			02/26/19 12:28	1

Client Sample ID: PNMW-23-EB
Date Collected: 02/17/19 12:00
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120557-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	6.2	HF	0.1	0.1	SU			02/26/19 17:01	1
Temperature	22.1	HF	1.0	1.0	Degrees C			02/26/19 17:01	1
Chloride	ND		3.0	1.0	mg/L			02/27/19 02:25	1
Fluoride	ND		0.50	0.060	mg/L			02/26/19 06:46	1

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-120557-1

General Chemistry (Continued)

Client Sample ID: PNMW-23-EB
Date Collected: 02/17/19 12:00
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120557-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		5.0	1.0	mg/L			02/27/19 02:25	1
Total Dissolved Solids (TDS)	**27**	**H B**	10	4.7	mg/L			02/26/19 12:21	1
Total Suspended Solids	ND	H	4.0	1.1	mg/L			02/26/19 12:28	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-369761/1-A
Matrix: Water
Analysis Batch: 369956

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 369761

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		02/28/19 14:00	03/01/19 10:45	1

Lab Sample ID: LCS 240-369761/2-A
Matrix: Water
Analysis Batch: 369956

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 369761

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	0.966		mg/L		97	80 - 120

Lab Sample ID: 280-120557-7 MS
Matrix: Water
Analysis Batch: 369956

Client Sample ID: PNMW-23
Prep Type: Total Recoverable
Prep Batch: 369761

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	0.13		1.00	1.23		mg/L		111	75 - 125

Lab Sample ID: 280-120557-7 MSD
Matrix: Water
Analysis Batch: 369956

Client Sample ID: PNMW-23
Prep Type: Total Recoverable
Prep Batch: 369761

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	0.13		1.00	1.22		mg/L		109	75 - 125	1	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-369761/1-A
Matrix: Water
Analysis Batch: 369965

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 369761

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		1.0	0.58	mg/L		02/28/19 14:00	03/01/19 10:45	1

Lab Sample ID: LCS 240-369761/3-A
Matrix: Water
Analysis Batch: 369965

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 369761

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	10.0	10.5		mg/L		105	80 - 120

Lab Sample ID: 280-120557-7 MS
Matrix: Water
Analysis Batch: 369965

Client Sample ID: PNMW-23
Prep Type: Total Recoverable
Prep Batch: 369761

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	330		10.0	327	4	mg/L		22	75 - 125

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

Lab Sample ID: 280-120557-7 MSD
Matrix: Water
Analysis Batch: 369965

Client Sample ID: PNMW-23
Prep Type: Total Recoverable
Prep Batch: 369761

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Calcium	330		10.0	325	4	mg/L		2	75 - 125	1	20

Method: 9040B - pH

Lab Sample ID: LCS 280-449024/4
Matrix: Water
Analysis Batch: 449024

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101

Lab Sample ID: 280-120557-1 DU
Matrix: Water
Analysis Batch: 449024

Client Sample ID: PNMW-17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH adj. to 25 deg C	7.7	HF	7.7		SU		0.3	5
Temperature	23.0	HF	22.5		Degrees C		2	10

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-448754/6
Matrix: Water
Analysis Batch: 448754

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.50	0.060	mg/L			02/25/19 12:17	1

Lab Sample ID: LCS 280-448754/4
Matrix: Water
Analysis Batch: 448754

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	5.00	4.67		mg/L		93	90 - 110

Lab Sample ID: LCSD 280-448754/5
Matrix: Water
Analysis Batch: 448754

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Fluoride	5.00	4.73		mg/L		95	90 - 110	1	10

Lab Sample ID: MRL 280-448754/3
Matrix: Water
Analysis Batch: 448754

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	0.200	0.221	J	mg/L		111	50 - 150

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

Lab Sample ID: 280-120557-3 MS
Matrix: Water
Analysis Batch: 448754

Client Sample ID: PNMW-19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	0.31	J	5.00	5.84		mg/L		111	80 - 120

Lab Sample ID: 280-120557-3 MSD
Matrix: Water
Analysis Batch: 448754

Client Sample ID: PNMW-19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Fluoride	0.31	J	5.00	6.06		mg/L		115	80 - 120	4	20

Lab Sample ID: 280-120557-3 DU
Matrix: Water
Analysis Batch: 448754

Client Sample ID: PNMW-19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Fluoride	0.31	J	0.400	J F5	mg/L		25	15

Lab Sample ID: MB 280-448877/6
Matrix: Water
Analysis Batch: 448877

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	1.0	mg/L			02/26/19 11:17	1
Sulfate	ND		5.0	1.0	mg/L			02/26/19 11:17	1

Lab Sample ID: LCS 280-448877/4
Matrix: Water
Analysis Batch: 448877

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	96.8		mg/L		97	90 - 110
Sulfate	100	98.4		mg/L		98	90 - 110

Lab Sample ID: LCSD 280-448877/5
Matrix: Water
Analysis Batch: 448877

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	97.1		mg/L		97	90 - 110	0	10
Sulfate	100	100		mg/L		100	90 - 110	2	10

Lab Sample ID: MRL 280-448877/3
Matrix: Water
Analysis Batch: 448877

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	1.97	J	mg/L		79	50 - 150
Sulfate	2.50	2.15	J	mg/L		86	50 - 150

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

Lab Sample ID: 280-120557-1 MS
Matrix: Water
Analysis Batch: 448877

Client Sample ID: PNMW-17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	360		250	636		mg/L		111	80 - 120
Sulfate	650	F1	250	844	F1	mg/L		79	80 - 120

Lab Sample ID: 280-120557-1 MSD
Matrix: Water
Analysis Batch: 448877

Client Sample ID: PNMW-17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	360		250	654		mg/L		118	80 - 120	3	20
Sulfate	650	F1	250	838	F1	mg/L		77	80 - 120	1	20

Lab Sample ID: 280-120557-1 DU
Matrix: Water
Analysis Batch: 448877

Client Sample ID: PNMW-17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Chloride	360		373		mg/L		4	15
Sulfate	650	F1	568		mg/L		13	15

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

Lab Sample ID: MB 280-448918/1
Matrix: Water
Analysis Batch: 448918

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	17.0		10	4.7	mg/L			02/26/19 12:21	1

Lab Sample ID: LCS 280-448918/2
Matrix: Water
Analysis Batch: 448918

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	501	524		mg/L		105	93 - 110

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

Lab Sample ID: MB 280-448920/1
Matrix: Water
Analysis Batch: 448920

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			02/26/19 12:28	1

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

Lab Sample ID: LCS 280-448920/2
Matrix: Water
Analysis Batch: 448920

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	98.8		mg/L		99	79 - 114

Metals

Prep Batch: 369761

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120557-1	PNMW-17	Total Recoverable	Water	3005A	
280-120557-2	PNMW-18	Total Recoverable	Water	3005A	
280-120557-3	PNMW-19	Total Recoverable	Water	3005A	
280-120557-4	PNMW-20	Total Recoverable	Water	3005A	
280-120557-5	PNMW-21	Total Recoverable	Water	3005A	
280-120557-6	PNMW-22	Total Recoverable	Water	3005A	
280-120557-7	PNMW-23	Total Recoverable	Water	3005A	
280-120557-8	PNMW-23-DUP	Total Recoverable	Water	3005A	
280-120557-9	PNMW-23-EB	Total Recoverable	Water	3005A	
MB 240-369761/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-369761/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-369761/3-A	Lab Control Sample	Total Recoverable	Water	3005A	
280-120557-7 MS	PNMW-23	Total Recoverable	Water	3005A	
280-120557-7 MS	PNMW-23	Total Recoverable	Water	3005A	
280-120557-7 MSD	PNMW-23	Total Recoverable	Water	3005A	
280-120557-7 MSD	PNMW-23	Total Recoverable	Water	3005A	

Analysis Batch: 369956

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120557-1	PNMW-17	Total Recoverable	Water	6010C	369761
280-120557-2	PNMW-18	Total Recoverable	Water	6010C	369761
280-120557-3	PNMW-19	Total Recoverable	Water	6010C	369761
280-120557-4	PNMW-20	Total Recoverable	Water	6010C	369761
280-120557-5	PNMW-21	Total Recoverable	Water	6010C	369761
280-120557-6	PNMW-22	Total Recoverable	Water	6010C	369761
280-120557-7	PNMW-23	Total Recoverable	Water	6010C	369761
280-120557-8	PNMW-23-DUP	Total Recoverable	Water	6010C	369761
280-120557-9	PNMW-23-EB	Total Recoverable	Water	6010C	369761
MB 240-369761/1-A	Method Blank	Total Recoverable	Water	6010C	369761
LCS 240-369761/2-A	Lab Control Sample	Total Recoverable	Water	6010C	369761
280-120557-7 MS	PNMW-23	Total Recoverable	Water	6010C	369761
280-120557-7 MSD	PNMW-23	Total Recoverable	Water	6010C	369761

Analysis Batch: 369965

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120557-1	PNMW-17	Total Recoverable	Water	6020A	369761
280-120557-2	PNMW-18	Total Recoverable	Water	6020A	369761
280-120557-3	PNMW-19	Total Recoverable	Water	6020A	369761
280-120557-4	PNMW-20	Total Recoverable	Water	6020A	369761
280-120557-5	PNMW-21	Total Recoverable	Water	6020A	369761
280-120557-6	PNMW-22	Total Recoverable	Water	6020A	369761
280-120557-7	PNMW-23	Total Recoverable	Water	6020A	369761
280-120557-8	PNMW-23-DUP	Total Recoverable	Water	6020A	369761
280-120557-9	PNMW-23-EB	Total Recoverable	Water	6020A	369761
MB 240-369761/1-A	Method Blank	Total Recoverable	Water	6020A	369761
LCS 240-369761/3-A	Lab Control Sample	Total Recoverable	Water	6020A	369761
280-120557-7 MS	PNMW-23	Total Recoverable	Water	6020A	369761
280-120557-7 MSD	PNMW-23	Total Recoverable	Water	6020A	369761

General Chemistry

Analysis Batch: 448754

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120557-1	PNMW-17	Total/NA	Water	9056A	
280-120557-1	PNMW-17	Total/NA	Water	9056A	
280-120557-2	PNMW-18	Total/NA	Water	9056A	
280-120557-3	PNMW-19	Total/NA	Water	9056A	
280-120557-4	PNMW-20	Total/NA	Water	9056A	
280-120557-5	PNMW-21	Total/NA	Water	9056A	
280-120557-6	PNMW-22	Total/NA	Water	9056A	
280-120557-7	PNMW-23	Total/NA	Water	9056A	
280-120557-8	PNMW-23-DUP	Total/NA	Water	9056A	
280-120557-9	PNMW-23-EB	Total/NA	Water	9056A	
MB 280-448754/6	Method Blank	Total/NA	Water	9056A	
LCS 280-448754/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-448754/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-448754/3	Lab Control Sample	Total/NA	Water	9056A	
280-120557-3 MS	PNMW-19	Total/NA	Water	9056A	
280-120557-3 MSD	PNMW-19	Total/NA	Water	9056A	
280-120557-3 DU	PNMW-19	Total/NA	Water	9056A	

Analysis Batch: 448877

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120557-1	PNMW-17	Total/NA	Water	9056A	
280-120557-2	PNMW-18	Total/NA	Water	9056A	
280-120557-3	PNMW-19	Total/NA	Water	9056A	
280-120557-4	PNMW-20	Total/NA	Water	9056A	
280-120557-5	PNMW-21	Total/NA	Water	9056A	
280-120557-6	PNMW-22	Total/NA	Water	9056A	
280-120557-7	PNMW-23	Total/NA	Water	9056A	
280-120557-8	PNMW-23-DUP	Total/NA	Water	9056A	
280-120557-9	PNMW-23-EB	Total/NA	Water	9056A	
MB 280-448877/6	Method Blank	Total/NA	Water	9056A	
LCS 280-448877/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-448877/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-448877/3	Lab Control Sample	Total/NA	Water	9056A	
280-120557-1 MS	PNMW-17	Total/NA	Water	9056A	
280-120557-1 MSD	PNMW-17	Total/NA	Water	9056A	
280-120557-1 DU	PNMW-17	Total/NA	Water	9056A	

Analysis Batch: 448918

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120557-1	PNMW-17	Total/NA	Water	SM 2540C	
280-120557-2	PNMW-18	Total/NA	Water	SM 2540C	
280-120557-3	PNMW-19	Total/NA	Water	SM 2540C	
280-120557-4	PNMW-20	Total/NA	Water	SM 2540C	
280-120557-5	PNMW-21	Total/NA	Water	SM 2540C	
280-120557-6	PNMW-22	Total/NA	Water	SM 2540C	
280-120557-7	PNMW-23	Total/NA	Water	SM 2540C	
280-120557-8	PNMW-23-DUP	Total/NA	Water	SM 2540C	
280-120557-9	PNMW-23-EB	Total/NA	Water	SM 2540C	
MB 280-448918/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-448918/2	Lab Control Sample	Total/NA	Water	SM 2540C	

General Chemistry (Continued)

Analysis Batch: 448920

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120557-1	PNMW-17	Total/NA	Water	SM 2540D	
280-120557-2	PNMW-18	Total/NA	Water	SM 2540D	
280-120557-3	PNMW-19	Total/NA	Water	SM 2540D	
280-120557-4	PNMW-20	Total/NA	Water	SM 2540D	
280-120557-5	PNMW-21	Total/NA	Water	SM 2540D	
280-120557-6	PNMW-22	Total/NA	Water	SM 2540D	
280-120557-7	PNMW-23	Total/NA	Water	SM 2540D	
280-120557-8	PNMW-23-DUP	Total/NA	Water	SM 2540D	
280-120557-9	PNMW-23-EB	Total/NA	Water	SM 2540D	
MB 280-448920/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-448920/2	Lab Control Sample	Total/NA	Water	SM 2540D	

Analysis Batch: 449024

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120557-1	PNMW-17	Total/NA	Water	9040B	
280-120557-2	PNMW-18	Total/NA	Water	9040B	
280-120557-3	PNMW-19	Total/NA	Water	9040B	
280-120557-4	PNMW-20	Total/NA	Water	9040B	
280-120557-5	PNMW-21	Total/NA	Water	9040B	
280-120557-6	PNMW-22	Total/NA	Water	9040B	
280-120557-7	PNMW-23	Total/NA	Water	9040B	
280-120557-8	PNMW-23-DUP	Total/NA	Water	9040B	
280-120557-9	PNMW-23-EB	Total/NA	Water	9040B	
LCS 280-449024/4	Lab Control Sample	Total/NA	Water	9040B	
280-120557-1 DU	PNMW-17	Total/NA	Water	9040B	

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-120557-1

Client Sample ID: PNMW-17

Date Collected: 02/21/19 11:00
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120557-1

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	369761	02/28/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			369956	03/01/19 12:05	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	369761	02/28/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			369965	03/01/19 11:01	DSH	TAL CAN
Total/NA	Analysis	9040B		1			449024	02/26/19 16:23	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	448754	02/26/19 01:17	TLP	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	448754	02/26/19 01:34	TLP	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	448877	02/26/19 22:21	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	448918	02/26/19 12:21	LMD	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	448920	02/26/19 12:28	LMD	TAL DEN

Client Sample ID: PNMW-18

Date Collected: 02/20/19 10:55
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120557-2

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	369761	02/28/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			369956	03/01/19 12:09	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	369761	02/28/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			369965	03/01/19 11:03	DSH	TAL CAN
Total/NA	Analysis	9040B		1			449024	02/26/19 16:31	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	448754	02/26/19 01:50	TLP	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	448877	02/26/19 23:36	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	448918	02/26/19 12:21	LMD	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	448920	02/26/19 12:28	LMD	TAL DEN

Client Sample ID: PNMW-19

Date Collected: 02/20/19 13:45
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120557-3

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	369761	02/28/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			369956	03/01/19 12:14	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	369761	02/28/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			369965	03/01/19 11:10	DSH	TAL CAN
Total/NA	Analysis	9040B		1			449024	02/26/19 16:36	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	448754	02/26/19 02:23	TLP	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	448877	02/26/19 23:55	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	448918	02/26/19 12:21	LMD	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	448920	02/26/19 12:28	LMD	TAL DEN

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-120557-1

Client Sample ID: PNMW-20

Date Collected: 02/20/19 15:40
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120557-4

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	369761	02/28/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			369956	03/01/19 12:19	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	369761	02/28/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			369965	03/01/19 11:12	DSH	TAL CAN
Total/NA	Analysis	9040B		1			449024	02/26/19 16:40	SGB	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	448754	02/26/19 03:28	TLP	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	448877	02/27/19 00:51	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	448918	02/26/19 12:21	LMD	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	448920	02/26/19 12:28	LMD	TAL DEN

Client Sample ID: PNMW-21

Date Collected: 02/17/19 17:25
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120557-5

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	369761	02/28/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			369956	03/01/19 12:24	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	369761	02/28/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			369965	03/01/19 11:15	DSH	TAL CAN
Total/NA	Analysis	9040B		1			449024	02/26/19 16:44	SGB	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	448754	02/26/19 04:34	TLP	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	448877	02/27/19 01:10	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	448918	02/26/19 12:21	LMD	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	448920	02/26/19 12:28	LMD	TAL DEN

Client Sample ID: PNMW-22

Date Collected: 02/17/19 15:20
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120557-6

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	369761	02/28/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			369956	03/01/19 12:28	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	369761	02/28/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			369965	03/01/19 11:17	DSH	TAL CAN
Total/NA	Analysis	9040B		1			449024	02/26/19 16:48	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	448754	02/26/19 05:07	TLP	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	448877	02/27/19 01:29	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	448918	02/26/19 12:21	LMD	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	448920	02/26/19 12:28	LMD	TAL DEN

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-120557-1

Client Sample ID: PNMW-23

Date Collected: 02/17/19 13:15
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120557-7

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	369761	02/28/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			369956	03/01/19 10:55	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	369761	02/28/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			369965	03/01/19 10:49	DSH	TAL CAN
Total/NA	Analysis	9040B		1			449024	02/26/19 16:53	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	448754	02/26/19 05:40	TLP	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	448877	02/27/19 01:47	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	448918	02/26/19 12:21	LMD	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	448920	02/26/19 12:28	LMD	TAL DEN

Client Sample ID: PNMW-23-DUP

Date Collected: 02/17/19 13:15
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120557-8

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	369761	02/28/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			369956	03/01/19 12:33	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	369761	02/28/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			369965	03/01/19 11:19	DSH	TAL CAN
Total/NA	Analysis	9040B		1			449024	02/26/19 16:57	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	448754	02/26/19 06:13	TLP	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	448877	02/27/19 02:06	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	448918	02/26/19 12:21	LMD	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	448920	02/26/19 12:28	LMD	TAL DEN

Client Sample ID: PNMW-23-EB

Date Collected: 02/17/19 12:00
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120557-9

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	369761	02/28/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			369956	03/01/19 12:38	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	369761	02/28/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			369965	03/01/19 11:22	DSH	TAL CAN
Total/NA	Analysis	9040B		1			449024	02/26/19 17:01	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	448754	02/26/19 06:46	TLP	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	448877	02/27/19 02:25	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	448918	02/26/19 12:21	LMD	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	448920	02/26/19 12:28	LMD	TAL DEN

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-120557-1

Laboratory References:

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

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

Accreditation/Certification Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-120557-1

Laboratory: TestAmerica Denver

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

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD / DOE		2907.01	10-31-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
9040B		Water	Temperature
9056A		Water	Chloride
9056A		Water	Fluoride
9056A		Water	Sulfate

Laboratory: TestAmerica Canton

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

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-20
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	04-30-19 *
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19 *
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State Program	3	210	12-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

Denver #280

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: FISHBURN	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-84487-26969.1
Client Contact: Anna Lundin	Phone: 208 841 9707	E-Mail: darlene.bandy@testamericainc.com		Page: Page 1 of 1
Company: HDR Inc				Job #:
Address: 9781 S. Meridian Blvd Suite 400	Due Date Requested:			
City: Englewood	TAT Requested (days):			
State, Zip: CO, 80112				
Phone: 734-263-7138(Tel)	PO #: DEN-018			
Email: anna.lundin@hdrinc.com	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Pawnee	Project #: 28014378			
Site: Colorado	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

samples split btwn 2 coolers

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010C, 6020A	9056A_28D - (MOD) Copy Analytes	2540D - TSS	TDS	Total Number of containers	Special Instructions/Note:
Preservation Code:					X	X	D	N	N		X	
PNMW-17	2-21	1100	G	Water								
PNMW-18	2-20	1055		Water								
PNMW-19	2-20	1345		Water								
PNMW-20	2-20	1540		Water								
PNMW-21	2-17	1725		Water								
PNMW-22	2-17	1520		Water								
PNMW-23	2-17	1315		Water								
PNMW-23-DUP	2-17	1315		Water								
PNMW-23-EB	2-17	1200	↓	Water								

280-120557 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:
Relinquished by: FISHBURN	Date/Time:	Company	Received by:	Date/Time: 02-25-19 1415	Company TAEN
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 3.9, 4.8, 1.0 RS KO 02-25-19

Ver: 08/04/2016

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

Denver #280

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: FISHBURN	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-84487-26969.1
Client Contact: Anna Lundin	Phone: 208 841 9707	E-Mail: darlene.bandy@testamericainc.com		Page: Page 1 of 1
Company: HDR Inc				Job #:
Address: 9781 S. Meridian Blvd Suite 400	Due Date Requested:			
City: Englewood	TAT Requested (days):			
State, Zip: CO, 80112				
Phone: 734-263-7138(Tel)	PO #: DEN-018			
Email: anna.lundin@hdrinc.com	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Pawnee	Project #: 28014378			
Site: Colorado	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

samples split btwn 2 coolers

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010C, 6020A	9056A_28D - (MOD) Copy Analytes	2540D - TSS /TDS	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	N	N		
PNMW-17	2-21	1100	G	Water							
PNMW-18	2-20	1055		Water							
PNMW-19	2-20	1345		Water							
PNMW-20	2-20	1540		Water							
PNMW-21	2-17	1725		Water							
PNMW-22	2-17	1520		Water							
PNMW-23	2-17	1315		Water							
PNMW-23-DUP	2-17	1315		Water							
PNMW-23-EB	2-17	1200	↓	Water							

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
FISHBURN				02-25-19 1415	DADEN
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 08/04/2016

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

6.0/C5.18

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-473505.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: darlene.bandy@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-120557-1
Address: 4101 Shuffel Street NW,	Due Date Requested: 3/21/2019			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Pawnee	Project #: 28014378			
Site: Xcel Energy - Pawnee	SSOW#:			

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

561

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010C/3005A Boron	6020A/3005A Calcium	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
PNMW-17 (280-120557-1)	2/21/19	11:00 Mountain		Water			X	X	1	
PNMW-18 (280-120557-2)	2/20/19	10:55 Mountain		Water			X	X	1	
PNMW-19 (280-120557-3)	2/20/19	13:45 Mountain		Water			X	X	1	
PNMW-20 (280-120557-4)	2/20/19	15:40 Mountain		Water			X	X	1	
PNMW-21 (280-120557-5)	2/17/19	17:25 Mountain		Water			X	X	1	
PNMW-22 (280-120557-6)	2/17/19	15:20 Mountain		Water			X	X	1	
PNMW-23 (280-120557-7)	2/17/19	13:15 Mountain		Water			X	X	1	
PNMW-23-DUP (280-120557-8)	2/17/19	13:15 Mountain		Water			X	X	1	
PNMW-23-EB (280-120557-9)	2/17/19	12:00 Mountain		Water			X	X	1	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. 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/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		2/26/19 1402	TAREN		2/27/19 1030	TA
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** _____
Canton Facility

Client TA Denver Site Name _____ Cooler unpacked by: SY

Cooler Received on 2/27/19 Opened on 2/27/19

FedEx: 1st Grd ~~Exp~~ UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA 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 Form
   IR GUN# IR-8 (CF **-0.2** °C) Observed Cooler Temp. 6.0 °C Corrected Cooler Temp. 5.8 °C
   IR GUN #36 (CF **+0.7**°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes (No)
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels be reconciled with the COC? (Yes) No
9. Were correct bottle(s) used for the test(s) indicated? (Yes) No
10. Sufficient quantity received to perform indicated analyses? (Yes) No
11. Are these work share samples? (Yes) No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# **HC861525**
13. Were VOAs on the COC? (Yes) No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ Yes No
16. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by:

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-120557-1

Login Number: 120557
List Number: 1
Creator: Dunlap, Krista M

List Source: TestAmerica Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
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.	False	Refer to Job Narrative for details.
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)	False	Refer to Job Narrative for details.
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	

TestAmerica
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ANALYTICAL REPORT

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

TestAmerica Job ID: 280-120559-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

For:
HDR Inc
1670 Broadway, Suite 3400
Denver, Colorado 80202

Attn: Molly Reeves

Darlene Bandy

Authorized for release by:
3/28/2019 6:10:39 PM

Darlene Bandy, Project Manager I
(303)736-0188
darlene.bandy@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 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
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-120559-1

Qualifiers

Metals

Qualifier	Qualifier Description
J	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
B	Compound was found in the blank and sample.
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
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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Job ID: 280-120559-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Pawnee

Report Number: 280-120559-1

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 2/25/2019 2:15 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.6º C.

Receipt Exceptions

The COC provided to the client is incorrect. The samples were logged for Ra226/228 Combined, TDS, TSS, pH, Anions (Cl, Fl, S), App III Total Metals, and App IV Total Metals per the predetermined scope of work for P6 (280-120559-1), P7 (280-120559-2) and P18B (280-120559-3).

The requested App III and App IV Total Metals were performed by TestAmerica's Canton laboratory.

The requested RadChem analyses were performed by TestAmerica's St. Louis laboratory.

TOTAL RECOVERABLE METALS

Samples P6 (280-120559-1), P7 (280-120559-2) and P18B (280-120559-3) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 02/27/2019 and analyzed on 02/28/2019.

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

TOTAL RECOVERABLE METALS (ICPMS)

Samples P6 (280-120559-1), P7 (280-120559-2) and P18B (280-120559-3) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 02/27/2019 and analyzed on 02/28/2019.

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

TOTAL MERCURY

Samples P6 (280-120559-1), P7 (280-120559-2) and P18B (280-120559-3) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared on 02/27/2019 and analyzed on 02/28/2019.

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

Job ID: 280-120559-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

TOTAL DISSOLVED SOLIDS

Samples P6 (280-120559-1), P7 (280-120559-2) and P18B (280-120559-3) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 02/26/2019.

Total Dissolved Solids (TDS) was detected in method blank MB 280-448919/1 at a level exceeding the reporting limit. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details. Associated sample(s) were not re-extracted and/or re-analyzed because results were greater than 10X the value found in the method blank.

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

TOTAL SUSPENDED SOLIDS

Samples P6 (280-120559-1), P7 (280-120559-2) and P18B (280-120559-3) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 02/26/2019.

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

CORROSIVITY (PH)

Samples P6 (280-120559-1), P7 (280-120559-2) and P18B (280-120559-3) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 02/26/2019.

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

ANIONS (28 DAYS)

Samples P6 (280-120559-1), P7 (280-120559-2) and P18B (280-120559-3) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 02/27/2019.

Samples P6 (280-120559-1)[10X], P7 (280-120559-2)[10X] and P18B (280-120559-3)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

RADIUM-226 (GFPC)

Samples P6 (280-120559-1), P7 (280-120559-2) and P18B (280-120559-3) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 03/04/2019 and analyzed on 03/26/2019.

Radium-226 was detected in method blank MB 160-417564/24-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. Refer to the QC report for details.

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. P6 (280-120559-1), P7 (280-120559-2), P18B (280-120559-3), (LCS 160-417578/1-A), (MB 160-417578/24-A), (310-149944-D-1-C), (310-149944-D-1-D MS) and (310-149944-C-1-B MSD)

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

RADIUM-228

Samples P6 (280-120559-1), P7 (280-120559-2) and P18B (280-120559-3) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 03/04/2019 and analyzed on 03/19/2019.

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. P6 (280-120559-1), P7

Job ID: 280-120559-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

(280-120559-2), P18B (280-120559-3), (LCS 160-417578/1-A), (MB 160-417578/24-A), (310-149944-D-1-C), (310-149944-D-1-D MS) and (310-149944-C-1-B MSD)

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

RADIUM-226/RADIUM-228 (GFPC)

Samples P6 (280-120559-1), P7 (280-120559-2) and P18B (280-120559-3) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 03/27/2019.

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

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-120559-1

Client Sample ID: P6 — Lab Sample ID: 280-120559-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.27		0.10	0.023	mg/L	1		6010C	Total Recoverable
Arsenic	0.00082	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.027		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	87		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.00048	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0041		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0041	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lithium	0.024		0.0080	0.0017	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	23.2	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	98		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	0.72		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	360		50	10	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	940	B	20	9.4	mg/L	1		SM 2540C	Total/NA

Client Sample ID: P7 — Lab Sample ID: 280-120559-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.073	J	0.10	0.023	mg/L	1		6010C	Total Recoverable
Arsenic	0.0014	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.042		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	380		1.0	0.58	mg/L	1		6020A	Total Recoverable
Chromium	0.0070		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Selenium	0.0038	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.031		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	23.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	240		30	10	mg/L	10		9056A	Total/NA
Fluoride	0.19	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1100		50	10	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	2100	B	20	9.4	mg/L	1		SM 2540C	Total/NA

Client Sample ID: P18B — Lab Sample ID: 280-120559-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.033	J	0.10	0.023	mg/L	1		6010C	Total Recoverable
Arsenic	0.0016	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-120559-1

Client Sample ID: P18B (Continued)

Lab Sample ID: 280-120559-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.044		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	110		1.0	0.58	mg/L	1		6020A	Total Recoverable
Chromium	0.0026		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Selenium	0.0017	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.021		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.9	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	23.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	74		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	0.25	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	210		50	10	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	630	B	10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	1.6	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-120559-1

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
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
3005A	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 = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396
TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-120559-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-120559-1	P6	Water	02/21/19 14:05	02/25/19 14:15
280-120559-2	P7	Water	02/21/19 12:25	02/25/19 14:15
280-120559-3	P18B	Water	02/21/19 10:25	02/25/19 14:15

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

Client Sample ID: P6
Date Collected: 02/21/19 14:05
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120559-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.27**		0.10	0.023	mg/L		02/27/19 14:00	02/28/19 20:11	1

Client Sample ID: P7
Date Collected: 02/21/19 12:25
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120559-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.073**	**J**	0.10	0.023	mg/L		02/27/19 14:00	02/28/19 20:15	1

Client Sample ID: P18B
Date Collected: 02/21/19 10:25
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120559-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.033**	**J**	0.10	0.023	mg/L		02/27/19 14:00	02/28/19 20:20	1

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

Client Sample ID: P6
Date Collected: 02/21/19 14:05
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120559-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		02/27/19 14:00	02/28/19 14:04	1
Arsenic	**0.00082**	**J**	0.0050	0.00075	mg/L		02/27/19 14:00	02/28/19 14:04	1
Barium	**0.027**		0.0050	0.0022	mg/L		02/27/19 14:00	02/28/19 14:04	1
Beryllium	ND		0.0010	0.00031	mg/L		02/27/19 14:00	02/28/19 14:04	1
Calcium	**87**		1.0	0.58	mg/L		02/27/19 14:00	02/28/19 14:04	1
Cadmium	ND		0.0010	0.00021	mg/L		02/27/19 14:00	02/28/19 14:04	1
Cobalt	**0.00048**	**J**	0.0010	0.00019	mg/L		02/27/19 14:00	02/28/19 14:04	1
Chromium	**0.0041**		0.0020	0.00098	mg/L		02/27/19 14:00	02/28/19 14:04	1
Molybdenum	**0.0041**	**J**	0.010	0.0011	mg/L		02/27/19 14:00	02/28/19 14:04	1
Lead	ND		0.0010	0.00045	mg/L		02/27/19 14:00	02/28/19 14:04	1
Selenium	ND		0.0050	0.00089	mg/L		02/27/19 14:00	02/28/19 14:04	1
Thallium	ND		0.0010	0.00020	mg/L		02/27/19 14:00	02/28/19 14:04	1
Lithium	**0.024**		0.0080	0.0017	mg/L		02/27/19 14:00	02/28/19 14:04	1

Client Sample ID: P7
Date Collected: 02/21/19 12:25
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120559-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		02/27/19 14:00	02/28/19 14:07	1
Arsenic	**0.0014**	**J**	0.0050	0.00075	mg/L		02/27/19 14:00	02/28/19 14:07	1
Barium	**0.042**		0.0050	0.0022	mg/L		02/27/19 14:00	02/28/19 14:07	1
Beryllium	ND		0.0010	0.00031	mg/L		02/27/19 14:00	02/28/19 14:07	1
Calcium	**380**		1.0	0.58	mg/L		02/27/19 14:00	02/28/19 14:07	1
Cadmium	ND		0.0010	0.00021	mg/L		02/27/19 14:00	02/28/19 14:07	1
Cobalt	ND		0.0010	0.00019	mg/L		02/27/19 14:00	02/28/19 14:07	1
Chromium	**0.0070**		0.0020	0.00098	mg/L		02/27/19 14:00	02/28/19 14:07	1
Molybdenum	ND		0.010	0.0011	mg/L		02/27/19 14:00	02/28/19 14:07	1
Lead	ND		0.0010	0.00045	mg/L		02/27/19 14:00	02/28/19 14:07	1
Selenium	**0.0038**	**J**	0.0050	0.00089	mg/L		02/27/19 14:00	02/28/19 14:07	1
Thallium	ND		0.0010	0.00020	mg/L		02/27/19 14:00	02/28/19 14:07	1

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

Client Sample ID: P7
Date Collected: 02/21/19 12:25
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120559-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	**0.031**		0.0080	0.0017	mg/L		02/27/19 14:00	02/28/19 14:07	1

Client Sample ID: P18B
Date Collected: 02/21/19 10:25
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120559-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		02/27/19 14:00	02/28/19 14:09	1
Arsenic	**0.0016**	**J**	0.0050	0.00075	mg/L		02/27/19 14:00	02/28/19 14:09	1
Barium	**0.044**		0.0050	0.0022	mg/L		02/27/19 14:00	02/28/19 14:09	1
Beryllium	ND		0.0010	0.00031	mg/L		02/27/19 14:00	02/28/19 14:09	1
Calcium	**110**		1.0	0.58	mg/L		02/27/19 14:00	02/28/19 14:09	1
Cadmium	ND		0.0010	0.00021	mg/L		02/27/19 14:00	02/28/19 14:09	1
Cobalt	ND		0.0010	0.00019	mg/L		02/27/19 14:00	02/28/19 14:09	1
Chromium	**0.0026**		0.0020	0.00098	mg/L		02/27/19 14:00	02/28/19 14:09	1
Molybdenum	ND		0.010	0.0011	mg/L		02/27/19 14:00	02/28/19 14:09	1
Lead	ND		0.0010	0.00045	mg/L		02/27/19 14:00	02/28/19 14:09	1
Selenium	**0.0017**	**J**	0.0050	0.00089	mg/L		02/27/19 14:00	02/28/19 14:09	1
Thallium	ND		0.0010	0.00020	mg/L		02/27/19 14:00	02/28/19 14:09	1
Lithium	**0.021**		0.0080	0.0017	mg/L		02/27/19 14:00	02/28/19 14:09	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: P6
Date Collected: 02/21/19 14:05
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120559-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		02/27/19 12:00	02/28/19 10:24	1

Client Sample ID: P7
Date Collected: 02/21/19 12:25
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120559-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		02/27/19 12:00	02/28/19 10:26	1

Client Sample ID: P18B
Date Collected: 02/21/19 10:25
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120559-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		02/27/19 12:00	02/28/19 10:16	1

General Chemistry

Client Sample ID: P6
Date Collected: 02/21/19 14:05
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120559-1
Matrix: Water

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			02/26/19 17:46	1
Temperature	**23.2**	**HF**	1.0	1.0	Degrees C			02/26/19 17:46	1
Chloride	**98**		3.0	1.0	mg/L			02/27/19 02:14	1
Fluoride	**0.72**		0.50	0.060	mg/L			02/27/19 02:14	1
Sulfate	**360**		50	10	mg/L			02/27/19 02:33	10

General Chemistry (Continued)

Client Sample ID: P6
Date Collected: 02/21/19 14:05
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120559-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	**940**	**B**	20	9.4	mg/L			02/26/19 12:24	1
Total Suspended Solids	ND		4.0	1.1	mg/L			02/26/19 12:32	1

Client Sample ID: P7
Date Collected: 02/21/19 12:25
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120559-2
Matrix: Water

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			02/26/19 17:51	1
Temperature	**23.0**	**HF**	1.0	1.0	Degrees C			02/26/19 17:51	1
Chloride	**240**		30	10	mg/L			02/27/19 03:11	10
Fluoride	**0.19**	**J**	0.50	0.060	mg/L			02/27/19 02:52	1
Sulfate	**1100**		50	10	mg/L			02/27/19 03:11	10
Total Dissolved Solids (TDS)	**2100**	**B**	20	9.4	mg/L			02/26/19 12:24	1
Total Suspended Solids	ND		4.0	1.1	mg/L			02/26/19 12:32	1

Client Sample ID: P18B
Date Collected: 02/21/19 10:25
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120559-3
Matrix: Water

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			02/26/19 17:42	1
Temperature	**23.0**	**HF**	1.0	1.0	Degrees C			02/26/19 17:42	1
Chloride	**74**		3.0	1.0	mg/L			02/27/19 03:29	1
Fluoride	**0.25**	**J**	0.50	0.060	mg/L			02/27/19 03:29	1
Sulfate	**210**		50	10	mg/L			02/27/19 03:48	10
Total Dissolved Solids (TDS)	**630**	**B**	10	4.7	mg/L			02/26/19 12:24	1
Total Suspended Solids	**1.6**	**J**	4.0	1.1	mg/L			02/26/19 12:32	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: P6
Date Collected: 02/21/19 14:05
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120559-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0696	U	0.0892	0.0894	1.00	0.148	pCi/L	03/04/19 10:51	03/26/19 06:19	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.0*		*40 - 110*	*03/04/19 10:51*	*03/26/19 06:19*	*1*

Client Sample ID: P7
Date Collected: 02/21/19 12:25
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120559-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.152**		0.0820	0.0831	1.00	0.101	pCi/L	03/04/19 10:51	03/26/19 08:21	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.5*		*40 - 110*	*03/04/19 10:51*	*03/26/19 08:21*	*1*

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: P18B
Date Collected: 02/21/19 10:25
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120559-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0621	U	0.0571	0.0574	1.00	0.0847	pCi/L	03/04/19 10:51	03/26/19 08:21	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*98.2*		*40 - 110*	*03/04/19 10:51*	*03/26/19 08:21*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: P6
Date Collected: 02/21/19 14:05
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120559-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.590**		0.249	0.254	1.00	0.341	pCi/L	03/04/19 12:41	03/19/19 09:12	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.0*		*40 - 110*	*03/04/19 12:41*	*03/19/19 09:12*	*1*
Y Carrier	*86.4*		*40 - 110*	*03/04/19 12:41*	*03/19/19 09:12*	*1*

Client Sample ID: P7
Date Collected: 02/21/19 12:25
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120559-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.152	U	0.196	0.197	1.00	0.326	pCi/L	03/04/19 12:41	03/19/19 09:12	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.5*		*40 - 110*	*03/04/19 12:41*	*03/19/19 09:12*	*1*
Y Carrier	*87.5*		*40 - 110*	*03/04/19 12:41*	*03/19/19 09:12*	*1*

Client Sample ID: P18B
Date Collected: 02/21/19 10:25
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120559-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.188	U	0.203	0.204	1.00	0.332	pCi/L	03/04/19 12:41	03/19/19 09:12	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*98.2*		*40 - 110*	*03/04/19 12:41*	*03/19/19 09:12*	*1*
Y Carrier	*92.0*		*40 - 110*	*03/04/19 12:41*	*03/19/19 09:12*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: P6
Date Collected: 02/21/19 14:05
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120559-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.660**		0.264	0.269	5.00	0.341	pCi/L		03/27/19 11:47	1

Client Sample ID: P7
Date Collected: 02/21/19 12:25
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120559-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.305	U	0.212	0.214	5.00	0.326	pCi/L		03/27/19 11:47	1

Client Sample ID: P18B
Date Collected: 02/21/19 10:25
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120559-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.250	U	0.211	0.212	5.00	0.332	pCi/L		03/27/19 11:47	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-369645/1-A
Matrix: Water
Analysis Batch: 369800

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 369645

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		02/27/19 14:00	02/28/19 18:15	1

Lab Sample ID: LCS 240-369645/2-A
Matrix: Water
Analysis Batch: 369800

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 369645

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.08		mg/L		108	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-369645/1-A
Matrix: Water
Analysis Batch: 369899

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 369645

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		02/27/19 14:00	02/28/19 13:07	1
Arsenic	ND		0.0050	0.00075	mg/L		02/27/19 14:00	02/28/19 13:07	1
Barium	ND		0.0050	0.0022	mg/L		02/27/19 14:00	02/28/19 13:07	1
Beryllium	ND		0.0010	0.00031	mg/L		02/27/19 14:00	02/28/19 13:07	1
Calcium	ND		1.0	0.58	mg/L		02/27/19 14:00	02/28/19 13:07	1
Cadmium	ND		0.0010	0.00021	mg/L		02/27/19 14:00	02/28/19 13:07	1
Cobalt	ND		0.0010	0.00019	mg/L		02/27/19 14:00	02/28/19 13:07	1
Chromium	ND		0.0020	0.00098	mg/L		02/27/19 14:00	02/28/19 13:07	1
Molybdenum	ND		0.010	0.0011	mg/L		02/27/19 14:00	02/28/19 13:07	1
Lead	ND		0.0010	0.00045	mg/L		02/27/19 14:00	02/28/19 13:07	1
Selenium	ND		0.0050	0.00089	mg/L		02/27/19 14:00	02/28/19 13:07	1
Thallium	ND		0.0010	0.00020	mg/L		02/27/19 14:00	02/28/19 13:07	1
Lithium	ND		0.0080	0.0017	mg/L		02/27/19 14:00	02/28/19 13:07	1

Lab Sample ID: LCS 240-369645/3-A
Matrix: Water
Analysis Batch: 369899

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 369645

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0969		mg/L		97	80 - 120
Arsenic	1.00	0.930		mg/L		93	80 - 120
Barium	1.00	0.974		mg/L		97	80 - 120
Beryllium	1.00	0.922		mg/L		92	80 - 120
Calcium	10.0	9.92		mg/L		99	80 - 120
Cadmium	1.00	0.977		mg/L		98	80 - 120
Cobalt	1.00	0.907		mg/L		91	80 - 120
Chromium	1.00	0.943		mg/L		94	80 - 120
Molybdenum	0.100	0.0949		mg/L		95	80 - 120
Lead	1.00	0.975		mg/L		98	80 - 120
Selenium	1.00	0.931		mg/L		93	80 - 120
Thallium	0.250	0.239		mg/L		96	80 - 120
Lithium	0.100	0.0908		mg/L		91	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 240-369569/1-A
Matrix: Water
Analysis Batch: 369906

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 369569

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		02/27/19 12:00	02/28/19 09:48	1

Lab Sample ID: LCS 240-369569/2-A
Matrix: Water
Analysis Batch: 369906

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 369569

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	4.46		ug/L		89	80 - 120

Method: 9040B - pH

Lab Sample ID: LCS 280-449024/4
Matrix: Water
Analysis Batch: 449024

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-448887/6
Matrix: Water
Analysis Batch: 448887

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	1.0	mg/L			02/26/19 11:17	1
Fluoride	ND		0.50	0.060	mg/L			02/26/19 11:17	1
Sulfate	ND		5.0	1.0	mg/L			02/26/19 11:17	1

Lab Sample ID: LCS 280-448887/4
Matrix: Water
Analysis Batch: 448887

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	100		mg/L		100	90 - 110
Fluoride	5.00	5.23		mg/L		105	90 - 110
Sulfate	100	100		mg/L		100	90 - 110

Lab Sample ID: LCSD 280-448887/5
Matrix: Water
Analysis Batch: 448887

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	99.9		mg/L		100	90 - 110	0	10
Fluoride	5.00	5.22		mg/L		104	90 - 110	0	10
Sulfate	100	100		mg/L		100	90 - 110	0	10

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

Lab Sample ID: MRL 280-448887/3
Matrix: Water
Analysis Batch: 448887

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.34	J	mg/L		93	50 - 150
Fluoride	0.200	0.177	J	mg/L		89	50 - 150
Sulfate	2.50	2.44	J	mg/L		98	50 - 150

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

Lab Sample ID: MB 280-448919/1
Matrix: Water
Analysis Batch: 448919

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	14.0		10	4.7	mg/L			02/26/19 12:24	1

Lab Sample ID: LCS 280-448919/2
Matrix: Water
Analysis Batch: 448919

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	501	535		mg/L		107	93 - 110

Lab Sample ID: 280-120559-1 DU
Matrix: Water
Analysis Batch: 448919

Client Sample ID: P6
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids (TDS)	940	B	934		mg/L		0.4	10

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

Lab Sample ID: MB 280-448921/1
Matrix: Water
Analysis Batch: 448921

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			02/26/19 12:32	1

Lab Sample ID: LCS 280-448921/2
Matrix: Water
Analysis Batch: 448921

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	96.8		mg/L		97	79 - 114

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-417564/24-A
Matrix: Water
Analysis Batch: 421200

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 417564

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1193		0.0743	0.0750	1.00	0.0951	pCi/L	03/04/19 10:51	03/26/19 08:22	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.9*		*40 - 110*	*03/04/19 10:51*	*03/26/19 08:22*	*1*

Lab Sample ID: LCS 160-417564/1-A
Matrix: Water
Analysis Batch: 421229

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 417564

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	9.473		1.01	1.00	0.0932	pCi/L	83	68 - 137		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*97.6*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-417578/24-A
Matrix: Water
Analysis Batch: 420023

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 417578

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.3425	U	0.245	0.247	1.00	0.381	pCi/L	03/04/19 12:41	03/19/19 09:14	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.9*		*40 - 110*	*03/04/19 12:41*	*03/19/19 09:14*	*1*
Y Carrier	*82.2*		*40 - 110*	*03/04/19 12:41*	*03/19/19 09:14*	*1*

Lab Sample ID: LCS 160-417578/1-A
Matrix: Water
Analysis Batch: 420061

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 417578

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.38	9.338		1.07	1.00	0.331	pCi/L	100	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*97.6*		*40 - 110*
Y Carrier	*89.0*		*40 - 110*

Metals

Prep Batch: 369569

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120559-1	P6	Total/NA	Water	7470A	
280-120559-2	P7	Total/NA	Water	7470A	
280-120559-3	P18B	Total/NA	Water	7470A	
MB 240-369569/1-A	Method Blank	Total/NA	Water	7470A	
LCS 240-369569/2-A	Lab Control Sample	Total/NA	Water	7470A	

Prep Batch: 369645

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120559-1	P6	Total Recoverable	Water	3005A	
280-120559-2	P7	Total Recoverable	Water	3005A	
280-120559-3	P18B	Total Recoverable	Water	3005A	
MB 240-369645/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-369645/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-369645/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 369800

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120559-1	P6	Total Recoverable	Water	6010C	369645
280-120559-2	P7	Total Recoverable	Water	6010C	369645
280-120559-3	P18B	Total Recoverable	Water	6010C	369645
MB 240-369645/1-A	Method Blank	Total Recoverable	Water	6010C	369645
LCS 240-369645/2-A	Lab Control Sample	Total Recoverable	Water	6010C	369645

Analysis Batch: 369899

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120559-1	P6	Total Recoverable	Water	6020A	369645
280-120559-2	P7	Total Recoverable	Water	6020A	369645
280-120559-3	P18B	Total Recoverable	Water	6020A	369645
MB 240-369645/1-A	Method Blank	Total Recoverable	Water	6020A	369645
LCS 240-369645/3-A	Lab Control Sample	Total Recoverable	Water	6020A	369645

Analysis Batch: 369906

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120559-1	P6	Total/NA	Water	7470A	369569
280-120559-2	P7	Total/NA	Water	7470A	369569
280-120559-3	P18B	Total/NA	Water	7470A	369569
MB 240-369569/1-A	Method Blank	Total/NA	Water	7470A	369569
LCS 240-369569/2-A	Lab Control Sample	Total/NA	Water	7470A	369569

General Chemistry

Analysis Batch: 448887

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120559-1	P6	Total/NA	Water	9056A	
280-120559-1	P6	Total/NA	Water	9056A	
280-120559-2	P7	Total/NA	Water	9056A	
280-120559-2	P7	Total/NA	Water	9056A	
280-120559-3	P18B	Total/NA	Water	9056A	
280-120559-3	P18B	Total/NA	Water	9056A	
MB 280-448887/6	Method Blank	Total/NA	Water	9056A	

General Chemistry (Continued)

Analysis Batch: 448887 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 280-448887/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-448887/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-448887/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 448919

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120559-1	P6	Total/NA	Water	SM 2540C	
280-120559-2	P7	Total/NA	Water	SM 2540C	
280-120559-3	P18B	Total/NA	Water	SM 2540C	
MB 280-448919/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-448919/2	Lab Control Sample	Total/NA	Water	SM 2540C	
280-120559-1 DU	P6	Total/NA	Water	SM 2540C	

Analysis Batch: 448921

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120559-1	P6	Total/NA	Water	SM 2540D	
280-120559-2	P7	Total/NA	Water	SM 2540D	
280-120559-3	P18B	Total/NA	Water	SM 2540D	
MB 280-448921/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-448921/2	Lab Control Sample	Total/NA	Water	SM 2540D	

Analysis Batch: 449024

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120559-1	P6	Total/NA	Water	9040B	
280-120559-2	P7	Total/NA	Water	9040B	
280-120559-3	P18B	Total/NA	Water	9040B	
LCS 280-449024/4	Lab Control Sample	Total/NA	Water	9040B	

Rad

Prep Batch: 417564

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120559-1	P6	Total/NA	Water	PrecSep-21	
280-120559-2	P7	Total/NA	Water	PrecSep-21	
280-120559-3	P18B	Total/NA	Water	PrecSep-21	
MB 160-417564/24-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-417564/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 417578

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120559-1	P6	Total/NA	Water	PrecSep_0	
280-120559-2	P7	Total/NA	Water	PrecSep_0	
280-120559-3	P18B	Total/NA	Water	PrecSep_0	
MB 160-417578/24-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-417578/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-120559-1

Client Sample ID: P6

Date Collected: 02/21/19 14:05
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120559-1

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	369645	02/27/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			369800	02/28/19 20:11	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	369645	02/27/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			369899	02/28/19 14:04	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	369569	02/27/19 12:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			369906	02/28/19 10:24	AJC	TAL CAN
Total/NA	Analysis	9040B		1			449024	02/26/19 17:46	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	448887	02/27/19 02:14	ARM	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	448887	02/27/19 02:33	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	448919	02/26/19 12:24	LMD	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	448921	02/26/19 12:32	LMD	TAL DEN
Total/NA	Prep	PrecSep-21			1000.26 mL	1.0 g	417564	03/04/19 10:51	LTC	TAL SL
Total/NA	Analysis	9315		1			421230	03/26/19 06:19	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.26 mL	1.0 g	417578	03/04/19 12:41	LTC	TAL SL
Total/NA	Analysis	9320		1			420061	03/19/19 09:12	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			421503	03/27/19 11:47	CDR	TAL SL

Client Sample ID: P7

Date Collected: 02/21/19 12:25
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120559-2

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	369645	02/27/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			369800	02/28/19 20:15	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	369645	02/27/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			369899	02/28/19 14:07	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	369569	02/27/19 12:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			369906	02/28/19 10:26	AJC	TAL CAN
Total/NA	Analysis	9040B		1			449024	02/26/19 17:51	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	448887	02/27/19 02:52	ARM	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	448887	02/27/19 03:11	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	448919	02/26/19 12:24	LMD	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	448921	02/26/19 12:32	LMD	TAL DEN
Total/NA	Prep	PrecSep-21			1000.42 mL	1.0 g	417564	03/04/19 10:51	LTC	TAL SL
Total/NA	Analysis	9315		1			421200	03/26/19 08:21	KLS	TAL SL
Total/NA	Prep	PrecSep_0			1000.42 mL	1.0 g	417578	03/04/19 12:41	LTC	TAL SL
Total/NA	Analysis	9320		1			420061	03/19/19 09:12	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			421503	03/27/19 11:47	CDR	TAL SL

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-120559-1

Client Sample ID: P18B

Date Collected: 02/21/19 10:25
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120559-3

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	369645	02/27/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			369800	02/28/19 20:20	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	369645	02/27/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			369899	02/28/19 14:09	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	369569	02/27/19 12:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			369906	02/28/19 10:16	AJC	TAL CAN
Total/NA	Analysis	9040B		1			449024	02/26/19 17:42	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	448887	02/27/19 03:29	ARM	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	448887	02/27/19 03:48	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	448919	02/26/19 12:24	LMD	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	448921	02/26/19 12:32	LMD	TAL DEN
Total/NA	Prep	PrecSep-21			1000.53 mL	1.0 g	417564	03/04/19 10:51	LTC	TAL SL
Total/NA	Analysis	9315		1			421200	03/26/19 08:21	KLS	TAL SL
Total/NA	Prep	PrecSep_0			1000.53 mL	1.0 g	417578	03/04/19 12:41	LTC	TAL SL
Total/NA	Analysis	9320		1			420061	03/19/19 09:12	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			421503	03/27/19 11:47	CDR	TAL SL

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396
TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-120559-1

Laboratory: TestAmerica Denver

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

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD / DOE		2907.01	10-31-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
9040B		Water	Temperature
9056A		Water	Chloride
9056A		Water	Fluoride
9056A		Water	Sulfate

Laboratory: TestAmerica Canton

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

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-20
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	04-30-19 *
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19 *
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State Program	3	210	12-31-19

Laboratory: TestAmerica St. Louis

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	DoD / DOE		L2305	04-06-22
Arizona	State Program	9	AZ0813	12-08-19
California	State Program	9	2886	06-30-19
Connecticut	State Program	1	PH-0241	03-31-19 *
Florida	NELAP	4	E87689	06-30-19
Hawaii	State Program	9	NA	06-30-19
Illinois	NELAP	5	200023	11-30-19
Iowa	State Program	7	373	12-01-20
Kansas	NELAP	7	E-10236	10-31-19
Kentucky (DW)	State Program	4	KY90125	12-31-19
Louisiana	NELAP	6	04080	06-30-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: HDR Inc
TestAmerica Job ID: 280-120559-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Laboratory: TestAmerica St. Louis (Continued)

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Louisiana (DW)	NELAP	6	LA011	12-31-19
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-19
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19
New York	NELAP	2	11616	03-31-19 *
North Dakota	State Program	8	R207	06-30-19
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-19 *
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-13	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542018-10	07-31-19
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	08-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: MUNOZ	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-84486-26967.1
Client Contact: Molly Reeves	Phone:	E-Mail: darlene.bandy@testamericainc.com		Page: Page 1 of 1
Company: HDR Inc				Job #:
Address: 1670 Broadway, Suite 3400	Due Date Requested:	Analysis Requested		
City: Denver	TAT Requested (days):			
State, Zip: CO, 80202				
Phone: 734-263-7138(Tel)	PO #: DEN-018			
Email: Molly.Reeves@hdrinc.com	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Pawnee	Project #: 28014378			
Site: Colorado	SSOW#:			

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010C, 7470A	9315_Ra226; 9320 - Ra228	9056A_28D_(MOD)(Long Analyte)	2540D_TSS / TDS	Total Number of containers	Special Instructions/Note:
Preservation Code:							D	D	2	2		
~~PNMW-1B~~ P6	2-21	1405	G	Water	2	2	X	X	X	X		
~~PNMW-2B~~ P7	2-21	1225	G	Water	2	2	X	X	X	X		
~~PNMW-13~~ P18B	2-21	1025	G	Water	2	2	X	X	X	X		
~~PNMW-14~~				Water								
~~PNMW-15~~				Water								
~~PNMW-16~~				Water								

280-120559 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
FISHBURN			KBA	02-25-19 1415	TAEN
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 4.6 +1.0 IRS KD 02-25-19

Ver: 08/04/2016

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Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-473497.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: darlene.bandy@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-120559-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 3/26/2019			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Pawnee	Project #: 28014378			
Site: Xcel Energy - Pawnee	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Ra226Ra228_GFPC/ Ra-226/Ra-228 (3/3)	9315_Ra226/PrecSep_21 Radium-226 (1/3)	9320_Ra228/PrecSep_0 Radium-228 (2/3)	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
P6 (280-120559-1)	2/21/19	14:05 Mountain		Water			X	X	X	2	
P7 (280-120559-2)	2/21/19	12:25 Mountain		Water			X	X	X	2	
P18B (280-120559-3)	2/21/19	10:25 Mountain		Water			X	X	X	2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. 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/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	2/26/19 1440	TAEN	Michael Hurm	2-27-19 0915	TA STL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

TestAmerica Denver
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Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-473496.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: darlene.bandy@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-120559-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 3/21/2019			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Pawnee	Project #: 28014378			
Site: Xcel Energy - Pawnee	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

S61

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010C/3005A Boron	6020A/3005A (MOD) 13 Total Metals (w/collision cell)	7470A/7470A_Prep Mercury - 2/2	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
P6 (280-120559-1)	2/21/19	14:05 Mountain		Water			X	X	X	1	, Use Collision Cell
P7 (280-120559-2)	2/21/19	12:25 Mountain		Water			X	X	X	1	, Use Collision Cell
P18B (280-120559-3)	2/21/19	10:25 Mountain		Water			X	X	X	1	, Use Collision Cell

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. 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/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		2/26/19 1413	TAL-EN		2/27/19 1030	TA
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** _____
Canton Facility

Client TA Denver Site Name _____ Cooler unpacked by:

Cooler Received on 2/22/19 Opened on 2/22/19

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA 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 Form
   IR GUN# IR-8 (CF **-0.2** °C) Observed Cooler Temp. 11.6 °C Corrected Cooler Temp. 11.4 °C
   IR GUN #36 (CF **+0.7**°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels be reconciled with the COC?	Yes	No
9. Were correct bottle(s) used for the test(s) indicated?	Yes	No
10. Sufficient quantity received to perform indicated analyses?	Yes	No
11. Are these work share samples?	Yes	No
If yes, Questions 12-16 have been checked at the originating laboratory.		
12. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# **HC861525**
13. Were VOAs on the COC?	Yes	No
14. Were air bubbles >6 mm in any VOA vials? ⬅ Larger than this.	Yes	No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	Yes	No
16. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by:

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-120559-1

Login Number: 120559
List Number: 1
Creator: Staack, KiAundra A

List Source: TestAmerica Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
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	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-120559-1

Login Number: 120559
List Number: 3
Creator: Hellm, Michael

List Source: TestAmerica St. Louis
List Creation: 02/27/19 03:45 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
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	16.0
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?	N/A	
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.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-120559-1

Method: 9315 - Radium-226 (GFPC)

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

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)
280-120559-1	P6	92.0
280-120559-2	P7	93.5
280-120559-3	P18B	98.2
LCS 160-417564/1-A	Lab Control Sample	97.6
MB 160-417564/24-A	Method Blank	95.9

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

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

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
280-120559-1	P6	92.0	86.4
280-120559-2	P7	93.5	87.5
280-120559-3	P18B	98.2	92.0
LCS 160-417578/1-A	Lab Control Sample	97.6	89.0
MB 160-417578/24-A	Method Blank	95.9	82.2

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Y Carrier = Y Carrier

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

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

TestAmerica Job ID: 280-120560-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

For:
HDR Inc
1670 Broadway, Suite 3400
Denver, Colorado 80202

Attn: Molly Reeves

Darlene Bandy

Authorized for release by:
3/28/2019 6:35:55 PM

Darlene Bandy, Project Manager I
(303)736-0188
darlene.bandy@testamericainc.com

LINKS

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The test results in this report meet all 2003 NELAC and 2009 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
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-120560-1

Qualifiers

Metals

Qualifier	Qualifier Description
J	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
B	Compound was found in the blank and sample.
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
F1	MS and/or MSD Recovery is outside acceptance limits.
H	Sample was prepped or analyzed beyond the specified holding time
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
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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Job ID: 280-120560-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Pawnee

Report Number: 280-120560-1

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 2/25/2019 2:15 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.9º C and 3.1º C.

Receipt Exceptions

The COC provided to the client is incorrect. The samples were logged for Ra226/228 Combined, TDS, TSS, pH, Anions (Cl, Fl, S), App III Total Metals, and App IV Total Metals per the predetermined scope of work for PNMW-1B (280-120560-1), PNMW-2B (280-120560-2), PNMW-13 (280-120560-3), PNMW-14 (280-120560-4), PNMW-15 (280-120560-5) and PNMW-16 (280-120560-6).

Sample PNMW-14 (280-120560-4) was collected on 2/18/19 and submitted to the lab on 2/25/19. Holding time for TSS and TDS analysis expired on 2/25/19 at 11:59PM. As such, the laboratory had insufficient time remaining to perform the analysis within holding time. The laboratory proceeded with analysis outside of hold per client instruction on 2/26/19.

Samples PNMW-13 (280-120560-3) and PNMW-15 (280-120560-5) were received without a sample collection time listed on their container labels. The samples were logged per the time listed on the COC.

The requested App III and App IV Total Metals were performed by TestAmerica's Canton laboratory.

The requested RadChem analyses were performed by TestAmerica's St. Louis laboratory.

TOTAL RECOVERABLE METALS

Samples PNMW-1B (280-120560-1), PNMW-2B (280-120560-2), PNMW-13 (280-120560-3), PNMW-14 (280-120560-4), PNMW-15 (280-120560-5) and PNMW-16 (280-120560-6) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 02/27/2019 and analyzed on 02/28/2019.

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

TOTAL RECOVERABLE METALS (ICPMS)

Samples PNMW-1B (280-120560-1), PNMW-2B (280-120560-2), PNMW-13 (280-120560-3), PNMW-14 (280-120560-4), PNMW-15 (280-120560-5) and PNMW-16 (280-120560-6) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 02/27/2019 and analyzed on 02/28/2019.

Job ID: 280-120560-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

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

TOTAL MERCURY
Samples PNMW-1B (280-120560-1), PNMW-2B (280-120560-2), PNMW-13 (280-120560-3), PNMW-14 (280-120560-4), PNMW-15 (280-120560-5) and PNMW-16 (280-120560-6) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared on 02/27/2019 and analyzed on 02/28/2019.

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

TOTAL DISSOLVED SOLIDS
Samples PNMW-1B (280-120560-1), PNMW-2B (280-120560-2), PNMW-13 (280-120560-3), PNMW-14 (280-120560-4), PNMW-15 (280-120560-5) and PNMW-16 (280-120560-6) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 02/26/2019.

Sample PNMW-14 (280-120560-4) was collected on 2/18/19 and submitted to the lab on 2/25/19. Holding time for TDS analysis expired on 2/25/19 at 11:59PM. As such, the laboratory had insufficient time remaining to perform the analysis within holding time. The laboratory proceeded with analysis outside of hold per client instruction on 2/26/19.

Total Dissolved Solids (TDS) was detected in method blanks MB 280-448918/1 and MB 280-448919/1 at levels exceeding the reporting limit. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details. Associated sample(s) were not re-extracted and/or re-analyzed because results were greater than 10X the value found in the method blanks.

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

TOTAL SUSPENDED SOLIDS
Samples PNMW-1B (280-120560-1), PNMW-2B (280-120560-2), PNMW-13 (280-120560-3), PNMW-14 (280-120560-4), PNMW-15 (280-120560-5) and PNMW-16 (280-120560-6) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 02/26/2019.

Sample PNMW-14 (280-120560-4) was collected on 2/18/19 and submitted to the lab on 2/25/19. Holding time for TSS analysis expired on 2/25/19 at 11:59PM. As such, the laboratory had insufficient time remaining to perform the analysis within holding time. The laboratory proceeded with analysis outside of hold per client instruction on 2/26/19.

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

CORROSIVITY (PH)
Samples PNMW-1B (280-120560-1), PNMW-2B (280-120560-2), PNMW-13 (280-120560-3), PNMW-14 (280-120560-4), PNMW-15 (280-120560-5) and PNMW-16 (280-120560-6) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 02/26/2019.

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

ANIONS (28 DAYS)
Samples PNMW-1B (280-120560-1), PNMW-2B (280-120560-2), PNMW-13 (280-120560-3), PNMW-14 (280-120560-4), PNMW-15 (280-120560-5) and PNMW-16 (280-120560-6) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 02/27/2019.

Samples PNMW-1B (280-120560-1)[10X], PNMW-15 (280-120560-5)[10X] and PNMW-16 (280-120560-6)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

Sulfate failed the recovery criteria high for the MS of sample PNMW-2B (280-120560-2) in batch 280-448887. Refer to the QC report for details. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Job ID: 280-120560-1 (Continued)

Laboratory: 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)

Samples PNMW-1B (280-120560-1), PNMW-2B (280-120560-2), PNMW-13 (280-120560-3), PNMW-14 (280-120560-4), PNMW-15 (280-120560-5) and PNMW-16 (280-120560-6) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 03/04/2019 and analyzed on 03/26/2019.

The following samples were prepared at a reduced aliquot due to sediment and discoloration: PNMW-13 (280-120560-3) and PNMW-15 (280-120560-5).

Radium-226 was detected in method blank MB 160-417564/24-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. Refer to the QC report for details.

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. PNMW-1B (280-120560-1), PNMW-2B (280-120560-2), PNMW-13 (280-120560-3), PNMW-14 (280-120560-4), PNMW-15 (280-120560-5), PNMW-16 (280-120560-6), (LCS 160-417578/1-A), (MB 160-417578/24-A), (310-149944-D-1-C), (310-149944-D-1-D MS) and (310-149944-C-1-B MSD)

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

RADIUM-228

Samples PNMW-1B (280-120560-1), PNMW-2B (280-120560-2), PNMW-13 (280-120560-3), PNMW-14 (280-120560-4), PNMW-15 (280-120560-5) and PNMW-16 (280-120560-6) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 03/04/2019 and analyzed on 03/19/2019.

The following samples were prepared at a reduced aliquot due to sediment and discoloration: PNMW-13 (280-120560-3) and PNMW-15 (280-120560-5).

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. PNMW-1B (280-120560-1), PNMW-2B (280-120560-2), PNMW-13 (280-120560-3), PNMW-14 (280-120560-4), PNMW-15 (280-120560-5), PNMW-16 (280-120560-6), (LCS 160-417578/1-A), (MB 160-417578/24-A), (310-149944-D-1-C), (310-149944-D-1-D MS) and (310-149944-C-1-B MSD)

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

RADIUM-226/RADIUM-228 (GFPC)

Samples PNMW-1B (280-120560-1), PNMW-2B (280-120560-2), PNMW-13 (280-120560-3), PNMW-14 (280-120560-4), PNMW-15 (280-120560-5) and PNMW-16 (280-120560-6) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 03/27/2019.

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

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-120560-1

Client Sample ID: PNMW-1B — Lab Sample ID: 280-120560-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.27		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.024		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	110		1.0	0.58	mg/L	1		6020A	Total Recoverable
Chromium	0.0027		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0028	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.014		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.073		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.9	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	58		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	0.76		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	330		50	10	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	920	B	20	9.4	mg/L	1		SM 2540C	Total/NA

Client Sample ID: PNMW-2B — Lab Sample ID: 280-120560-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.049	J	0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.14		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	70		1.0	0.58	mg/L	1		6020A	Total Recoverable
Chromium	0.0037		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0027	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.0021		0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.0020	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.030		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	23.2	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	13		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	0.57		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	24	F1	5.0	1.0	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	920	B	20	9.4	mg/L	1		SM 2540C	Total/NA

Client Sample ID: PNMW-13 — Lab Sample ID: 280-120560-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.23		0.10	0.023	mg/L	1		6010C	Total Recoverable
Arsenic	0.00094	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Client Sample ID: PNMW-13 (Continued) — Lab Sample ID: 280-120560-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.054		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	37		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.00075	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.012		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0048	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.00095	J	0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Lithium	0.051		0.0080	0.0017	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	23.4	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	5.6		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	1.1		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	47		5.0	1.0	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	430	B	10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	540		40	11	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-14 — Lab Sample ID: 280-120560-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.060	J	0.10	0.023	mg/L	1		6010C	Total Recoverable
Arsenic	0.00084	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.084		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	35		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.00033	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0077		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0064	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.00054	J	0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.0020	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.029		0.0080	0.0017	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	23.2	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	2.1	J	3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	0.94		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	24		5.0	1.0	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	250	H B	10	4.7	mg/L	1		SM 2540C	Total/NA

Client Sample ID: PNMW-15 — Lab Sample ID: 280-120560-5

This Detection Summary does not include radiochemical test results.

Client Sample ID: PNMW-15 (Continued) — Lab Sample ID: 280-120560-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.36		0.10	0.023	mg/L	1		6010C	Total Recoverable
Antimony	0.00076	J	0.0020	0.00057	mg/L	1		6020A	Total Recoverable
Arsenic	0.010		0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.32		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.0017		0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Calcium	170		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cadmium	0.00045	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.015		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.060		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0031	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.029		0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.014		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Thallium	0.00051	J	0.0010	0.00020	mg/L	1		6020A	Total Recoverable
Lithium	0.13		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	23.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	4.0		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	0.36	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	650		50	10	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	1300	B	20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	700		40	11	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-16 — Lab Sample ID: 280-120560-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.39		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.016		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	180		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.0023		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0011	J	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0014	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lithium	0.12		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.5	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	23.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	2.1	J	3.0	1.0	mg/L	1		9056A	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-120560-1

Client Sample ID: PNMW-16 (Continued)

Lab Sample ID: 280-120560-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	0.27	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1000		50	10	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	2000	B	20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	16		4.0	1.1	mg/L	1		SM 2540D	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-120560-1

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
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
3005A	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 = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396
TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-120560-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-120560-1	PNMW-1B	Water	02/21/19 17:15	02/25/19 14:15
280-120560-2	PNMW-2B	Water	02/21/19 16:20	02/25/19 14:15
280-120560-3	PNMW-13	Water	02/21/19 13:30	02/25/19 14:15
280-120560-4	PNMW-14	Water	02/18/19 12:30	02/25/19 14:15
280-120560-5	PNMW-15	Water	02/21/19 14:30	02/25/19 14:15
280-120560-6	PNMW-16	Water	02/21/19 18:50	02/25/19 14:15

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

Client Sample ID: PNMW-1B
Date Collected: 02/21/19 17:15
Date Received: 02/25/19 14:15
Lab Sample ID: 280-120560-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.27**		0.10	0.023	mg/L		02/27/19 14:00	02/28/19 19:33	1

Client Sample ID: PNMW-2B
Date Collected: 02/21/19 16:20
Date Received: 02/25/19 14:15
Lab Sample ID: 280-120560-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.049**	**J**	0.10	0.023	mg/L		02/27/19 14:00	02/28/19 19:38	1

Client Sample ID: PNMW-13
Date Collected: 02/21/19 13:30
Date Received: 02/25/19 14:15
Lab Sample ID: 280-120560-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.23**		0.10	0.023	mg/L		02/27/19 14:00	02/28/19 19:43	1

Client Sample ID: PNMW-14
Date Collected: 02/18/19 12:30
Date Received: 02/25/19 14:15
Lab Sample ID: 280-120560-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.060**	**J**	0.10	0.023	mg/L		02/27/19 14:00	02/28/19 19:47	1

Client Sample ID: PNMW-15
Date Collected: 02/21/19 14:30
Date Received: 02/25/19 14:15
Lab Sample ID: 280-120560-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.36**		0.10	0.023	mg/L		02/27/19 14:00	02/28/19 19:52	1

Client Sample ID: PNMW-16
Date Collected: 02/21/19 18:50
Date Received: 02/25/19 14:15
Lab Sample ID: 280-120560-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.39**		0.10	0.023	mg/L		02/27/19 14:00	02/28/19 20:06	1

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

Client Sample ID: PNMW-1B
Date Collected: 02/21/19 17:15
Date Received: 02/25/19 14:15
Lab Sample ID: 280-120560-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		02/27/19 14:00	02/28/19 13:46	1
Arsenic	ND		0.0050	0.00075	mg/L		02/27/19 14:00	02/28/19 13:46	1
Barium	**0.024**		0.0050	0.0022	mg/L		02/27/19 14:00	02/28/19 13:46	1
Beryllium	ND		0.0010	0.00031	mg/L		02/27/19 14:00	02/28/19 13:46	1
Calcium	**110**		1.0	0.58	mg/L		02/27/19 14:00	02/28/19 13:46	1
Cadmium	ND		0.0010	0.00021	mg/L		02/27/19 14:00	02/28/19 13:46	1
Cobalt	ND		0.0010	0.00019	mg/L		02/27/19 14:00	02/28/19 13:46	1
Chromium	**0.0027**		0.0020	0.00098	mg/L		02/27/19 14:00	02/28/19 13:46	1
Molybdenum	**0.0028**	**J**	0.010	0.0011	mg/L		02/27/19 14:00	02/28/19 13:46	1
Lead	ND		0.0010	0.00045	mg/L		02/27/19 14:00	02/28/19 13:46	1
Selenium	**0.014**		0.0050	0.00089	mg/L		02/27/19 14:00	02/28/19 13:46	1
Thallium	ND		0.0010	0.00020	mg/L		02/27/19 14:00	02/28/19 13:46	1
Lithium	**0.073**		0.0080	0.0017	mg/L		02/27/19 14:00	02/28/19 13:46	1

Client Sample ID: PNMW-2B
Date Collected: 02/21/19 16:20
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		02/27/19 14:00	02/28/19 13:48	1
Arsenic	ND		0.0050	0.00075	mg/L		02/27/19 14:00	02/28/19 13:48	1
Barium	**0.14**		0.0050	0.0022	mg/L		02/27/19 14:00	02/28/19 13:48	1
Beryllium	ND		0.0010	0.00031	mg/L		02/27/19 14:00	02/28/19 13:48	1
Calcium	**70**		1.0	0.58	mg/L		02/27/19 14:00	02/28/19 13:48	1
Cadmium	ND		0.0010	0.00021	mg/L		02/27/19 14:00	02/28/19 13:48	1
Cobalt	ND		0.0010	0.00019	mg/L		02/27/19 14:00	02/28/19 13:48	1
Chromium	**0.0037**		0.0020	0.00098	mg/L		02/27/19 14:00	02/28/19 13:48	1
Molybdenum	**0.0027**	**J**	0.010	0.0011	mg/L		02/27/19 14:00	02/28/19 13:48	1
Lead	**0.0021**		0.0010	0.00045	mg/L		02/27/19 14:00	02/28/19 13:48	1
Selenium	**0.0020**	**J**	0.0050	0.00089	mg/L		02/27/19 14:00	02/28/19 13:48	1
Thallium	ND		0.0010	0.00020	mg/L		02/27/19 14:00	02/28/19 13:48	1
Lithium	**0.030**		0.0080	0.0017	mg/L		02/27/19 14:00	02/28/19 13:48	1

Client Sample ID: PNMW-13
Date Collected: 02/21/19 13:30
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		02/27/19 14:00	02/28/19 13:50	1
Arsenic	**0.00094**	**J**	0.0050	0.00075	mg/L		02/27/19 14:00	02/28/19 13:50	1
Barium	**0.054**		0.0050	0.0022	mg/L		02/27/19 14:00	02/28/19 13:50	1
Beryllium	ND		0.0010	0.00031	mg/L		02/27/19 14:00	02/28/19 13:50	1
Calcium	**37**		1.0	0.58	mg/L		02/27/19 14:00	02/28/19 13:50	1
Cadmium	ND		0.0010	0.00021	mg/L		02/27/19 14:00	02/28/19 13:50	1
Cobalt	**0.00075**	**J**	0.0010	0.00019	mg/L		02/27/19 14:00	02/28/19 13:50	1
Chromium	**0.012**		0.0020	0.00098	mg/L		02/27/19 14:00	02/28/19 13:50	1
Molybdenum	**0.0048**	**J**	0.010	0.0011	mg/L		02/27/19 14:00	02/28/19 13:50	1
Lead	**0.00095**	**J**	0.0010	0.00045	mg/L		02/27/19 14:00	02/28/19 13:50	1
Selenium	ND		0.0050	0.00089	mg/L		02/27/19 14:00	02/28/19 13:50	1
Thallium	ND		0.0010	0.00020	mg/L		02/27/19 14:00	02/28/19 13:50	1
Lithium	**0.051**		0.0080	0.0017	mg/L		02/27/19 14:00	02/28/19 13:50	1

Client Sample ID: PNMW-14
Date Collected: 02/18/19 12:30
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		02/27/19 14:00	02/28/19 13:57	1
Arsenic	**0.00084**	**J**	0.0050	0.00075	mg/L		02/27/19 14:00	02/28/19 13:57	1
Barium	**0.084**		0.0050	0.0022	mg/L		02/27/19 14:00	02/28/19 13:57	1
Beryllium	ND		0.0010	0.00031	mg/L		02/27/19 14:00	02/28/19 13:57	1
Calcium	**35**		1.0	0.58	mg/L		02/27/19 14:00	02/28/19 13:57	1
Cadmium	ND		0.0010	0.00021	mg/L		02/27/19 14:00	02/28/19 13:57	1
Cobalt	**0.00033**	**J**	0.0010	0.00019	mg/L		02/27/19 14:00	02/28/19 13:57	1
Chromium	**0.0077**		0.0020	0.00098	mg/L		02/27/19 14:00	02/28/19 13:57	1
Molybdenum	**0.0064**	**J**	0.010	0.0011	mg/L		02/27/19 14:00	02/28/19 13:57	1
Lead	**0.00054**	**J**	0.0010	0.00045	mg/L		02/27/19 14:00	02/28/19 13:57	1
Selenium	**0.0020**	**J**	0.0050	0.00089	mg/L		02/27/19 14:00	02/28/19 13:57	1
Thallium	ND		0.0010	0.00020	mg/L		02/27/19 14:00	02/28/19 13:57	1
Lithium	**0.029**		0.0080	0.0017	mg/L		02/27/19 14:00	02/28/19 13:57	1

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

Client Sample ID: PNMW-15
Date Collected: 02/21/19 14:30
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.00076**	**J**	0.0020	0.00057	mg/L		02/27/19 14:00	02/28/19 14:00	1
Arsenic	**0.010**		0.0050	0.00075	mg/L		02/27/19 14:00	02/28/19 14:00	1
Barium	**0.32**		0.0050	0.0022	mg/L		02/27/19 14:00	02/28/19 14:00	1
Beryllium	**0.0017**		0.0010	0.00031	mg/L		02/27/19 14:00	02/28/19 14:00	1
Calcium	**170**		1.0	0.58	mg/L		02/27/19 14:00	02/28/19 14:00	1
Cadmium	**0.00045**	**J**	0.0010	0.00021	mg/L		02/27/19 14:00	02/28/19 14:00	1
Cobalt	**0.015**		0.0010	0.00019	mg/L		02/27/19 14:00	02/28/19 14:00	1
Chromium	**0.060**		0.0020	0.00098	mg/L		02/27/19 14:00	02/28/19 14:00	1
Molybdenum	**0.0031**	**J**	0.010	0.0011	mg/L		02/27/19 14:00	02/28/19 14:00	1
Lead	**0.029**		0.0010	0.00045	mg/L		02/27/19 14:00	02/28/19 14:00	1
Selenium	**0.014**		0.0050	0.00089	mg/L		02/27/19 14:00	02/28/19 14:00	1
Thallium	**0.00051**	**J**	0.0010	0.00020	mg/L		02/27/19 14:00	02/28/19 14:00	1
Lithium	**0.13**		0.0080	0.0017	mg/L		02/27/19 14:00	02/28/19 14:00	1

Client Sample ID: PNMW-16
Date Collected: 02/21/19 18:50
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		02/27/19 14:00	02/28/19 14:02	1
Arsenic	ND		0.0050	0.00075	mg/L		02/27/19 14:00	02/28/19 14:02	1
Barium	**0.016**		0.0050	0.0022	mg/L		02/27/19 14:00	02/28/19 14:02	1
Beryllium	ND		0.0010	0.00031	mg/L		02/27/19 14:00	02/28/19 14:02	1
Calcium	**180**		1.0	0.58	mg/L		02/27/19 14:00	02/28/19 14:02	1
Cadmium	ND		0.0010	0.00021	mg/L		02/27/19 14:00	02/28/19 14:02	1
Cobalt	**0.0023**		0.0010	0.00019	mg/L		02/27/19 14:00	02/28/19 14:02	1
Chromium	**0.0011**	**J**	0.0020	0.00098	mg/L		02/27/19 14:00	02/28/19 14:02	1
Molybdenum	**0.0014**	**J**	0.010	0.0011	mg/L		02/27/19 14:00	02/28/19 14:02	1
Lead	ND		0.0010	0.00045	mg/L		02/27/19 14:00	02/28/19 14:02	1
Selenium	ND		0.0050	0.00089	mg/L		02/27/19 14:00	02/28/19 14:02	1
Thallium	ND		0.0010	0.00020	mg/L		02/27/19 14:00	02/28/19 14:02	1
Lithium	**0.12**		0.0080	0.0017	mg/L		02/27/19 14:00	02/28/19 14:02	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: PNMW-1B
Date Collected: 02/21/19 17:15
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		02/27/19 12:00	02/28/19 10:07	1

Client Sample ID: PNMW-2B
Date Collected: 02/21/19 16:20
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		02/27/19 12:00	02/28/19 10:14	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: PNMW-13
Date Collected: 02/21/19 13:30
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		02/27/19 12:00	02/28/19 10:28	1

Client Sample ID: PNMW-14
Date Collected: 02/18/19 12:30
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		02/27/19 12:00	02/28/19 10:18	1

Client Sample ID: PNMW-15
Date Collected: 02/21/19 14:30
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		02/27/19 12:00	02/28/19 10:20	1

Client Sample ID: PNMW-16
Date Collected: 02/21/19 18:50
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		02/27/19 12:00	02/28/19 10:22	1

General Chemistry

Client Sample ID: PNMW-1B
Date Collected: 02/21/19 17:15
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	**7.8**	**HF**	0.1	0.1	SU			02/26/19 17:55	1
Temperature	**22.9**	**HF**	1.0	1.0	Degrees C			02/26/19 17:55	1
Chloride	**58**		3.0	1.0	mg/L			02/27/19 05:59	1
Fluoride	**0.76**		0.50	0.060	mg/L			02/27/19 05:59	1
Sulfate	**330**		50	10	mg/L			02/27/19 06:18	10
Total Dissolved Solids (TDS)	**920**	**B**	20	9.4	mg/L			02/26/19 12:24	1
Total Suspended Solids	ND		4.0	1.1	mg/L			02/26/19 12:32	1

Client Sample ID: PNMW-2B
Date Collected: 02/21/19 16:20
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	**7.8**	**HF**	0.1	0.1	SU			02/26/19 18:11	1
Temperature	**23.2**	**HF**	1.0	1.0	Degrees C			02/26/19 18:11	1
Chloride	**13**		3.0	1.0	mg/L			02/27/19 04:07	1
Fluoride	**0.57**		0.50	0.060	mg/L			02/27/19 04:07	1
Sulfate	**24**	**F1**	5.0	1.0	mg/L			02/27/19 04:07	1
Total Dissolved Solids (TDS)	**920**	**B**	20	9.4	mg/L			02/26/19 12:24	1
Total Suspended Solids	ND		4.0	1.1	mg/L			02/26/19 12:32	1

Client Sample ID: PNMW-13
Date Collected: 02/21/19 13:30
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-3
Matrix: Water

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			02/26/19 18:19	1

General Chemistry (Continued)

Client Sample ID: PNMW-13
Date Collected: 02/21/19 13:30
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Temperature	23.4	HF	1.0	1.0	Degrees C			02/26/19 18:19	1
Chloride	5.6		3.0	1.0	mg/L			02/27/19 06:36	1
Fluoride	1.1		0.50	0.060	mg/L			02/27/19 06:36	1
Sulfate	47		5.0	1.0	mg/L			02/27/19 06:36	1
Total Dissolved Solids (TDS)	430	B	10	4.7	mg/L			02/26/19 12:24	1
Total Suspended Solids	540		40	11	mg/L			02/26/19 12:41	1

Client Sample ID: PNMW-14
Date Collected: 02/18/19 12:30
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-4
Matrix: Water

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			02/26/19 18:23	1
Temperature	23.2	HF	1.0	1.0	Degrees C			02/26/19 18:23	1
Chloride	2.1	J	3.0	1.0	mg/L			02/27/19 22:26	1
Fluoride	0.94		0.50	0.060	mg/L			02/27/19 22:26	1
Sulfate	24		5.0	1.0	mg/L			02/27/19 22:26	1
Total Dissolved Solids (TDS)	250	H B	10	4.7	mg/L			02/26/19 12:21	1
Total Suspended Solids	ND	H	50	14	mg/L			02/26/19 12:28	1

Client Sample ID: PNMW-15
Date Collected: 02/21/19 14:30
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-5
Matrix: Water

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			02/26/19 18:27	1
Temperature	23.1	HF	1.0	1.0	Degrees C			02/26/19 18:27	1
Chloride	4.0		3.0	1.0	mg/L			02/27/19 06:55	1
Fluoride	0.36	J	0.50	0.060	mg/L			02/27/19 06:55	1
Sulfate	650		50	10	mg/L			02/27/19 07:14	10
Total Dissolved Solids (TDS)	1300	B	20	9.4	mg/L			02/26/19 12:24	1
Total Suspended Solids	700		40	11	mg/L			02/26/19 12:41	1

Client Sample ID: PNMW-16
Date Collected: 02/21/19 18:50
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.5	HF	0.1	0.1	SU			02/26/19 18:30	1
Temperature	23.1	HF	1.0	1.0	Degrees C			02/26/19 18:30	1
Chloride	2.1	J	3.0	1.0	mg/L			02/27/19 07:33	1
Fluoride	0.27	J	0.50	0.060	mg/L			02/27/19 07:33	1
Sulfate	1000		50	10	mg/L			02/27/19 07:51	10
Total Dissolved Solids (TDS)	2000	B	20	9.4	mg/L			02/26/19 12:24	1
Total Suspended Solids	16		4.0	1.1	mg/L			02/26/19 12:41	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: PNMW-1B
Date Collected: 02/21/19 17:15
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.202		0.0879	0.0898	1.00	0.0915	pCi/L	03/04/19 10:51	03/26/19 08:21	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	97.6		40 - 110	03/04/19 10:51	03/26/19 08:21	1

Client Sample ID: PNMW-2B
Date Collected: 02/21/19 16:20
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.197		0.0806	0.0825	1.00	0.0713	pCi/L	03/04/19 10:51	03/26/19 08:21	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	105		40 - 110	03/04/19 10:51	03/26/19 08:21	1

Client Sample ID: PNMW-13
Date Collected: 02/21/19 13:30
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.454		0.145	0.151	1.00	0.119	pCi/L	03/04/19 10:51	03/26/19 08:21	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	96.2		40 - 110	03/04/19 10:51	03/26/19 08:21	1

Client Sample ID: PNMW-14
Date Collected: 02/18/19 12:30
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.152		0.0726	0.0739	1.00	0.0723	pCi/L	03/04/19 10:51	03/26/19 08:21	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	106		40 - 110	03/04/19 10:51	03/26/19 08:21	1

Client Sample ID: PNMW-15
Date Collected: 02/21/19 14:30
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.638		0.176	0.185	1.00	0.136	pCi/L	03/04/19 10:51	03/26/19 08:21	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	85.3		40 - 110	03/04/19 10:51	03/26/19 08:21	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: PNMW-16
Date Collected: 02/21/19 18:50
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.392		0.110	0.116	1.00	0.0817	pCi/L	03/04/19 10:51	03/26/19 08:21	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*105*		*40 - 110*	*03/04/19 10:51*	*03/26/19 08:21*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: PNMW-1B
Date Collected: 02/21/19 17:15
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.949		0.282	0.295	1.00	0.364	pCi/L	03/04/19 12:41	03/19/19 09:12	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.6*		*40 - 110*	*03/04/19 12:41*	*03/19/19 09:12*	*1*
Y Carrier	*91.2*		*40 - 110*	*03/04/19 12:41*	*03/19/19 09:12*	*1*

Client Sample ID: PNMW-2B
Date Collected: 02/21/19 16:20
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.886		0.259	0.271	1.00	0.324	pCi/L	03/04/19 12:41	03/19/19 09:12	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*105*		*40 - 110*	*03/04/19 12:41*	*03/19/19 09:12*	*1*
Y Carrier	*87.1*		*40 - 110*	*03/04/19 12:41*	*03/19/19 09:12*	*1*

Client Sample ID: PNMW-13
Date Collected: 02/21/19 13:30
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.77		0.394	0.426	1.00	0.437	pCi/L	03/04/19 12:41	03/19/19 09:13	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.2*		*40 - 110*	*03/04/19 12:41*	*03/19/19 09:13*	*1*
Y Carrier	*92.7*		*40 - 110*	*03/04/19 12:41*	*03/19/19 09:13*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: PNMW-14
Date Collected: 02/18/19 12:30
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.232	U	0.219	0.220	1.00	0.353	pCi/L	03/04/19 12:41	03/19/19 09:14	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*106*		*40 - 110*	*03/04/19 12:41*	*03/19/19 09:14*	*1*
Y Carrier	*86.0*		*40 - 110*	*03/04/19 12:41*	*03/19/19 09:14*	*1*

Client Sample ID: PNMW-15
Date Collected: 02/21/19 14:30
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.833**		0.378	0.386	1.00	0.543	pCi/L	03/04/19 12:41	03/19/19 09:14	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*85.3*		*40 - 110*	*03/04/19 12:41*	*03/19/19 09:14*	*1*
Y Carrier	*89.7*		*40 - 110*	*03/04/19 12:41*	*03/19/19 09:14*	*1*

Client Sample ID: PNMW-16
Date Collected: 02/21/19 18:50
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.697**		0.253	0.261	1.00	0.347	pCi/L	03/04/19 12:41	03/19/19 09:14	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*105*		*40 - 110*	*03/04/19 12:41*	*03/19/19 09:14*	*1*
Y Carrier	*87.5*		*40 - 110*	*03/04/19 12:41*	*03/19/19 09:14*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: PNMW-1B
Date Collected: 02/21/19 17:15
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**1.15**		0.295	0.308	5.00	0.364	pCi/L		03/27/19 11:47	1

Client Sample ID: PNMW-2B
Date Collected: 02/21/19 16:20
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**1.08**		0.271	0.283	5.00	0.324	pCi/L		03/27/19 11:47	1

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: PNMW-13
Date Collected: 02/21/19 13:30
Date Received: 02/25/19 14:15
Lab Sample ID: 280-120560-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	2.22		0.420	0.452	5.00	0.437	pCi/L		03/27/19 11:47	1

Client Sample ID: PNMW-14
Date Collected: 02/18/19 12:30
Date Received: 02/25/19 14:15
Lab Sample ID: 280-120560-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.384		0.231	0.232	5.00	0.353	pCi/L		03/27/19 11:47	1

Client Sample ID: PNMW-15
Date Collected: 02/21/19 14:30
Date Received: 02/25/19 14:15
Lab Sample ID: 280-120560-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.47		0.417	0.428	5.00	0.543	pCi/L		03/27/19 11:47	1

Client Sample ID: PNMW-16
Date Collected: 02/21/19 18:50
Date Received: 02/25/19 14:15
Lab Sample ID: 280-120560-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.09		0.276	0.286	5.00	0.347	pCi/L		03/27/19 11:47	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-369645/1-A
Matrix: Water
Analysis Batch: 369800

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 369645

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		02/27/19 14:00	02/28/19 18:15	1

Lab Sample ID: LCS 240-369645/2-A
Matrix: Water
Analysis Batch: 369800

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 369645

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.08		mg/L		108	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-369645/1-A
Matrix: Water
Analysis Batch: 369899

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 369645

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		02/27/19 14:00	02/28/19 13:07	1
Arsenic	ND		0.0050	0.00075	mg/L		02/27/19 14:00	02/28/19 13:07	1
Barium	ND		0.0050	0.0022	mg/L		02/27/19 14:00	02/28/19 13:07	1
Beryllium	ND		0.0010	0.00031	mg/L		02/27/19 14:00	02/28/19 13:07	1
Calcium	ND		1.0	0.58	mg/L		02/27/19 14:00	02/28/19 13:07	1
Cadmium	ND		0.0010	0.00021	mg/L		02/27/19 14:00	02/28/19 13:07	1
Cobalt	ND		0.0010	0.00019	mg/L		02/27/19 14:00	02/28/19 13:07	1
Chromium	ND		0.0020	0.00098	mg/L		02/27/19 14:00	02/28/19 13:07	1
Molybdenum	ND		0.010	0.0011	mg/L		02/27/19 14:00	02/28/19 13:07	1
Lead	ND		0.0010	0.00045	mg/L		02/27/19 14:00	02/28/19 13:07	1
Selenium	ND		0.0050	0.00089	mg/L		02/27/19 14:00	02/28/19 13:07	1
Thallium	ND		0.0010	0.00020	mg/L		02/27/19 14:00	02/28/19 13:07	1
Lithium	ND		0.0080	0.0017	mg/L		02/27/19 14:00	02/28/19 13:07	1

Lab Sample ID: LCS 240-369645/3-A
Matrix: Water
Analysis Batch: 369899

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 369645

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0969		mg/L		97	80 - 120
Arsenic	1.00	0.930		mg/L		93	80 - 120
Barium	1.00	0.974		mg/L		97	80 - 120
Beryllium	1.00	0.922		mg/L		92	80 - 120
Calcium	10.0	9.92		mg/L		99	80 - 120
Cadmium	1.00	0.977		mg/L		98	80 - 120
Cobalt	1.00	0.907		mg/L		91	80 - 120
Chromium	1.00	0.943		mg/L		94	80 - 120
Molybdenum	0.100	0.0949		mg/L		95	80 - 120
Lead	1.00	0.975		mg/L		98	80 - 120
Selenium	1.00	0.931		mg/L		93	80 - 120
Thallium	0.250	0.239		mg/L		96	80 - 120
Lithium	0.100	0.0908		mg/L		91	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 240-369569/1-A
Matrix: Water
Analysis Batch: 369906

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 369569

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		02/27/19 12:00	02/28/19 09:48	1

Lab Sample ID: LCS 240-369569/2-A
Matrix: Water
Analysis Batch: 369906

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 369569

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	4.46		ug/L		89	80 - 120

Method: 9040B - pH

Lab Sample ID: LCS 280-449024/29
Matrix: Water
Analysis Batch: 449024

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101

Lab Sample ID: LCS 280-449024/4
Matrix: Water
Analysis Batch: 449024

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101

Lab Sample ID: 280-120560-2 DU
Matrix: Water
Analysis Batch: 449024

Client Sample ID: PNMW-2B
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH adj. to 25 deg C	7.8	HF	7.9		SU		2	5
Temperature	23.2	HF	23.8		Degrees C		3	10

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-448887/6
Matrix: Water
Analysis Batch: 448887

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	1.0	mg/L			02/26/19 11:17	1
Fluoride	ND		0.50	0.060	mg/L			02/26/19 11:17	1
Sulfate	ND		5.0	1.0	mg/L			02/26/19 11:17	1

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

Lab Sample ID: LCS 280-448887/4
Matrix: Water
Analysis Batch: 448887

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	100		mg/L		100	90 - 110
Fluoride	5.00	5.23		mg/L		105	90 - 110
Sulfate	100	100		mg/L		100	90 - 110

Lab Sample ID: LCSD 280-448887/5
Matrix: Water
Analysis Batch: 448887

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	99.9		mg/L		100	90 - 110	0	10
Fluoride	5.00	5.22		mg/L		104	90 - 110	0	10
Sulfate	100	100		mg/L		100	90 - 110	0	10

Lab Sample ID: MRL 280-448887/3
Matrix: Water
Analysis Batch: 448887

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.34	J	mg/L		93	50 - 150
Fluoride	0.200	0.177	J	mg/L		89	50 - 150
Sulfate	2.50	2.44	J	mg/L		98	50 - 150

Lab Sample ID: 280-120560-2 MS
Matrix: Water
Analysis Batch: 448887

Client Sample ID: PNMW-2B
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	13		25.0	42.2		mg/L		118	80 - 120
Fluoride	0.57		5.00	6.10		mg/L		111	80 - 120
Sulfate	24	F1	25.0	55.2	F1	mg/L		125	80 - 120

Lab Sample ID: 280-120560-2 MSD
Matrix: Water
Analysis Batch: 448887

Client Sample ID: PNMW-2B
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	13		25.0	42.2		mg/L		118	80 - 120	0	20
Fluoride	0.57		5.00	6.15		mg/L		112	80 - 120	1	20
Sulfate	24	F1	25.0	53.1		mg/L		117	80 - 120	4	20

Lab Sample ID: 280-120560-2 DU
Matrix: Water
Analysis Batch: 448887

Client Sample ID: PNMW-2B
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Chloride	13		12.8		mg/L		0	15
Fluoride	0.57		0.578		mg/L		1	15
Sulfate	24	F1	23.9		mg/L		0.1	15

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

Lab Sample ID: MB 280-449017/6
Matrix: Water
Analysis Batch: 449017

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	1.0	mg/L			02/27/19 12:59	1
Fluoride	ND		0.50	0.060	mg/L			02/27/19 12:59	1
Sulfate	ND		5.0	1.0	mg/L			02/27/19 12:59	1

Lab Sample ID: LCS 280-449017/4
Matrix: Water
Analysis Batch: 449017

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	104		mg/L		104	90 - 110
Fluoride	5.00	5.19		mg/L		104	90 - 110
Sulfate	100	104		mg/L		104	90 - 110

Lab Sample ID: LCSD 280-449017/5
Matrix: Water
Analysis Batch: 449017

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	104		mg/L		104	90 - 110	0	10
Fluoride	5.00	5.08		mg/L		102	90 - 110	2	10
Sulfate	100	104		mg/L		104	90 - 110	0	10

Lab Sample ID: MRL 280-449017/3
Matrix: Water
Analysis Batch: 449017

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.28	J	mg/L		91	50 - 150
Fluoride	0.200	0.224	J	mg/L		112	50 - 150
Sulfate	2.50	2.28	J	mg/L		91	50 - 150

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

Lab Sample ID: MB 280-448918/1
Matrix: Water
Analysis Batch: 448918

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	17.0		10	4.7	mg/L			02/26/19 12:21	1

Lab Sample ID: LCS 280-448918/2
Matrix: Water
Analysis Batch: 448918

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	501	524		mg/L		105	93 - 110

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

Lab Sample ID: 280-120560-4 DU
Matrix: Water
Analysis Batch: 448918

Client Sample ID: PNMW-14
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids (TDS)	250	H B	251		mg/L		0.4	10

Lab Sample ID: MB 280-448919/1
Matrix: Water
Analysis Batch: 448919

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	14.0		10	4.7	mg/L			02/26/19 12:24	1

Lab Sample ID: LCS 280-448919/2
Matrix: Water
Analysis Batch: 448919

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	501	535		mg/L		107	93 - 110

Lab Sample ID: 280-120560-6 DU
Matrix: Water
Analysis Batch: 448919

Client Sample ID: PNMW-16
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids (TDS)	2000	B	1930		mg/L		1	10

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

Lab Sample ID: MB 280-448920/1
Matrix: Water
Analysis Batch: 448920

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			02/26/19 12:28	1

Lab Sample ID: LCS 280-448920/2
Matrix: Water
Analysis Batch: 448920

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	98.8		mg/L		99	79 - 114

Lab Sample ID: MB 280-448921/1
Matrix: Water
Analysis Batch: 448921

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			02/26/19 12:32	1

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

Lab Sample ID: LCS 280-448921/2
Matrix: Water
Analysis Batch: 448921

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Suspended Solids			100	96.8		mg/L		97	79 - 114		

Lab Sample ID: 280-120560-6 DU
Matrix: Water
Analysis Batch: 448921

Client Sample ID: PNMW-16
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Suspended Solids	16			16.0		mg/L				0	10

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-417564/24-A
Matrix: Water
Analysis Batch: 421200

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 417564

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1193		0.0743	0.0750	1.00	0.0951	pCi/L	03/04/19 10:51	03/26/19 08:22	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.9*		*40 - 110*	*03/04/19 10:51*	*03/26/19 08:22*	*1*

Lab Sample ID: LCS 160-417564/1-A
Matrix: Water
Analysis Batch: 421229

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 417564

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	9.473		1.01	1.00	0.0932	pCi/L	83	68 - 137		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*97.6*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-417578/24-A
Matrix: Water
Analysis Batch: 420023

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 417578

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.3425	U	0.245	0.247	1.00	0.381	pCi/L	03/04/19 12:41	03/19/19 09:14	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.9*		*40 - 110*	*03/04/19 12:41*	*03/19/19 09:14*	*1*
Y Carrier	*82.2*		*40 - 110*	*03/04/19 12:41*	*03/19/19 09:14*	*1*

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-120560-1

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

Lab Sample ID: LCS 160-417578/1-A
Matrix: Water
Analysis Batch: 420061

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 417578

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.38	9.338		1.07	1.00	0.331	pCi/L	100	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*97.6*		*40 - 110*
Y Carrier	*89.0*		*40 - 110*

Metals

Prep Batch: 369569

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120560-1	PNMW-1B	Total/NA	Water	7470A	
280-120560-2	PNMW-2B	Total/NA	Water	7470A	
280-120560-3	PNMW-13	Total/NA	Water	7470A	
280-120560-4	PNMW-14	Total/NA	Water	7470A	
280-120560-5	PNMW-15	Total/NA	Water	7470A	
280-120560-6	PNMW-16	Total/NA	Water	7470A	
MB 240-369569/1-A	Method Blank	Total/NA	Water	7470A	
LCS 240-369569/2-A	Lab Control Sample	Total/NA	Water	7470A	

Prep Batch: 369645

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120560-1	PNMW-1B	Total Recoverable	Water	3005A	
280-120560-2	PNMW-2B	Total Recoverable	Water	3005A	
280-120560-3	PNMW-13	Total Recoverable	Water	3005A	
280-120560-4	PNMW-14	Total Recoverable	Water	3005A	
280-120560-5	PNMW-15	Total Recoverable	Water	3005A	
280-120560-6	PNMW-16	Total Recoverable	Water	3005A	
MB 240-369645/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-369645/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-369645/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 369800

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120560-1	PNMW-1B	Total Recoverable	Water	6010C	369645
280-120560-2	PNMW-2B	Total Recoverable	Water	6010C	369645
280-120560-3	PNMW-13	Total Recoverable	Water	6010C	369645
280-120560-4	PNMW-14	Total Recoverable	Water	6010C	369645
280-120560-5	PNMW-15	Total Recoverable	Water	6010C	369645
280-120560-6	PNMW-16	Total Recoverable	Water	6010C	369645
MB 240-369645/1-A	Method Blank	Total Recoverable	Water	6010C	369645
LCS 240-369645/2-A	Lab Control Sample	Total Recoverable	Water	6010C	369645

Analysis Batch: 369899

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120560-1	PNMW-1B	Total Recoverable	Water	6020A	369645
280-120560-2	PNMW-2B	Total Recoverable	Water	6020A	369645
280-120560-3	PNMW-13	Total Recoverable	Water	6020A	369645
280-120560-4	PNMW-14	Total Recoverable	Water	6020A	369645
280-120560-5	PNMW-15	Total Recoverable	Water	6020A	369645
280-120560-6	PNMW-16	Total Recoverable	Water	6020A	369645
MB 240-369645/1-A	Method Blank	Total Recoverable	Water	6020A	369645
LCS 240-369645/3-A	Lab Control Sample	Total Recoverable	Water	6020A	369645

Analysis Batch: 369906

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120560-1	PNMW-1B	Total/NA	Water	7470A	369569
280-120560-2	PNMW-2B	Total/NA	Water	7470A	369569
280-120560-3	PNMW-13	Total/NA	Water	7470A	369569
280-120560-4	PNMW-14	Total/NA	Water	7470A	369569
280-120560-5	PNMW-15	Total/NA	Water	7470A	369569
280-120560-6	PNMW-16	Total/NA	Water	7470A	369569

Metals (Continued)

Analysis Batch: 369906 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 240-369569/1-A	Method Blank	Total/NA	Water	7470A	369569
LCS 240-369569/2-A	Lab Control Sample	Total/NA	Water	7470A	369569

General Chemistry

Analysis Batch: 448887

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120560-1	PNMW-1B	Total/NA	Water	9056A	
280-120560-1	PNMW-1B	Total/NA	Water	9056A	
280-120560-2	PNMW-2B	Total/NA	Water	9056A	
280-120560-3	PNMW-13	Total/NA	Water	9056A	
280-120560-5	PNMW-15	Total/NA	Water	9056A	
280-120560-5	PNMW-15	Total/NA	Water	9056A	
280-120560-6	PNMW-16	Total/NA	Water	9056A	
280-120560-6	PNMW-16	Total/NA	Water	9056A	
MB 280-448887/6	Method Blank	Total/NA	Water	9056A	
LCS 280-448887/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-448887/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-448887/3	Lab Control Sample	Total/NA	Water	9056A	
280-120560-2 MS	PNMW-2B	Total/NA	Water	9056A	
280-120560-2 MSD	PNMW-2B	Total/NA	Water	9056A	
280-120560-2 DU	PNMW-2B	Total/NA	Water	9056A	

Analysis Batch: 448918

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120560-4	PNMW-14	Total/NA	Water	SM 2540C	
MB 280-448918/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-448918/2	Lab Control Sample	Total/NA	Water	SM 2540C	
280-120560-4 DU	PNMW-14	Total/NA	Water	SM 2540C	

Analysis Batch: 448919

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120560-1	PNMW-1B	Total/NA	Water	SM 2540C	
280-120560-2	PNMW-2B	Total/NA	Water	SM 2540C	
280-120560-3	PNMW-13	Total/NA	Water	SM 2540C	
280-120560-5	PNMW-15	Total/NA	Water	SM 2540C	
280-120560-6	PNMW-16	Total/NA	Water	SM 2540C	
MB 280-448919/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-448919/2	Lab Control Sample	Total/NA	Water	SM 2540C	
280-120560-6 DU	PNMW-16	Total/NA	Water	SM 2540C	

Analysis Batch: 448920

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120560-4	PNMW-14	Total/NA	Water	SM 2540D	
MB 280-448920/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-448920/2	Lab Control Sample	Total/NA	Water	SM 2540D	

Analysis Batch: 448921

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120560-1	PNMW-1B	Total/NA	Water	SM 2540D	

General Chemistry (Continued)

Analysis Batch: 448921 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120560-2	PNMW-2B	Total/NA	Water	SM 2540D	
280-120560-3	PNMW-13	Total/NA	Water	SM 2540D	
280-120560-5	PNMW-15	Total/NA	Water	SM 2540D	
280-120560-6	PNMW-16	Total/NA	Water	SM 2540D	
MB 280-448921/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-448921/2	Lab Control Sample	Total/NA	Water	SM 2540D	
280-120560-6 DU	PNMW-16	Total/NA	Water	SM 2540D	

Analysis Batch: 449017

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120560-4	PNMW-14	Total/NA	Water	9056A	
MB 280-449017/6	Method Blank	Total/NA	Water	9056A	
LCS 280-449017/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-449017/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-449017/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 449024

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120560-1	PNMW-1B	Total/NA	Water	9040B	
280-120560-2	PNMW-2B	Total/NA	Water	9040B	
280-120560-3	PNMW-13	Total/NA	Water	9040B	
280-120560-4	PNMW-14	Total/NA	Water	9040B	
280-120560-5	PNMW-15	Total/NA	Water	9040B	
280-120560-6	PNMW-16	Total/NA	Water	9040B	
LCS 280-449024/29	Lab Control Sample	Total/NA	Water	9040B	
LCS 280-449024/4	Lab Control Sample	Total/NA	Water	9040B	
280-120560-2 DU	PNMW-2B	Total/NA	Water	9040B	

Rad

Prep Batch: 417564

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120560-1	PNMW-1B	Total/NA	Water	PrecSep-21	
280-120560-2	PNMW-2B	Total/NA	Water	PrecSep-21	
280-120560-3	PNMW-13	Total/NA	Water	PrecSep-21	
280-120560-4	PNMW-14	Total/NA	Water	PrecSep-21	
280-120560-5	PNMW-15	Total/NA	Water	PrecSep-21	
280-120560-6	PNMW-16	Total/NA	Water	PrecSep-21	
MB 160-417564/24-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-417564/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 417578

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-120560-1	PNMW-1B	Total/NA	Water	PrecSep_0	
280-120560-2	PNMW-2B	Total/NA	Water	PrecSep_0	
280-120560-3	PNMW-13	Total/NA	Water	PrecSep_0	
280-120560-4	PNMW-14	Total/NA	Water	PrecSep_0	
280-120560-5	PNMW-15	Total/NA	Water	PrecSep_0	
280-120560-6	PNMW-16	Total/NA	Water	PrecSep_0	
MB 160-417578/24-A	Method Blank	Total/NA	Water	PrecSep_0	

Rad (Continued)

Prep Batch: 417578 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 160-417578/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-120560-1

Client Sample ID: PNMW-1B

Date Collected: 02/21/19 17:15
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-1

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	369645	02/27/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			369800	02/28/19 19:33	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	369645	02/27/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			369899	02/28/19 13:46	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	369569	02/27/19 12:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			369906	02/28/19 10:07	AJC	TAL CAN
Total/NA	Analysis	9040B		1			449024	02/26/19 17:55	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	448887	02/27/19 05:59	ARM	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	448887	02/27/19 06:18	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	448919	02/26/19 12:24	LMD	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	448921	02/26/19 12:32	LMD	TAL DEN
Total/NA	Prep	PrecSep-21			999.96 mL	1.0 g	417564	03/04/19 10:51	LTC	TAL SL
Total/NA	Analysis	9315		1			421200	03/26/19 08:21	KLS	TAL SL
Total/NA	Prep	PrecSep_0			999.96 mL	1.0 g	417578	03/04/19 12:41	LTC	TAL SL
Total/NA	Analysis	9320		1			420061	03/19/19 09:12	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			421503	03/27/19 11:47	CDR	TAL SL

Client Sample ID: PNMW-2B

Date Collected: 02/21/19 16:20
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-2

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	369645	02/27/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			369800	02/28/19 19:38	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	369645	02/27/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			369899	02/28/19 13:48	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	369569	02/27/19 12:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			369906	02/28/19 10:14	AJC	TAL CAN
Total/NA	Analysis	9040B		1			449024	02/26/19 18:11	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	448887	02/27/19 04:07	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	448919	02/26/19 12:24	LMD	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	448921	02/26/19 12:32	LMD	TAL DEN
Total/NA	Prep	PrecSep-21			1000.96 mL	1.0 g	417564	03/04/19 10:51	LTC	TAL SL
Total/NA	Analysis	9315		1			421200	03/26/19 08:21	KLS	TAL SL
Total/NA	Prep	PrecSep_0			1000.96 mL	1.0 g	417578	03/04/19 12:41	LTC	TAL SL
Total/NA	Analysis	9320		1			420061	03/19/19 09:12	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			421503	03/27/19 11:47	CDR	TAL SL

Client Sample ID: PNMW-13

Date Collected: 02/21/19 13:30
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-3

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	369645	02/27/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			369800	02/28/19 19:43	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	369645	02/27/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			369899	02/28/19 13:50	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	369569	02/27/19 12:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			369906	02/28/19 10:28	AJC	TAL CAN
Total/NA	Analysis	9040B		1			449024	02/26/19 18:19	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	448887	02/27/19 06:36	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	448919	02/26/19 12:24	LMD	TAL DEN
Total/NA	Analysis	SM 2540D		1	25 mL	250 mL	448921	02/26/19 12:41	LMD	TAL DEN
Total/NA	Prep	PrecSep-21			750.47 mL	1.0 g	417564	03/04/19 10:51	LTC	TAL SL
Total/NA	Analysis	9315		1			421200	03/26/19 08:21	KLS	TAL SL
Total/NA	Prep	PrecSep_0			750.47 mL	1.0 g	417578	03/04/19 12:41	LTC	TAL SL
Total/NA	Analysis	9320		1			420061	03/19/19 09:13	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			421503	03/27/19 11:47	CDR	TAL SL

Client Sample ID: PNMW-14

Date Collected: 02/18/19 12:30
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-4

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	369645	02/27/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			369800	02/28/19 19:47	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	369645	02/27/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			369899	02/28/19 13:57	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	369569	02/27/19 12:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			369906	02/28/19 10:18	AJC	TAL CAN
Total/NA	Analysis	9040B		1			449024	02/26/19 18:23	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	449017	02/27/19 22:26	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	448918	02/26/19 12:21	LMD	TAL DEN
Total/NA	Analysis	SM 2540D		1	20 mL	250 mL	448920	02/26/19 12:28	LMD	TAL DEN
Total/NA	Prep	PrecSep-21			999.69 mL	1.0 g	417564	03/04/19 10:51	LTC	TAL SL
Total/NA	Analysis	9315		1			421200	03/26/19 08:21	KLS	TAL SL
Total/NA	Prep	PrecSep_0			999.69 mL	1.0 g	417578	03/04/19 12:41	LTC	TAL SL
Total/NA	Analysis	9320		1			420023	03/19/19 09:14	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			421503	03/27/19 11:47	CDR	TAL SL

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-120560-1

Client Sample ID: PNMW-15

Date Collected: 02/21/19 14:30
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-5

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	369645	02/27/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			369800	02/28/19 19:52	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	369645	02/27/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			369899	02/28/19 14:00	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	369569	02/27/19 12:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			369906	02/28/19 10:20	AJC	TAL CAN
Total/NA	Analysis	9040B		1			449024	02/26/19 18:27	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	448887	02/27/19 06:55	ARM	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	448887	02/27/19 07:14	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	448919	02/26/19 12:24	LMD	TAL DEN
Total/NA	Analysis	SM 2540D		1	25 mL	250 mL	448921	02/26/19 12:41	LMD	TAL DEN
Total/NA	Prep	PrecSep-21			749.27 mL	1.0 g	417564	03/04/19 10:51	LTC	TAL SL
Total/NA	Analysis	9315		1			421200	03/26/19 08:21	KLS	TAL SL
Total/NA	Prep	PrecSep_0			749.27 mL	1.0 g	417578	03/04/19 12:41	LTC	TAL SL
Total/NA	Analysis	9320		1			420023	03/19/19 09:14	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			421503	03/27/19 11:47	CDR	TAL SL

Client Sample ID: PNMW-16

Date Collected: 02/21/19 18:50
Date Received: 02/25/19 14:15

Lab Sample ID: 280-120560-6

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	369645	02/27/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			369800	02/28/19 20:06	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	369645	02/27/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			369899	02/28/19 14:02	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	369569	02/27/19 12:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			369906	02/28/19 10:22	AJC	TAL CAN
Total/NA	Analysis	9040B		1			449024	02/26/19 18:30	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	448887	02/27/19 07:33	ARM	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	448887	02/27/19 07:51	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	448919	02/26/19 12:24	LMD	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	448921	02/26/19 12:41	LMD	TAL DEN
Total/NA	Prep	PrecSep-21			1000.58 mL	1.0 g	417564	03/04/19 10:51	LTC	TAL SL
Total/NA	Analysis	9315		1			421200	03/26/19 08:21	KLS	TAL SL
Total/NA	Prep	PrecSep_0			1000.58 mL	1.0 g	417578	03/04/19 12:41	LTC	TAL SL
Total/NA	Analysis	9320		1			420023	03/19/19 09:14	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			421503	03/27/19 11:47	CDR	TAL SL

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396
TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-120560-1

Laboratory: TestAmerica Denver

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

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD / DOE		2907.01	10-31-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
9040B		Water	Temperature
9056A		Water	Chloride
9056A		Water	Fluoride
9056A		Water	Sulfate

Laboratory: TestAmerica Canton

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

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-20
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	04-30-19 *
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19 *
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State Program	3	210	12-31-19

Laboratory: TestAmerica St. Louis

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	DoD / DOE		L2305	04-06-22
Arizona	State Program	9	AZ0813	12-08-19
California	State Program	9	2886	06-30-19
Connecticut	State Program	1	PH-0241	03-31-19 *
Florida	NELAP	4	E87689	06-30-19
Hawaii	State Program	9	NA	06-30-19
Illinois	NELAP	5	200023	11-30-19
Iowa	State Program	7	373	12-01-20
Kansas	NELAP	7	E-10236	10-31-19
Kentucky (DW)	State Program	4	KY90125	12-31-19
Louisiana	NELAP	6	04080	06-30-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-120560-1

Laboratory: TestAmerica St. Louis (Continued)

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Louisiana (DW)	NELAP	6	LA011	12-31-19
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-19
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19
New York	NELAP	2	11616	03-31-19 *
North Dakota	State Program	8	R207	06-30-19
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-19 *
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-13	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542018-10	07-31-19
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	08-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

Denv #28

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: FISHBURN / MUÑOZ	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-84488-26203.1
Client Contact: Anna Lundin	Phone: 208 841 9707	E-Mail: darlene.bandy@testamericainc.com		Page: Page 1 of 1
Company: HDR Inc				Job #:
Address: 9781 S. Meridian Blvd Suite 400	Due Date Requested:			
City: Englewood	TAT Requested (days):			
State, Zip: CO, 80112				
Phone: 734-263-7138(Tel)	PO #: DEN-018			
Email: anna.lundin@hdrinc.com	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Pawnee	Project #: 28014378			
Site: Colorado	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010C, 6020A, 7470A	9315_Ra226, 9320_Ra228	9056A_28D - (MOD) Copy Analytes	2540D - TSS / TDS	Total Number of containers	Special Instructions/Note:
Preservation Code:							D	D	N	N		
PNMW-1B	2/21	1715	G	Water	N	N	X	X	X	X		samples split between two coolers
PNMW-2B	2/21	1620		Water	N	N	X	X	X	X		
PNMW-13	2/20 - 2/21	1725 - 1330		Water	N	N	X	X	X	X		
PNMW-14	2-18	1230		Water	N	N	X	X	X	X		only 1 rad. bottle
PNMW-15	2-21	1430		Water	N	N	X	X	X	X		
PNMW-16	2-21	1850		Water	N	N	X	X	X	X		
[illegible]	2-21	1405	G	W	N	N	X	X	X	X		re
[illegible]	2-21	1225		W	N	N	X	X	X	X		ignore
[illegible]	2-21	1025		W	N	N	X	X	X	X		ignore

280-120560 Chain of Custody

Possible Hazard Identification

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:
Relinquished by: FISHBURN	Date/Time:	Company	Received by:	Date/Time: 2/25/19 1415	Company TA Den
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 21.0, 21.0 Sent by UPS 2/25/19

Ver: 08/04/2016

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-473500.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: darlene.bandy@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-120560-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 3/26/2019			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Pawnee	Project #: 28014378			
Site: Xcel Energy - Pawnee	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PrecSep_21 Radium-226 (1/3)	9320_Ra228/PrecSep_0 Radium-228 (2/3)	Ra226Ra228_GFPC/ Ra-226/Ra-228 (3/3)	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
PNMW-1B (280-120560-1)	2/21/19	17:15 Mountain		Water			X	X	X	2	
PNMW-2B (280-120560-2)	2/21/19	16:20 Mountain		Water			X	X	X	2	
PNMW-13 (280-120560-3)	2/21/19	13:30 Mountain		Water			X	X	X	1	
PNMW-14 (280-120560-4)	2/18/19	12:30 Mountain		Water			X	X	X	2	
PNMW-15 (280-120560-5)	2/21/19	14:30 Mountain		Water			X	X	X	2	
PNMW-16 (280-120560-6)	2/21/19	18:50 Mountain		Water			X	X	X	2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. 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/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification *Unconfirmed*			***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*		
Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliverable Rank: 4		Special Instructions/QC Requirements:		
Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by: [signature]	Date/Time: 2/26/19 1425	Company: TA DEN	Received by: Michael Heim	Date/Time: 2-27-19 0915	Company: TA STL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:		

Ver: 01/16/2019

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-473500.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: darlene.bandy@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-120560-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 3/26/2019			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Pawnee	Project #: 28014378			
Site: Xcel Energy - Pawnee	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PrecSep_21 Radium-226 (1/3)	9320_Ra228/PrecSep_0 Radium-228 (2/3)	Ra226Ra228_GFPC/ Ra-226/Ra-228 (3/3)	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
PNMW-1B (280-120560-1)	2/21/19	17:15 Mountain		Water			X	X	X	2	
PNMW-2B (280-120560-2)	2/21/19	16:20 Mountain		Water			X	X	X	2	
PNMW-13 (280-120560-3)	2/21/19	13:30 Mountain		Water			X	X	X	1	
PNMW-14 (280-120560-4)	2/18/19	12:30 Mountain		Water			X	X	X	2	
PNMW-15 (280-120560-5)	2/21/19	14:30 Mountain		Water			X	X	X	2	
PNMW-16 (280-120560-6)	2/21/19	18:50 Mountain		Water			X	X	X	2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. 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/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by: [signature]	Date/Time: 2/26/19 1425	Company: TASTEN	Received by: Michael Heim	Date/Time: 2-27-19 0915	Company: TASTL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:		

Ver: 01/16/2019

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-473499.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: darlene.bandy@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-120560-1
Address: 4101 Shuffel Street NW,	Due Date Requested: 3/18/2019			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Pawnee	Project #: 28014378			
Site: Xcel Energy - Pawnee	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A/3005A (MOD) 13 Total Metals (w/collision cell)	6010C/3005A Boron	7470A/7470A_Prep Mercury - 2/2	Total Number of containers	Special Instructions/Note:
			Preservation Code:								S61
PNMW-1B (280-120560-1)	2/21/19	17:15 Mountain		Water			X	X	X	1	Use Collision Cell
PNMW-2B (280-120560-2)	2/21/19	16:20 Mountain		Water			X	X	X	1	Use Collision Cell
PNMW-13 (280-120560-3)	2/21/19	13:30 Mountain		Water			X	X	X	1	Use Collision Cell
PNMW-14 (280-120560-4)	2/18/19	12:30 Mountain		Water			X	X	X	1	Use Collision Cell
PNMW-15 (280-120560-5)	2/21/19	14:30 Mountain		Water			X	X	X	1	Use Collision Cell
PNMW-16 (280-120560-6)	2/21/19	18:50 Mountain		Water			X	X	X	1	Use Collision Cell

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. 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/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification: Unconfirmed	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		2/26/19 1413	TAPEN		2/27/19 1030	TA
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** _____
Canton Facility

Client TA Denver Site Name _____ Cooler unpacked by:

Cooler Received on 2/22/19 Opened on 2/22/19

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA 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 Form
   IR GUN# IR-8 (CF **-0.2** °C) Observed Cooler Temp. 11.6 °C Corrected Cooler Temp. 11.4 °C
   IR GUN #36 (CF **+0.7**°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels be reconciled with the COC?	Yes	No
9. Were correct bottle(s) used for the test(s) indicated?	Yes	No
10. Sufficient quantity received to perform indicated analyses?	Yes	No
11. Are these work share samples?	Yes	No
If yes, Questions 12-16 have been checked at the originating laboratory.		
12. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# **HC861525**
13. Were VOAs on the COC?	Yes	No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	Yes	No
16. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by:

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-120560-1

Login Number: 120560
List Number: 1
Creator: Staack, KiAundra A

List Source: TestAmerica Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
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	Refer to Job Narrative for details.
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	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-120560-1

Login Number: 120560
List Number: 3
Creator: Hellm, Michael

List Source: TestAmerica St. Louis
List Creation: 02/27/19 03:18 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
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	0.8, 0.1
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?	N/A	
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.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-120560-1

Method: 9315 - Radium-226 (GFPC)

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

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)
280-120560-1	PNMW-1B	97.6
280-120560-2	PNMW-2B	105
280-120560-3	PNMW-13	96.2
280-120560-4	PNMW-14	106
280-120560-5	PNMW-15	85.3
280-120560-6	PNMW-16	105
LCS 160-417564/1-A	Lab Control Sample	97.6
MB 160-417564/24-A	Method Blank	95.9

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

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

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
280-120560-1	PNMW-1B	97.6	91.2
280-120560-2	PNMW-2B	105	87.1
280-120560-3	PNMW-13	96.2	92.7
280-120560-4	PNMW-14	106	86.0
280-120560-5	PNMW-15	85.3	89.7
280-120560-6	PNMW-16	105	87.5
LCS 160-417578/1-A	Lab Control Sample	97.6	89.0
MB 160-417578/24-A	Method Blank	95.9	82.2

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

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ANALYTICAL REPORT

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

Laboratory Job ID: 280-127107-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

For:
HDR Inc
1670 Broadway, Suite 3400
Denver, Colorado 80202

Attn: Molly Reeves

Darlene Bandy

Authorized for release by:
9/26/2019 10:11:32 PM

Darlene Bandy, Project Manager I
(303)736-0188
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LINKS

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The test results in this report meet all 2003 NELAC and 2009 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: 280-127107-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Qualifiers

Metals

Qualifier	Qualifier Description
J	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
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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Job ID: 280-127107-1

Laboratory: Eurofins TestAmerica, Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Pawnee

Report Number: 280-127107-1

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 8/9/2019 10:42 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 0.6º C, 1.1º C, 1.6º C and 1.9º C.

Receipt Exceptions

2 x 1L plastic containers requesting TSS and TDS analysis for the following sample were received with the client label indicating Nitric Acid preservative: PNMW-15 (280-127107-5). A pH test confirmed the volume is unpreserved; no corrective action is necessary as unpreserved volume is appropriate for the requested analyses. All other volume received was labeled correctly for their associated analyses.

TOTAL RECOVERABLE METALS

Samples PNMW-1B (280-127107-1), PNMW-2B (280-127107-2), PNMW-13 (280-127107-3), PNMW-14 (280-127107-4), PNMW-15 (280-127107-5), PNMW-16 (280-127107-6), PNMW-13-EB (280-127107-7), PNMW-P6-DUP (280-127107-8), P6 (280-127107-9), P7 (280-127107-10) and P18B (280-127107-11) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 08/14/2019 and analyzed on 08/15/2019.

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

TOTAL RECOVERABLE METALS (ICPMS)

Samples PNMW-1B (280-127107-1), PNMW-2B (280-127107-2), PNMW-13 (280-127107-3), PNMW-14 (280-127107-4), PNMW-15 (280-127107-5), PNMW-16 (280-127107-6), PNMW-13-EB (280-127107-7), PNMW-P6-DUP (280-127107-8), P6 (280-127107-9), P7 (280-127107-10) and P18B (280-127107-11) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 08/14/2019 and analyzed on 08/15/2019.

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

TOTAL DISSOLVED SOLIDS

Samples PNMW-1B (280-127107-1), PNMW-2B (280-127107-2), PNMW-13 (280-127107-3), PNMW-14 (280-127107-4), PNMW-15 (280-127107-5), PNMW-16 (280-127107-6), PNMW-13-EB (280-127107-7), PNMW-P6-DUP (280-127107-8), P6 (280-127107-9), P7 (280-127107-10) and P18B (280-127107-11) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 08/12/2019.

Job ID: 280-127107-1 (Continued)

Laboratory: Eurofins TestAmerica, Denver (Continued)

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

TOTAL SUSPENDED SOLIDS
Samples PNMW-1B (280-127107-1), PNMW-2B (280-127107-2), PNMW-13 (280-127107-3), PNMW-14 (280-127107-4), PNMW-15 (280-127107-5), PNMW-16 (280-127107-6), PNMW-13-EB (280-127107-7), PNMW-P6-DUP (280-127107-8), P6 (280-127107-9), P7 (280-127107-10) and P18B (280-127107-11) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 08/13/2019 and 08/14/2019.

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

CORROSIVITY (PH)
Samples PNMW-1B (280-127107-1), PNMW-2B (280-127107-2), PNMW-13 (280-127107-3), PNMW-14 (280-127107-4), PNMW-15 (280-127107-5), PNMW-16 (280-127107-6), PNMW-13-EB (280-127107-7), PNMW-P6-DUP (280-127107-8), P6 (280-127107-9), P7 (280-127107-10) and P18B (280-127107-11) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 08/12/2019.

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

ANIONS (28 DAYS)
Samples PNMW-1B (280-127107-1), PNMW-2B (280-127107-2), PNMW-13 (280-127107-3), PNMW-14 (280-127107-4), PNMW-15 (280-127107-5), PNMW-16 (280-127107-6), PNMW-13-EB (280-127107-7), PNMW-P6-DUP (280-127107-8), P6 (280-127107-9), P7 (280-127107-10) and P18B (280-127107-11) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 08/14/2019.

Samples PNMW-1B (280-127107-1)[5X], PNMW-15 (280-127107-5)[5X], PNMW-16 (280-127107-6)[10X], PNMW-P6-DUP (280-127107-8) [5X], P6 (280-127107-9)[5X], P7 (280-127107-10)[2X] and P7 (280-127107-10)[20X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

The following sample was analyzed at a dilution due to the Matrix Conductivity Threshold (MCT) of the instrument for fluoride, method 9056A_28D, batch 467440: P7 (280-127107-10). The reporting limits have been adjusted accordingly.

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

RADIUM-226 (GFPC)
Samples PNMW-1B (280-127107-1), PNMW-2B (280-127107-2), PNMW-13 (280-127107-3), PNMW-14 (280-127107-4), PNMW-15 (280-127107-5), PNMW-16 (280-127107-6), PNMW-13-EB (280-127107-7), PNMW-P6-DUP (280-127107-8), P6 (280-127107-9), P7 (280-127107-10) and P18B (280-127107-11) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 08/14/2019 and 08/15/2019 and analyzed on 09/05/2019 and 09/13/2019.

The following sample was prepared at a reduced aliquot due to discoloration and heavy sediment levels: PNMW-14 (280-127107-4).

Insufficient sample volume was available to perform a sample duplicate for the following samples: PNMW-1B (280-127107-1), PNMW-13 (280-127107-3) and PNMW-15 (280-127107-5). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Insufficient sample volume was available to perform a sample duplicate for the following samples: PNMW-2B (280-127107-2), PNMW-14 (280-127107-4), PNMW-16 (280-127107-6), PNMW-13-EB (280-127107-7), PNMW-P6-DUP (280-127107-8), P6 (280-127107-9), P7 (280-127107-10) and P18B (280-127107-11). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

The Method Blank (MB) exhibited a negative result greater in magnitude than the 3 sigma TPU. This occurrence was evaluated and determined to be random in nature. Sporadic occurrences such as this are statistically expected. No further action is required. PNMW-1B (280-127107-1), PNMW-13 (280-127107-3), PNMW-15 (280-127107-5), (LCS 160-439523/1-A), (LCSD 160-439523/2-A) and (MB 160-439523/22-A)

Job ID: 280-127107-1 (Continued)

Laboratory: Eurofins TestAmerica, Denver (Continued)

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

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

RADIUM-228

Samples PNMW-1B (280-127107-1), PNMW-2B (280-127107-2), PNMW-13 (280-127107-3), PNMW-14 (280-127107-4), PNMW-15 (280-127107-5), PNMW-16 (280-127107-6), PNMW-13-EB (280-127107-7), PNMW-P6-DUP (280-127107-8), P6 (280-127107-9), P7 (280-127107-10) and P18B (280-127107-11) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 08/14/2019 and 08/15/2019 and analyzed on 09/05/2019.

The following sample was prepared at a reduced aliquot due to discoloration and heavy sediment levels: PNMW-14 (280-127107-4).

The following sample did not meet the detection goal: PNMW-14 (280-127107-4). The samples were prepared at a reduced aliquot due to discoloration and heavy sediment levels. Analytical results are reported with the MDC achieved.

Insufficient sample volume was available to perform a sample duplicate for the following samples: PNMW-1B (280-127107-1), PNMW-13 (280-127107-3) and PNMW-15 (280-127107-5). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Insufficient sample volume was available to perform a sample duplicate for the following samples: PNMW-2B (280-127107-2), PNMW-14 (280-127107-4), PNMW-16 (280-127107-6), PNMW-13-EB (280-127107-7), PNMW-P6-DUP (280-127107-8), P6 (280-127107-9), P7 (280-127107-10) and P18B (280-127107-11). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

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

RADIUM-226/RADIUM-228 (GFPC)

Samples PNMW-1B (280-127107-1), PNMW-2B (280-127107-2), PNMW-13 (280-127107-3), PNMW-14 (280-127107-4), PNMW-15 (280-127107-5), PNMW-16 (280-127107-6), PNMW-13-EB (280-127107-7), PNMW-P6-DUP (280-127107-8), P6 (280-127107-9), P7 (280-127107-10) and P18B (280-127107-11) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 09/25/2019.

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

Detection Summary

Client: HDR Inc
Job ID: 280-127107-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Client Sample ID: PNMW-1B — Lab Sample ID: 280-127107-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.26		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.033		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.00037	J	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Calcium	110		1.0	0.58	mg/L	1		6020A	Total Recoverable
Chromium	0.0024		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0043	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.015		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Thallium	0.00046	J	0.0010	0.00020	mg/L	1		6020A	Total Recoverable
Lithium	0.074		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.8	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	58		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	0.63		0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	230		25	5.2	mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	890		20	9.4	mg/L	1		SM 2540C	Total/NA

Client Sample ID: PNMW-2B — Lab Sample ID: 280-127107-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.057	J	0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.15		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	76		1.0	0.58	mg/L	1		6020A	Total Recoverable
Chromium	0.0032		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0033	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0024	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.034		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.9	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	9.5		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	0.52		0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	19		5.0	1.0	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	430		10	4.7	mg/L	1		SM 2540C	Total/NA

Client Sample ID: PNMW-13 — Lab Sample ID: 280-127107-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.24		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.047		0.0050	0.0022	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Denver

Client Sample ID: PNMW-13 (Continued)
Lab Sample ID: 280-127107-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	37		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.00021	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0055		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0057	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0016	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Thallium	0.00042	J	0.0010	0.00020	mg/L	1		6020A	Total Recoverable
Lithium	0.054		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.4	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	4.0		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	0.95		0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	36		5.0	1.0	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	400		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	51		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-14
Lab Sample ID: 280-127107-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.073	J	0.10	0.023	mg/L	1		6010C	Total Recoverable
Arsenic	0.0022	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.13		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	45		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.0022		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.017		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0062	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.0034		0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.0018	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.036		0.0080	0.0017	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	20.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	2.0	J	3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	0.95		0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	21		5.0	1.0	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	280		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	180		4.0	1.1	mg/L	1		SM 2540D	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: HDR Inc
Job ID: 280-127107-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Client Sample ID: PNMW-15
Lab Sample ID: 280-127107-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.35		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.029		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	120		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.0012		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0017	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.00095	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.096		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	3.5		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	0.30	J	0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	520		25	5.2	mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	1100		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	34		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-16
Lab Sample ID: 280-127107-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.42		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.021		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	220		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.0037		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0053		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0019	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lithium	0.14		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	2.3	J	3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	0.20	J	0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	990		50	10	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	1800		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	14		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-13-EB
Lab Sample ID: 280-127107-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
pH adj. to 25 deg C	6.1	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: HDR Inc
Job ID: 280-127107-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Client Sample ID: PNMW-P6-DUP
Lab Sample ID: 280-127107-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.26		0.10	0.023	mg/L	1		6010C	Total Recoverable
Arsenic	0.0014	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.033		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	100		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.0015		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0014	J	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0054	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.0013		0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Lithium	0.029		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.9	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.3	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	94		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	0.59		0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	320		25	5.2	mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	880		20	9.4	mg/L	1		SM 2540C	Total/NA

Client Sample ID: P6
Lab Sample ID: 280-127107-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.27		0.10	0.023	mg/L	1		6010C	Total Recoverable
Arsenic	0.0012	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.033		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	100		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.0015		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0018	J	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0053	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.0011		0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Lithium	0.029		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.9	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.8	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	94		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	0.59		0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	310		25	5.2	mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	870		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	2.4	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: HDR Inc
Job ID: 280-127107-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Client Sample ID: P7 — Lab Sample ID: 280-127107-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.087	J	0.10	0.023	mg/L	1		6010C	Total Recoverable
Arsenic	0.0012	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.044		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	490		1.0	0.58	mg/L	1		6020A	Total Recoverable
Chromium	0.0045		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Selenium	0.0046	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.035		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.6	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	290		6.0	2.0	mg/L	2		9056A	Total/NA
Sulfate	1100		100	21	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	2500		40	19	mg/L	1		SM 2540C	Total/NA

Client Sample ID: P18B — Lab Sample ID: 280-127107-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.039	J	0.10	0.023	mg/L	1		6010C	Total Recoverable
Arsenic	0.0016	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.049		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	120		1.0	0.58	mg/L	1		6020A	Total Recoverable
Chromium	0.0061		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0014	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0020	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.024		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	56		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	0.23	J	0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	170		5.0	1.0	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	280		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

This Detection Summary does not include radiochemical test results.

Method Summary

Client: HDR Inc
Job ID: 280-127107-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	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
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
3005A	Preparation, Total Recoverable or Dissolved Metals	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: 280-127107-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
280-127107-1	PNMW-1B	Water	08/07/19 20:01	08/09/19 10:42	
280-127107-2	PNMW-2B	Water	08/07/19 19:10	08/09/19 10:42	
280-127107-3	PNMW-13	Water	08/08/19 17:30	08/09/19 10:42	
280-127107-4	PNMW-14	Water	08/08/19 17:50	08/09/19 10:42	
280-127107-5	PNMW-15	Water	08/07/19 11:39	08/09/19 10:42	
280-127107-6	PNMW-16	Water	08/07/19 17:45	08/09/19 10:42	
280-127107-7	PNMW-13-EB	Water	08/08/19 09:45	08/09/19 10:42	
280-127107-8	PNMW-P6-DUP	Water	08/07/19 15:20	08/09/19 10:42	
280-127107-9	P6	Water	08/07/19 15:20	08/09/19 10:42	
280-127107-10	P7	Water	08/06/19 20:50	08/09/19 10:42	
280-127107-11	P18B	Water	08/06/19 10:30	08/09/19 10:42	

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

Client Sample ID: PNMW-1B
Date Collected: 08/07/19 20:01
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.26		0.10	0.023	mg/L		08/14/19 14:00	08/15/19 17:00	1

Client Sample ID: PNMW-2B
Date Collected: 08/07/19 19:10
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.057	J	0.10	0.023	mg/L		08/14/19 14:00	08/15/19 17:05	1

Client Sample ID: PNMW-13
Date Collected: 08/08/19 17:30
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.24		0.10	0.023	mg/L		08/14/19 14:00	08/15/19 16:29	1

Client Sample ID: PNMW-14
Date Collected: 08/08/19 17:50
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.073	J	0.10	0.023	mg/L		08/14/19 14:00	08/15/19 17:10	1

Client Sample ID: PNMW-15
Date Collected: 08/07/19 11:39
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.35		0.10	0.023	mg/L		08/14/19 14:00	08/15/19 17:15	1

Client Sample ID: PNMW-16
Date Collected: 08/07/19 17:45
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.42		0.10	0.023	mg/L		08/14/19 14:00	08/15/19 17:19	1

Client Sample ID: PNMW-13-EB
Date Collected: 08/08/19 09:45
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		08/14/19 14:00	08/15/19 17:24	1

Client Sample ID: PNMW-P6-DUP
Date Collected: 08/07/19 15:20
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.26		0.10	0.023	mg/L		08/14/19 14:00	08/15/19 17:29	1

Client Sample ID: P6
Date Collected: 08/07/19 15:20
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.27		0.10	0.023	mg/L		08/14/19 14:00	08/15/19 17:34	1

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

Client Sample ID: P7
Date Collected: 08/06/19 20:50
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-10
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.087**	**J**	0.10	0.023	mg/L		08/14/19 14:00	08/15/19 17:38	1

Client Sample ID: P18B
Date Collected: 08/06/19 10:30
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-11
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.039**	**J**	0.10	0.023	mg/L		08/14/19 14:00	08/15/19 17:43	1

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

Client Sample ID: PNMW-1B
Date Collected: 08/07/19 20:01
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/14/19 14:00	08/15/19 14:50	1
Arsenic	ND		0.0050	0.00075	mg/L		08/14/19 14:00	08/15/19 14:50	1
Barium	**0.033**		0.0050	0.0022	mg/L		08/14/19 14:00	08/15/19 14:50	1
Beryllium	**0.00037**	**J**	0.0010	0.00031	mg/L		08/14/19 14:00	08/15/19 14:50	1
Calcium	**110**		1.0	0.58	mg/L		08/14/19 14:00	08/15/19 14:50	1
Cadmium	ND		0.0010	0.00021	mg/L		08/14/19 14:00	08/15/19 14:50	1
Cobalt	ND		0.0010	0.00019	mg/L		08/14/19 14:00	08/15/19 14:50	1
Chromium	**0.0024**		0.0020	0.00098	mg/L		08/14/19 14:00	08/15/19 14:50	1
Molybdenum	**0.0043**	**J**	0.010	0.0011	mg/L		08/14/19 14:00	08/15/19 14:50	1
Lead	ND		0.0010	0.00045	mg/L		08/14/19 14:00	08/15/19 14:50	1
Selenium	**0.015**		0.0050	0.00089	mg/L		08/14/19 14:00	08/15/19 14:50	1
Thallium	**0.00046**	**J**	0.0010	0.00020	mg/L		08/14/19 14:00	08/15/19 14:50	1
Lithium	**0.074**		0.0080	0.0017	mg/L		08/14/19 14:00	08/15/19 14:50	1

Client Sample ID: PNMW-2B
Date Collected: 08/07/19 19:10
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/14/19 14:00	08/15/19 14:57	1
Arsenic	ND		0.0050	0.00075	mg/L		08/14/19 14:00	08/15/19 14:57	1
Barium	**0.15**		0.0050	0.0022	mg/L		08/14/19 14:00	08/15/19 14:57	1
Beryllium	ND		0.0010	0.00031	mg/L		08/14/19 14:00	08/15/19 14:57	1
Calcium	**76**		1.0	0.58	mg/L		08/14/19 14:00	08/15/19 14:57	1
Cadmium	ND		0.0010	0.00021	mg/L		08/14/19 14:00	08/15/19 14:57	1
Cobalt	ND		0.0010	0.00019	mg/L		08/14/19 14:00	08/15/19 14:57	1
Chromium	**0.0032**		0.0020	0.00098	mg/L		08/14/19 14:00	08/15/19 14:57	1
Molybdenum	**0.0033**	**J**	0.010	0.0011	mg/L		08/14/19 14:00	08/15/19 14:57	1
Lead	ND		0.0010	0.00045	mg/L		08/14/19 14:00	08/15/19 14:57	1
Selenium	**0.0024**	**J**	0.0050	0.00089	mg/L		08/14/19 14:00	08/15/19 14:57	1
Thallium	ND		0.0010	0.00020	mg/L		08/14/19 14:00	08/15/19 14:57	1
Lithium	**0.034**		0.0080	0.0017	mg/L		08/14/19 14:00	08/15/19 14:57	1

Client Sample ID: PNMW-13
Date Collected: 08/08/19 17:30
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/14/19 14:00	08/15/19 14:39	1

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

Client Sample ID: PNMW-13
Date Collected: 08/08/19 17:30
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050	0.00075	mg/L		08/14/19 14:00	08/15/19 14:39	1
Barium	**0.047**		0.0050	0.0022	mg/L		08/14/19 14:00	08/15/19 14:39	1
Beryllium	ND		0.0010	0.00031	mg/L		08/14/19 14:00	08/15/19 14:39	1
Calcium	**37**		1.0	0.58	mg/L		08/14/19 14:00	08/15/19 14:39	1
Cadmium	ND		0.0010	0.00021	mg/L		08/14/19 14:00	08/15/19 14:39	1
Cobalt	**0.00021**	**J**	0.0010	0.00019	mg/L		08/14/19 14:00	08/15/19 14:39	1
Chromium	**0.0055**		0.0020	0.00098	mg/L		08/14/19 14:00	08/15/19 14:39	1
Molybdenum	**0.0057**	**J**	0.010	0.0011	mg/L		08/14/19 14:00	08/15/19 14:39	1
Lead	ND		0.0010	0.00045	mg/L		08/14/19 14:00	08/15/19 14:39	1
Selenium	**0.0016**	**J**	0.0050	0.00089	mg/L		08/14/19 14:00	08/15/19 14:39	1
Thallium	**0.00042**	**J**	0.0010	0.00020	mg/L		08/14/19 14:00	08/15/19 14:39	1
Lithium	**0.054**		0.0080	0.0017	mg/L		08/14/19 14:00	08/15/19 14:39	1

Client Sample ID: PNMW-14
Date Collected: 08/08/19 17:50
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/14/19 14:00	08/15/19 14:59	1
Arsenic	**0.0022**	**J**	0.0050	0.00075	mg/L		08/14/19 14:00	08/15/19 14:59	1
Barium	**0.13**		0.0050	0.0022	mg/L		08/14/19 14:00	08/15/19 14:59	1
Beryllium	ND		0.0010	0.00031	mg/L		08/14/19 14:00	08/15/19 14:59	1
Calcium	**45**		1.0	0.58	mg/L		08/14/19 14:00	08/15/19 14:59	1
Cadmium	ND		0.0010	0.00021	mg/L		08/14/19 14:00	08/15/19 14:59	1
Cobalt	**0.0022**		0.0010	0.00019	mg/L		08/14/19 14:00	08/15/19 14:59	1
Chromium	**0.017**		0.0020	0.00098	mg/L		08/14/19 14:00	08/15/19 14:59	1
Molybdenum	**0.0062**	**J**	0.010	0.0011	mg/L		08/14/19 14:00	08/15/19 14:59	1
Lead	**0.0034**		0.0010	0.00045	mg/L		08/14/19 14:00	08/15/19 14:59	1
Selenium	**0.0018**	**J**	0.0050	0.00089	mg/L		08/14/19 14:00	08/15/19 14:59	1
Thallium	ND		0.0010	0.00020	mg/L		08/14/19 14:00	08/15/19 14:59	1
Lithium	**0.036**		0.0080	0.0017	mg/L		08/14/19 14:00	08/15/19 14:59	1

Client Sample ID: PNMW-15
Date Collected: 08/07/19 11:39
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/14/19 14:00	08/15/19 15:02	1
Arsenic	ND		0.0050	0.00075	mg/L		08/14/19 14:00	08/15/19 15:02	1
Barium	**0.029**		0.0050	0.0022	mg/L		08/14/19 14:00	08/15/19 15:02	1
Beryllium	ND		0.0010	0.00031	mg/L		08/14/19 14:00	08/15/19 15:02	1
Calcium	**120**		1.0	0.58	mg/L		08/14/19 14:00	08/15/19 15:02	1
Cadmium	ND		0.0010	0.00021	mg/L		08/14/19 14:00	08/15/19 15:02	1
Cobalt	**0.0012**		0.0010	0.00019	mg/L		08/14/19 14:00	08/15/19 15:02	1
Chromium	ND		0.0020	0.00098	mg/L		08/14/19 14:00	08/15/19 15:02	1
Molybdenum	**0.0017**	**J**	0.010	0.0011	mg/L		08/14/19 14:00	08/15/19 15:02	1
Lead	ND		0.0010	0.00045	mg/L		08/14/19 14:00	08/15/19 15:02	1
Selenium	**0.00095**	**J**	0.0050	0.00089	mg/L		08/14/19 14:00	08/15/19 15:02	1
Thallium	ND		0.0010	0.00020	mg/L		08/14/19 14:00	08/15/19 15:02	1
Lithium	**0.096**		0.0080	0.0017	mg/L		08/14/19 14:00	08/15/19 15:02	1

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

Client Sample ID: PNMW-16
Date Collected: 08/07/19 17:45
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/14/19 14:00	08/15/19 15:04	1
Arsenic	ND		0.0050	0.00075	mg/L		08/14/19 14:00	08/15/19 15:04	1
Barium	**0.021**		0.0050	0.0022	mg/L		08/14/19 14:00	08/15/19 15:04	1
Beryllium	ND		0.0010	0.00031	mg/L		08/14/19 14:00	08/15/19 15:04	1
Calcium	**220**		1.0	0.58	mg/L		08/14/19 14:00	08/15/19 15:04	1
Cadmium	ND		0.0010	0.00021	mg/L		08/14/19 14:00	08/15/19 15:04	1
Cobalt	**0.0037**		0.0010	0.00019	mg/L		08/14/19 14:00	08/15/19 15:04	1
Chromium	**0.0053**		0.0020	0.00098	mg/L		08/14/19 14:00	08/15/19 15:04	1
Molybdenum	**0.0019**	**J**	0.010	0.0011	mg/L		08/14/19 14:00	08/15/19 15:04	1
Lead	ND		0.0010	0.00045	mg/L		08/14/19 14:00	08/15/19 15:04	1
Selenium	ND		0.0050	0.00089	mg/L		08/14/19 14:00	08/15/19 15:04	1
Thallium	ND		0.0010	0.00020	mg/L		08/14/19 14:00	08/15/19 15:04	1
Lithium	**0.14**		0.0080	0.0017	mg/L		08/14/19 14:00	08/15/19 15:04	1

Client Sample ID: PNMW-13-EB
Date Collected: 08/08/19 09:45
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/14/19 14:00	08/15/19 15:06	1
Arsenic	ND		0.0050	0.00075	mg/L		08/14/19 14:00	08/15/19 15:06	1
Barium	ND		0.0050	0.0022	mg/L		08/14/19 14:00	08/15/19 15:06	1
Beryllium	ND		0.0010	0.00031	mg/L		08/14/19 14:00	08/15/19 15:06	1
Calcium	ND		1.0	0.58	mg/L		08/14/19 14:00	08/15/19 15:06	1
Cadmium	ND		0.0010	0.00021	mg/L		08/14/19 14:00	08/15/19 15:06	1
Cobalt	ND		0.0010	0.00019	mg/L		08/14/19 14:00	08/15/19 15:06	1
Chromium	ND		0.0020	0.00098	mg/L		08/14/19 14:00	08/15/19 15:06	1
Molybdenum	ND		0.010	0.0011	mg/L		08/14/19 14:00	08/15/19 15:06	1
Lead	ND		0.0010	0.00045	mg/L		08/14/19 14:00	08/15/19 15:06	1
Selenium	ND		0.0050	0.00089	mg/L		08/14/19 14:00	08/15/19 15:06	1
Thallium	ND		0.0010	0.00020	mg/L		08/14/19 14:00	08/15/19 15:06	1
Lithium	ND		0.0080	0.0017	mg/L		08/14/19 14:00	08/15/19 15:06	1

Client Sample ID: PNMW-P6-DUP
Date Collected: 08/07/19 15:20
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/14/19 14:00	08/15/19 15:09	1
Arsenic	**0.0014**	**J**	0.0050	0.00075	mg/L		08/14/19 14:00	08/15/19 15:09	1
Barium	**0.033**		0.0050	0.0022	mg/L		08/14/19 14:00	08/15/19 15:09	1
Beryllium	ND		0.0010	0.00031	mg/L		08/14/19 14:00	08/15/19 15:09	1
Calcium	**100**		1.0	0.58	mg/L		08/14/19 14:00	08/15/19 15:09	1
Cadmium	ND		0.0010	0.00021	mg/L		08/14/19 14:00	08/15/19 15:09	1
Cobalt	**0.0015**		0.0010	0.00019	mg/L		08/14/19 14:00	08/15/19 15:09	1
Chromium	**0.0014**	**J**	0.0020	0.00098	mg/L		08/14/19 14:00	08/15/19 15:09	1
Molybdenum	**0.0054**	**J**	0.010	0.0011	mg/L		08/14/19 14:00	08/15/19 15:09	1
Lead	**0.0013**		0.0010	0.00045	mg/L		08/14/19 14:00	08/15/19 15:09	1
Selenium	ND		0.0050	0.00089	mg/L		08/14/19 14:00	08/15/19 15:09	1
Thallium	ND		0.0010	0.00020	mg/L		08/14/19 14:00	08/15/19 15:09	1
Lithium	**0.029**		0.0080	0.0017	mg/L		08/14/19 14:00	08/15/19 15:09	1

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

Client Sample ID: P6
Date Collected: 08/07/19 15:20
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/14/19 14:00	08/15/19 15:11	1
Arsenic	**0.0012**	**J**	0.0050	0.00075	mg/L		08/14/19 14:00	08/15/19 15:11	1
Barium	**0.033**		0.0050	0.0022	mg/L		08/14/19 14:00	08/15/19 15:11	1
Beryllium	ND		0.0010	0.00031	mg/L		08/14/19 14:00	08/15/19 15:11	1
Calcium	**100**		1.0	0.58	mg/L		08/14/19 14:00	08/15/19 15:11	1
Cadmium	ND		0.0010	0.00021	mg/L		08/14/19 14:00	08/15/19 15:11	1
Cobalt	**0.0015**		0.0010	0.00019	mg/L		08/14/19 14:00	08/15/19 15:11	1
Chromium	**0.0018**	**J**	0.0020	0.00098	mg/L		08/14/19 14:00	08/15/19 15:11	1
Molybdenum	**0.0053**	**J**	0.010	0.0011	mg/L		08/14/19 14:00	08/15/19 15:11	1
Lead	**0.0011**		0.0010	0.00045	mg/L		08/14/19 14:00	08/15/19 15:11	1
Selenium	ND		0.0050	0.00089	mg/L		08/14/19 14:00	08/15/19 15:11	1
Thallium	ND		0.0010	0.00020	mg/L		08/14/19 14:00	08/15/19 15:11	1
Lithium	**0.029**		0.0080	0.0017	mg/L		08/14/19 14:00	08/15/19 15:11	1

Client Sample ID: P7
Date Collected: 08/06/19 20:50
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-10
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/14/19 14:00	08/15/19 15:13	1
Arsenic	**0.0012**	**J**	0.0050	0.00075	mg/L		08/14/19 14:00	08/15/19 15:13	1
Barium	**0.044**		0.0050	0.0022	mg/L		08/14/19 14:00	08/15/19 15:13	1
Beryllium	ND		0.0010	0.00031	mg/L		08/14/19 14:00	08/15/19 15:13	1
Calcium	**490**		1.0	0.58	mg/L		08/14/19 14:00	08/15/19 15:13	1
Cadmium	ND		0.0010	0.00021	mg/L		08/14/19 14:00	08/15/19 15:13	1
Cobalt	ND		0.0010	0.00019	mg/L		08/14/19 14:00	08/15/19 15:13	1
Chromium	**0.0045**		0.0020	0.00098	mg/L		08/14/19 14:00	08/15/19 15:13	1
Molybdenum	ND		0.010	0.0011	mg/L		08/14/19 14:00	08/15/19 15:13	1
Lead	ND		0.0010	0.00045	mg/L		08/14/19 14:00	08/15/19 15:13	1
Selenium	**0.0046**	**J**	0.0050	0.00089	mg/L		08/14/19 14:00	08/15/19 15:13	1
Thallium	ND		0.0010	0.00020	mg/L		08/14/19 14:00	08/15/19 15:13	1
Lithium	**0.035**		0.0080	0.0017	mg/L		08/14/19 14:00	08/15/19 15:13	1

Client Sample ID: P18B
Date Collected: 08/06/19 10:30
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-11
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/14/19 14:00	08/15/19 15:16	1
Arsenic	**0.0016**	**J**	0.0050	0.00075	mg/L		08/14/19 14:00	08/15/19 15:16	1
Barium	**0.049**		0.0050	0.0022	mg/L		08/14/19 14:00	08/15/19 15:16	1
Beryllium	ND		0.0010	0.00031	mg/L		08/14/19 14:00	08/15/19 15:16	1
Calcium	**120**		1.0	0.58	mg/L		08/14/19 14:00	08/15/19 15:16	1
Cadmium	ND		0.0010	0.00021	mg/L		08/14/19 14:00	08/15/19 15:16	1
Cobalt	ND		0.0010	0.00019	mg/L		08/14/19 14:00	08/15/19 15:16	1
Chromium	**0.0061**		0.0020	0.00098	mg/L		08/14/19 14:00	08/15/19 15:16	1
Molybdenum	**0.0014**	**J**	0.010	0.0011	mg/L		08/14/19 14:00	08/15/19 15:16	1
Lead	ND		0.0010	0.00045	mg/L		08/14/19 14:00	08/15/19 15:16	1
Selenium	**0.0020**	**J**	0.0050	0.00089	mg/L		08/14/19 14:00	08/15/19 15:16	1
Thallium	ND		0.0010	0.00020	mg/L		08/14/19 14:00	08/15/19 15:16	1
Lithium	**0.024**		0.0080	0.0017	mg/L		08/14/19 14:00	08/15/19 15:16	1

General Chemistry

Client Sample ID: PNMW-1B
Date Collected: 08/07/19 20:01
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU			08/12/19 15:37	1
Temperature	20.7	HF	1.0	1.0	Degrees C			08/12/19 15:37	1
Chloride	58		3.0	1.0	mg/L			08/14/19 00:26	1
Fluoride	0.63		0.50	0.17	mg/L			08/14/19 00:26	1
Sulfate	230		25	5.2	mg/L			08/14/19 00:43	5
Total Dissolved Solids (TDS)	890		20	9.4	mg/L			08/12/19 14:55	1
Total Suspended Solids	ND		4.0	1.1	mg/L			08/14/19 14:42	1

Client Sample ID: PNMW-2B
Date Collected: 08/07/19 19:10
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-2
Matrix: Water

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			08/12/19 15:51	1
Temperature	21.0	HF	1.0	1.0	Degrees C			08/12/19 15:51	1
Chloride	9.5		3.0	1.0	mg/L			08/14/19 00:59	1
Fluoride	0.52		0.50	0.17	mg/L			08/14/19 00:59	1
Sulfate	19		5.0	1.0	mg/L			08/14/19 00:59	1
Total Dissolved Solids (TDS)	430		10	4.7	mg/L			08/12/19 14:55	1
Total Suspended Solids	ND		4.0	1.1	mg/L			08/14/19 14:42	1

Client Sample ID: PNMW-13
Date Collected: 08/08/19 17:30
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU			08/12/19 15:54	1
Temperature	20.4	HF	1.0	1.0	Degrees C			08/12/19 15:54	1
Chloride	4.0		3.0	1.0	mg/L			08/14/19 01:32	1
Fluoride	0.95		0.50	0.17	mg/L			08/14/19 01:32	1
Sulfate	36		5.0	1.0	mg/L			08/14/19 01:32	1
Total Dissolved Solids (TDS)	400		10	4.7	mg/L			08/12/19 14:55	1
Total Suspended Solids	51		4.0	1.1	mg/L			08/14/19 14:42	1

Client Sample ID: PNMW-14
Date Collected: 08/08/19 17:50
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-4
Matrix: Water

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			08/12/19 15:58	1
Temperature	20.1	HF	1.0	1.0	Degrees C			08/12/19 15:58	1
Chloride	2.0	J	3.0	1.0	mg/L			08/14/19 01:48	1
Fluoride	0.95		0.50	0.17	mg/L			08/14/19 01:48	1
Sulfate	21		5.0	1.0	mg/L			08/14/19 01:48	1
Total Dissolved Solids (TDS)	280		10	4.7	mg/L			08/12/19 14:55	1
Total Suspended Solids	180		4.0	1.1	mg/L			08/14/19 14:42	1

Client Sample ID: PNMW-15
Date Collected: 08/07/19 11:39
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-5
Matrix: Water

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			08/12/19 16:02	1
Temperature	20.6	HF	1.0	1.0	Degrees C			08/12/19 16:02	1

General Chemistry (Continued)

Client Sample ID: PNMW-15
Date Collected: 08/07/19 11:39
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	3.5		3.0	1.0	mg/L			08/14/19 02:05	1
Fluoride	0.30	J	0.50	0.17	mg/L			08/14/19 02:05	1
Sulfate	520		25	5.2	mg/L			08/14/19 02:21	5
Total Dissolved Solids (TDS)	1100		20	9.4	mg/L			08/12/19 14:55	1
Total Suspended Solids	34		4.0	1.1	mg/L			08/14/19 14:42	1

Client Sample ID: PNMW-16
Date Collected: 08/07/19 17:45
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-6
Matrix: Water

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			08/12/19 16:09	1
Temperature	21.0	HF	1.0	1.0	Degrees C			08/12/19 16:09	1
Chloride	2.3	J	3.0	1.0	mg/L			08/14/19 03:10	1
Fluoride	0.20	J	0.50	0.17	mg/L			08/14/19 03:10	1
Sulfate	990		50	10	mg/L			08/14/19 03:27	10
Total Dissolved Solids (TDS)	1800		20	9.4	mg/L			08/12/19 14:55	1
Total Suspended Solids	14		4.0	1.1	mg/L			08/14/19 14:42	1

Client Sample ID: PNMW-13-EB
Date Collected: 08/08/19 09:45
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	6.1	HF	0.1	0.1	SU			08/12/19 16:13	1
Temperature	21.1	HF	1.0	1.0	Degrees C			08/12/19 16:13	1
Chloride	ND		3.0	1.0	mg/L			08/14/19 03:43	1
Fluoride	ND		0.50	0.17	mg/L			08/14/19 03:43	1
Sulfate	ND		5.0	1.0	mg/L			08/14/19 03:43	1
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			08/12/19 14:55	1
Total Suspended Solids	ND		4.0	1.1	mg/L			08/14/19 14:42	1

Client Sample ID: PNMW-P6-DUP
Date Collected: 08/07/19 15:20
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-8
Matrix: Water

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			08/12/19 16:16	1
Temperature	21.3	HF	1.0	1.0	Degrees C			08/12/19 16:16	1
Chloride	94		3.0	1.0	mg/L			08/14/19 04:00	1
Fluoride	0.59		0.50	0.17	mg/L			08/14/19 04:00	1
Sulfate	320		25	5.2	mg/L			08/14/19 04:16	5
Total Dissolved Solids (TDS)	880		20	9.4	mg/L			08/12/19 14:55	1
Total Suspended Solids	ND		4.0	1.1	mg/L			08/14/19 14:42	1

Client Sample ID: P6
Date Collected: 08/07/19 15:20
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-9
Matrix: Water

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			08/12/19 16:20	1
Temperature	20.8	HF	1.0	1.0	Degrees C			08/12/19 16:20	1
Chloride	94		3.0	1.0	mg/L			08/14/19 04:32	1
Fluoride	0.59		0.50	0.17	mg/L			08/14/19 04:32	1

General Chemistry (Continued)

Client Sample ID: P6
Date Collected: 08/07/19 15:20
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**310**		25	5.2	mg/L			08/14/19 04:49	5
Total Dissolved Solids (TDS)	**870**		20	9.4	mg/L			08/12/19 14:55	1
Total Suspended Solids	**2.4**	**J**	4.0	1.1	mg/L			08/14/19 14:42	1

Client Sample ID: P7
Date Collected: 08/06/19 20:50
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-10
Matrix: Water

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			08/12/19 16:24	1
Temperature	**20.7**	**HF**	1.0	1.0	Degrees C			08/12/19 16:24	1
Chloride	**290**		6.0	2.0	mg/L			08/14/19 05:05	2
Fluoride	ND		1.0	0.33	mg/L			08/14/19 05:05	2
Sulfate	**1100**		100	21	mg/L			08/14/19 05:22	20
Total Dissolved Solids (TDS)	**2500**		40	19	mg/L			08/12/19 14:55	1
Total Suspended Solids	ND		4.0	1.1	mg/L			08/13/19 11:22	1

Client Sample ID: P18B
Date Collected: 08/06/19 10:30
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-11
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	**7.8**	**HF**	0.1	0.1	SU			08/12/19 16:28	1
Temperature	**20.6**	**HF**	1.0	1.0	Degrees C			08/12/19 16:28	1
Chloride	**56**		3.0	1.0	mg/L			08/14/19 05:38	1
Fluoride	**0.23**	**J**	0.50	0.17	mg/L			08/14/19 05:38	1
Sulfate	**170**		5.0	1.0	mg/L			08/14/19 05:38	1
Total Dissolved Solids (TDS)	**280**		10	4.7	mg/L			08/12/19 14:55	1
Total Suspended Solids	**2.8**	**J**	4.0	1.1	mg/L			08/13/19 11:22	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: PNMW-1B
Date Collected: 08/07/19 20:01
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.106	U	0.165	0.165	1.00	0.285	pCi/L	08/14/19 09:09	09/05/19 21:54	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*87.0*		*40 - 110*	*08/14/19 09:09*	*09/05/19 21:54*	*1*

Client Sample ID: PNMW-2B
Date Collected: 08/07/19 19:10
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.254**		0.107	0.109	1.00	0.127	pCi/L	08/15/19 10:47	09/13/19 07:35	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*99.2*		*40 - 110*	*08/15/19 10:47*	*09/13/19 07:35*	*1*

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: PNMW-13
Date Collected: 08/08/19 17:30
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0219	U	0.181	0.181	1.00	0.350	pCi/L	08/14/19 09:09	09/05/19 21:54	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*88.4*		*40 - 110*	*08/14/19 09:09*	*09/05/19 21:54*	*1*

Client Sample ID: PNMW-14
Date Collected: 08/08/19 17:50
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.276	U	0.197	0.198	1.00	0.282	pCi/L	08/15/19 10:47	09/13/19 07:35	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*82.2*		*40 - 110*	*08/15/19 10:47*	*09/13/19 07:35*	*1*

Client Sample ID: PNMW-15
Date Collected: 08/07/19 11:39
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.152	U	0.169	0.169	1.00	0.271	pCi/L	08/14/19 09:09	09/05/19 21:54	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*87.3*		*40 - 110*	*08/14/19 09:09*	*09/05/19 21:54*	*1*

Client Sample ID: PNMW-16
Date Collected: 08/07/19 17:45
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.200**		0.102	0.103	1.00	0.128	pCi/L	08/15/19 10:47	09/13/19 07:35	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*90.1*		*40 - 110*	*08/15/19 10:47*	*09/13/19 07:35*	*1*

Client Sample ID: PNMW-13-EB
Date Collected: 08/08/19 09:45
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0279	U	0.0750	0.0751	1.00	0.136	pCi/L	08/15/19 10:47	09/13/19 07:35	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.7*		*40 - 110*	*08/15/19 10:47*	*09/13/19 07:35*	*1*

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: PNMW-P6-DUP
Date Collected: 08/07/19 15:20
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0282	U	0.0689	0.0690	1.00	0.126	pCi/L	08/15/19 10:47	09/13/19 07:35	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*86.7*		*40 - 110*	*08/15/19 10:47*	*09/13/19 07:35*	*1*

Client Sample ID: P6
Date Collected: 08/07/19 15:20
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0358	U	0.0750	0.0751	1.00	0.135	pCi/L	08/15/19 10:47	09/13/19 07:36	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*81.9*		*40 - 110*	*08/15/19 10:47*	*09/13/19 07:36*	*1*

Client Sample ID: P7
Date Collected: 08/06/19 20:50
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-10
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0262	U	0.0581	0.0581	1.00	0.106	pCi/L	08/15/19 10:47	09/13/19 07:36	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.5*		*40 - 110*	*08/15/19 10:47*	*09/13/19 07:36*	*1*

Client Sample ID: P18B
Date Collected: 08/06/19 10:30
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-11
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0174	U	0.0659	0.0659	1.00	0.125	pCi/L	08/15/19 10:47	09/13/19 07:36	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.2*		*40 - 110*	*08/15/19 10:47*	*09/13/19 07:36*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: PNMW-1B
Date Collected: 08/07/19 20:01
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0599	U	0.280	0.281	1.00	0.486	pCi/L	08/14/19 09:46	09/05/19 09:04	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*87.0*		*40 - 110*	*08/14/19 09:46*	*09/05/19 09:04*	*1*

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

Client Sample ID: PNMW-1B
Date Collected: 08/07/19 20:01
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-1
Matrix: Water

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Y Carrier	96.1		40 - 110	08/14/19 09:46	09/05/19 09:04	1

Client Sample ID: PNMW-2B
Date Collected: 08/07/19 19:10
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.288	U	0.256	0.258	1.00	0.412	pCi/L	08/15/19 11:21	09/05/19 14:53	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	99.2		40 - 110	08/15/19 11:21	09/05/19 14:53	1
Y Carrier	85.2		40 - 110	08/15/19 11:21	09/05/19 14:53	1

Client Sample ID: PNMW-13
Date Collected: 08/08/19 17:30
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.141	U	0.269	0.269	1.00	0.456	pCi/L	08/14/19 09:46	09/05/19 09:04	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	88.4		40 - 110	08/14/19 09:46	09/05/19 09:04	1
Y Carrier	86.7		40 - 110	08/14/19 09:46	09/05/19 09:04	1

Client Sample ID: PNMW-14
Date Collected: 08/08/19 17:50
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.467	U G	0.629	0.631	1.00	1.05	pCi/L	08/15/19 11:21	09/05/19 14:53	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	82.2		40 - 110	08/15/19 11:21	09/05/19 14:53	1
Y Carrier	81.1		40 - 110	08/15/19 11:21	09/05/19 14:53	1

Client Sample ID: PNMW-15
Date Collected: 08/07/19 11:39
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.614**		0.305	0.310	1.00	0.453	pCi/L	08/14/19 09:46	09/05/19 09:04	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	87.3		40 - 110	08/14/19 09:46	09/05/19 09:04	1
Y Carrier	87.5		40 - 110	08/14/19 09:46	09/05/19 09:04	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: PNMW-16
Date Collected: 08/07/19 17:45
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.347	U	0.267	0.269	1.00	0.420	pCi/L	08/15/19 11:21	09/05/19 14:53	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*90.1*		*40 - 110*	*08/15/19 11:21*	*09/05/19 14:53*	*1*
Y Carrier	*82.6*		*40 - 110*	*08/15/19 11:21*	*09/05/19 14:53*	*1*

Client Sample ID: PNMW-13-EB
Date Collected: 08/08/19 09:45
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.00720	U	0.248	0.248	1.00	0.443	pCi/L	08/15/19 11:21	09/05/19 14:53	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.7*		*40 - 110*	*08/15/19 11:21*	*09/05/19 14:53*	*1*
Y Carrier	*81.1*		*40 - 110*	*08/15/19 11:21*	*09/05/19 14:53*	*1*

Client Sample ID: PNMW-P6-DUP
Date Collected: 08/07/19 15:20
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.449	U	0.321	0.324	1.00	0.500	pCi/L	08/15/19 11:21	09/05/19 14:54	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*86.7*		*40 - 110*	*08/15/19 11:21*	*09/05/19 14:54*	*1*
Y Carrier	*74.4*		*40 - 110*	*08/15/19 11:21*	*09/05/19 14:54*	*1*

Client Sample ID: P6
Date Collected: 08/07/19 15:20
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.250	U	0.271	0.272	1.00	0.443	pCi/L	08/15/19 11:21	09/05/19 14:54	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*81.9*		*40 - 110*	*08/15/19 11:21*	*09/05/19 14:54*	*1*
Y Carrier	*90.5*		*40 - 110*	*08/15/19 11:21*	*09/05/19 14:54*	*1*

Client Sample ID: P7
Date Collected: 08/06/19 20:50
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-10
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.329	U	0.258	0.259	1.00	0.406	pCi/L	08/15/19 11:21	09/05/19 14:54	1

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

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	93.5		40 - 110	08/15/19 11:21	09/05/19 14:54	1
Y Carrier	86.0		40 - 110	08/15/19 11:21	09/05/19 14:54	1

Client Sample ID: P18B — **Lab Sample ID: 280-127107-11**
Date Collected: 08/06/19 10:30 — **Matrix: Water**
Date Received: 08/09/19 10:42

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.404	U	0.287	0.290	1.00	0.449	pCi/L	08/15/19 11:21	09/05/19 14:55	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	97.2		40 - 110	08/15/19 11:21	09/05/19 14:55	1
Y Carrier	81.5		40 - 110	08/15/19 11:21	09/05/19 14:55	1

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: PNMW-1B — **Lab Sample ID: 280-127107-1**
Date Collected: 08/07/19 20:01 — **Matrix: Water**
Date Received: 08/09/19 10:42

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.166	U	0.325	0.326	5.00	0.486	pCi/L		09/25/19 12:27	1

Client Sample ID: PNMW-2B — **Lab Sample ID: 280-127107-2**
Date Collected: 08/07/19 19:10 — **Matrix: Water**
Date Received: 08/09/19 10:42

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.542**		0.277	0.280	5.00	0.412	pCi/L		09/25/19 12:27	1

Client Sample ID: PNMW-13 — **Lab Sample ID: 280-127107-3**
Date Collected: 08/08/19 17:30 — **Matrix: Water**
Date Received: 08/09/19 10:42

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.163	U	0.324	0.324	5.00	0.456	pCi/L		09/25/19 12:27	1

Client Sample ID: PNMW-14 — **Lab Sample ID: 280-127107-4**
Date Collected: 08/08/19 17:50 — **Matrix: Water**
Date Received: 08/09/19 10:42

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.743	U	0.659	0.661	5.00	1.05	pCi/L		09/25/19 12:27	1

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: PNMW-15
Date Collected: 08/07/19 11:39
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.766**		0.349	0.353	5.00	0.453	pCi/L		09/25/19 12:27	1

Client Sample ID: PNMW-16
Date Collected: 08/07/19 17:45
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.547**		0.286	0.288	5.00	0.420	pCi/L		09/25/19 12:27	1

Client Sample ID: PNMW-13-EB
Date Collected: 08/08/19 09:45
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0352	U	0.259	0.259	5.00	0.443	pCi/L		09/25/19 12:27	1

Client Sample ID: PNMW-P6-DUP
Date Collected: 08/07/19 15:20
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.478	U	0.328	0.331	5.00	0.500	pCi/L		09/25/19 12:27	1

Client Sample ID: P6
Date Collected: 08/07/19 15:20
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.285	U	0.281	0.282	5.00	0.443	pCi/L		09/25/19 12:27	1

Client Sample ID: P7
Date Collected: 08/06/19 20:50
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127107-10
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.356	U	0.264	0.265	5.00	0.406	pCi/L		09/25/19 12:27	1

Client: HDR Inc
Job ID: 280-127107-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: P18B
Date Collected: 08/06/19 10:30
Date Received: 08/09/19 10:42

Lab Sample ID: 280-127107-11
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.421	U	0.294	0.297	5.00	0.449	pCi/L		09/25/19 12:27	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-395988/1-A
Matrix: Water
Analysis Batch: 396208

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 395988

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		08/14/19 14:00	08/15/19 16:20	1

Lab Sample ID: LCS 240-395988/2-A
Matrix: Water
Analysis Batch: 396208

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 395988

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.08		mg/L		108	80 - 120

Lab Sample ID: 280-127107-3 MS
Matrix: Water
Analysis Batch: 396208

Client Sample ID: PNMW-13
Prep Type: Total Recoverable
Prep Batch: 395988

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	0.24		1.00	1.34		mg/L		110	75 - 125

Lab Sample ID: 280-127107-3 MSD
Matrix: Water
Analysis Batch: 396208

Client Sample ID: PNMW-13
Prep Type: Total Recoverable
Prep Batch: 395988

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	0.24		1.00	1.33		mg/L		109	75 - 125	0	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-395988/1-A
Matrix: Water
Analysis Batch: 396231

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 395988

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/14/19 14:00	08/15/19 14:34	1
Arsenic	ND		0.0050	0.00075	mg/L		08/14/19 14:00	08/15/19 14:34	1
Barium	ND		0.0050	0.0022	mg/L		08/14/19 14:00	08/15/19 14:34	1
Beryllium	ND		0.0010	0.00031	mg/L		08/14/19 14:00	08/15/19 14:34	1
Calcium	ND		1.0	0.58	mg/L		08/14/19 14:00	08/15/19 14:34	1
Cadmium	ND		0.0010	0.00021	mg/L		08/14/19 14:00	08/15/19 14:34	1
Cobalt	ND		0.0010	0.00019	mg/L		08/14/19 14:00	08/15/19 14:34	1
Chromium	ND		0.0020	0.00098	mg/L		08/14/19 14:00	08/15/19 14:34	1
Molybdenum	ND		0.010	0.0011	mg/L		08/14/19 14:00	08/15/19 14:34	1
Lead	ND		0.0010	0.00045	mg/L		08/14/19 14:00	08/15/19 14:34	1
Selenium	ND		0.0050	0.00089	mg/L		08/14/19 14:00	08/15/19 14:34	1
Thallium	ND		0.0010	0.00020	mg/L		08/14/19 14:00	08/15/19 14:34	1
Lithium	ND		0.0080	0.0017	mg/L		08/14/19 14:00	08/15/19 14:34	1

Lab Sample ID: LCS 240-395988/3-A
Matrix: Water
Analysis Batch: 396231

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 395988

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.102		mg/L		102	80 - 120

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

Lab Sample ID: LCS 240-395988/3-A
Matrix: Water
Analysis Batch: 396231

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 395988

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.00	1.01		mg/L		101	80 - 120
Barium	1.00	1.08		mg/L		108	80 - 120
Beryllium	0.500	0.493		mg/L		99	80 - 120
Calcium	25.0	26.4		mg/L		106	80 - 120
Cadmium	0.500	0.515		mg/L		103	80 - 120
Cobalt	0.500	0.504		mg/L		101	80 - 120
Chromium	0.500	0.516		mg/L		103	80 - 120
Molybdenum	0.500	0.538		mg/L		108	80 - 120
Lead	0.500	0.522		mg/L		104	80 - 120
Selenium	1.00	0.983		mg/L		98	80 - 120
Thallium	1.00	0.989		mg/L		99	80 - 120
Lithium	0.500	0.461		mg/L		92	80 - 120

Lab Sample ID: 280-127107-3 MS
Matrix: Water
Analysis Batch: 396231

Client Sample ID: PNMW-13
Prep Type: Total Recoverable
Prep Batch: 395988

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	ND		0.100	0.0937		mg/L		94	75 - 125
Arsenic	ND		1.00	0.930		mg/L		93	75 - 125
Barium	0.047		1.00	1.01		mg/L		96	75 - 125
Beryllium	ND		0.500	0.449		mg/L		90	75 - 125
Calcium	37		25.0	58.2		mg/L		83	75 - 125
Cadmium	ND		0.500	0.456		mg/L		91	75 - 125
Cobalt	0.00021	J	0.500	0.457		mg/L		91	75 - 125
Chromium	0.0055		0.500	0.464		mg/L		92	75 - 125
Molybdenum	0.0057	J	0.500	0.496		mg/L		98	75 - 125
Lead	ND		0.500	0.467		mg/L		93	75 - 125
Selenium	0.0016	J	1.00	0.884		mg/L		88	75 - 125
Thallium	0.00042	J	1.00	0.883		mg/L		88	75 - 125
Lithium	0.054		0.500	0.464		mg/L		82	75 - 125

Lab Sample ID: 280-127107-3 MSD
Matrix: Water
Analysis Batch: 396231

Client Sample ID: PNMW-13
Prep Type: Total Recoverable
Prep Batch: 395988

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	ND		0.100	0.0944		mg/L		94	75 - 125	1	20
Arsenic	ND		1.00	0.939		mg/L		94	75 - 125	1	20
Barium	0.047		1.00	1.03		mg/L		99	75 - 125	2	20
Beryllium	ND		0.500	0.455		mg/L		91	75 - 125	1	20
Calcium	37		25.0	60.1		mg/L		91	75 - 125	3	20
Cadmium	ND		0.500	0.465		mg/L		93	75 - 125	2	20
Cobalt	0.00021	J	0.500	0.462		mg/L		92	75 - 125	1	20
Chromium	0.0055		0.500	0.478		mg/L		94	75 - 125	3	20
Molybdenum	0.0057	J	0.500	0.507		mg/L		100	75 - 125	2	20
Lead	ND		0.500	0.486		mg/L		97	75 - 125	4	20
Selenium	0.0016	J	1.00	0.911		mg/L		91	75 - 125	3	20
Thallium	0.00042	J	1.00	0.912		mg/L		91	75 - 125	3	20

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

Lab Sample ID: 280-127107-3 MSD
Matrix: Water
Analysis Batch: 396231

Client Sample ID: PNMW-13
Prep Type: Total Recoverable
Prep Batch: 395988

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lithium	0.054		0.500	0.473		mg/L		84	75 - 125	2	20

Method: 9040B - pH

Lab Sample ID: LCS 280-467411/4
Matrix: Water
Analysis Batch: 467411

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
pH adj. to 25 deg C			7.00	7.0		SU		100	99 - 101		

Lab Sample ID: LCSD 280-467411/5
Matrix: Water
Analysis Batch: 467411

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
pH adj. to 25 deg C			7.00	7.0		SU		100	99 - 101	0	5

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-467440/6
Matrix: Water
Analysis Batch: 467440

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	1.0	mg/L			08/13/19 11:52	1
Fluoride	ND		0.50	0.17	mg/L			08/13/19 11:52	1
Sulfate	ND		5.0	1.0	mg/L			08/13/19 11:52	1

Lab Sample ID: LCS 280-467440/4
Matrix: Water
Analysis Batch: 467440

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride			100	96.8		mg/L		97	90 - 110		
Fluoride			5.00	5.02		mg/L		100	90 - 110		
Sulfate			100	91.5		mg/L		92	90 - 110		

Lab Sample ID: LCSD 280-467440/5
Matrix: Water
Analysis Batch: 467440

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride			100	97.4		mg/L		97	90 - 110	1	10
Fluoride			5.00	5.04		mg/L		101	90 - 110	0	10
Sulfate			100	91.8		mg/L		92	90 - 110	0	10

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

Lab Sample ID: MRL 280-467440/3
Matrix: Water
Analysis Batch: 467440

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.07		mg/L		81	50 - 150
Fluoride	0.500	0.517		mg/L		103	50 - 150
Sulfate	5.00	4.27	J	mg/L		85	50 - 150

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

Lab Sample ID: MB 280-467353/1
Matrix: Water
Analysis Batch: 467353

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			08/12/19 14:55	1

Lab Sample ID: LCS 280-467353/2
Matrix: Water
Analysis Batch: 467353

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	500	494		mg/L		99	93 - 110

Lab Sample ID: LCSD 280-467353/3
Matrix: Water
Analysis Batch: 467353

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Dissolved Solids (TDS)	500	495		mg/L		99	93 - 110	0	20

Lab Sample ID: 280-127107-3 DU
Matrix: Water
Analysis Batch: 467353

Client Sample ID: PNMW-13
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids (TDS)	400		403		mg/L		2	10

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

Lab Sample ID: MB 280-467462/1
Matrix: Water
Analysis Batch: 467462

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			08/13/19 11:22	1

Lab Sample ID: LCS 280-467462/2
Matrix: Water
Analysis Batch: 467462

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	80.8		mg/L		81	79 - 114

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

Lab Sample ID: LCSD 280-467462/3
Matrix: Water
Analysis Batch: 467462

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Suspended Solids			100	84.8		mg/L		85	79 - 114	5	20

Lab Sample ID: MB 280-467637/1
Matrix: Water
Analysis Batch: 467637

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			08/14/19 14:42	1

Lab Sample ID: LCS 280-467637/2
Matrix: Water
Analysis Batch: 467637

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Suspended Solids			100	90.4		mg/L		90	79 - 114		

Lab Sample ID: LCSD 280-467637/3
Matrix: Water
Analysis Batch: 467637

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Suspended Solids			100	107		mg/L		107	79 - 114	17	20

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-439523/22-A
Matrix: Water
Analysis Batch: 441882

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 439523

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.2228	U	0.0772	0.0797	1.00	0.282	pCi/L	08/14/19 09:09	09/06/19 11:07	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.7*		*40 - 110*	*08/14/19 09:09*	*09/06/19 11:07*	*1*

Lab Sample ID: LCS 160-439523/1-A
Matrix: Water
Analysis Batch: 441783

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 439523

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	10.85		1.42	1.00	0.385	pCi/L	96	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*81.1*		*40 - 110*

Method: 9315 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCSD 160-439523/2-A
Matrix: Water
Analysis Batch: 441783

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 439523

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.4	10.12		1.34	1.00	0.347	pCi/L	89	75 - 125	0.27	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*91.8*		*40 - 110*

Lab Sample ID: MB 160-439626/17-A
Matrix: Water
Analysis Batch: 442834

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 439626

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.01038	U	0.0668	0.0668	1.00	0.130	pCi/L	08/15/19 10:47	09/13/19 09:43	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*88.7*		*40 - 110*	*08/15/19 10:47*	*09/13/19 09:43*	*1*

Lab Sample ID: LCS 160-439626/1-A
Matrix: Water
Analysis Batch: 442833

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 439626

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	9.101		0.966	1.00	0.136	pCi/L	80	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*103*		*40 - 110*

Lab Sample ID: LCSD 160-439626/2-A
Matrix: Water
Analysis Batch: 442834

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 439626

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.4	9.163		0.978	1.00	0.142	pCi/L	81	75 - 125	0.03	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*94.6*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-439525/22-A
Matrix: Water
Analysis Batch: 441816

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 439525

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1573	U	0.230	0.230	1.00	0.385	pCi/L	08/14/19 09:46	09/05/19 08:59	1

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

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	92.7		40 - 110	08/14/19 09:46	09/05/19 08:59	1
Y Carrier	88.2		40 - 110	08/14/19 09:46	09/05/19 08:59	1

Lab Sample ID: LCS 160-439525/1-A
Matrix: Water
Analysis Batch: 441799

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 439525

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.62	8.437		1.04	1.00	0.481	pCi/L	88	75 - 125		

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	81.1		40 - 110
Y Carrier	88.6		40 - 110

Lab Sample ID: LCSD 160-439525/2-A
Matrix: Water
Analysis Batch: 441799

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 439525

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			9.62	8.872		1.05	1.00	0.384	pCi/L	92	75 - 125	0.21	1

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Ba Carrier	91.8		40 - 110
Y Carrier	87.5		40 - 110

Lab Sample ID: MB 160-439658/17-A
Matrix: Water
Analysis Batch: 441783

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 439658

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.08786	U	0.303	0.303	1.00	0.551	pCi/L	08/15/19 11:21	09/05/19 14:50	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	88.7		40 - 110	08/15/19 11:21	09/05/19 14:50	1
Y Carrier	81.9		40 - 110	08/15/19 11:21	09/05/19 14:50	1

Lab Sample ID: LCS 160-439658/1-A
Matrix: Water
Analysis Batch: 441816

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 439658

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.62	8.370		1.01	1.00	0.413	pCi/L	87	75 - 125		

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	103		40 - 110
Y Carrier	80.4		40 - 110

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

Lab Sample ID: LCSD 160-439658/2-A
Matrix: Water
Analysis Batch: 441816

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 439658

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			9.62	8.945		1.09	1.00	0.447	pCi/L	93	75 - 125	0.27	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*94.6*		*40 - 110*
Y Carrier	*80.4*		*40 - 110*

Metals

Prep Batch: 395988

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127107-1	PNMW-1B	Total Recoverable	Water	3005A	
280-127107-2	PNMW-2B	Total Recoverable	Water	3005A	
280-127107-3	PNMW-13	Total Recoverable	Water	3005A	
280-127107-4	PNMW-14	Total Recoverable	Water	3005A	
280-127107-5	PNMW-15	Total Recoverable	Water	3005A	
280-127107-6	PNMW-16	Total Recoverable	Water	3005A	
280-127107-7	PNMW-13-EB	Total Recoverable	Water	3005A	
280-127107-8	PNMW-P6-DUP	Total Recoverable	Water	3005A	
280-127107-9	P6	Total Recoverable	Water	3005A	
280-127107-10	P7	Total Recoverable	Water	3005A	
280-127107-11	P18B	Total Recoverable	Water	3005A	
MB 240-395988/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-395988/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-395988/3-A	Lab Control Sample	Total Recoverable	Water	3005A	
280-127107-3 MS	PNMW-13	Total Recoverable	Water	3005A	
280-127107-3 MS	PNMW-13	Total Recoverable	Water	3005A	
280-127107-3 MSD	PNMW-13	Total Recoverable	Water	3005A	
280-127107-3 MSD	PNMW-13	Total Recoverable	Water	3005A	

Analysis Batch: 396208

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127107-1	PNMW-1B	Total Recoverable	Water	6010C	395988
280-127107-2	PNMW-2B	Total Recoverable	Water	6010C	395988
280-127107-3	PNMW-13	Total Recoverable	Water	6010C	395988
280-127107-4	PNMW-14	Total Recoverable	Water	6010C	395988
280-127107-5	PNMW-15	Total Recoverable	Water	6010C	395988
280-127107-6	PNMW-16	Total Recoverable	Water	6010C	395988
280-127107-7	PNMW-13-EB	Total Recoverable	Water	6010C	395988
280-127107-8	PNMW-P6-DUP	Total Recoverable	Water	6010C	395988
280-127107-9	P6	Total Recoverable	Water	6010C	395988
280-127107-10	P7	Total Recoverable	Water	6010C	395988
280-127107-11	P18B	Total Recoverable	Water	6010C	395988
MB 240-395988/1-A	Method Blank	Total Recoverable	Water	6010C	395988
LCS 240-395988/2-A	Lab Control Sample	Total Recoverable	Water	6010C	395988
280-127107-3 MS	PNMW-13	Total Recoverable	Water	6010C	395988
280-127107-3 MSD	PNMW-13	Total Recoverable	Water	6010C	395988

Analysis Batch: 396231

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127107-1	PNMW-1B	Total Recoverable	Water	6020A	395988
280-127107-2	PNMW-2B	Total Recoverable	Water	6020A	395988
280-127107-3	PNMW-13	Total Recoverable	Water	6020A	395988
280-127107-4	PNMW-14	Total Recoverable	Water	6020A	395988
280-127107-5	PNMW-15	Total Recoverable	Water	6020A	395988
280-127107-6	PNMW-16	Total Recoverable	Water	6020A	395988
280-127107-7	PNMW-13-EB	Total Recoverable	Water	6020A	395988
280-127107-8	PNMW-P6-DUP	Total Recoverable	Water	6020A	395988
280-127107-9	P6	Total Recoverable	Water	6020A	395988
280-127107-10	P7	Total Recoverable	Water	6020A	395988
280-127107-11	P18B	Total Recoverable	Water	6020A	395988
MB 240-395988/1-A	Method Blank	Total Recoverable	Water	6020A	395988

Metals (Continued)

Analysis Batch: 396231 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 240-395988/3-A	Lab Control Sample	Total Recoverable	Water	6020A	395988
280-127107-3 MS	PNMW-13	Total Recoverable	Water	6020A	395988
280-127107-3 MSD	PNMW-13	Total Recoverable	Water	6020A	395988

General Chemistry

Analysis Batch: 467353

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127107-1	PNMW-1B	Total/NA	Water	SM 2540C	
280-127107-2	PNMW-2B	Total/NA	Water	SM 2540C	
280-127107-3	PNMW-13	Total/NA	Water	SM 2540C	
280-127107-4	PNMW-14	Total/NA	Water	SM 2540C	
280-127107-5	PNMW-15	Total/NA	Water	SM 2540C	
280-127107-6	PNMW-16	Total/NA	Water	SM 2540C	
280-127107-7	PNMW-13-EB	Total/NA	Water	SM 2540C	
280-127107-8	PNMW-P6-DUP	Total/NA	Water	SM 2540C	
280-127107-9	P6	Total/NA	Water	SM 2540C	
280-127107-10	P7	Total/NA	Water	SM 2540C	
280-127107-11	P18B	Total/NA	Water	SM 2540C	
MB 280-467353/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-467353/2	Lab Control Sample	Total/NA	Water	SM 2540C	
LCSD 280-467353/3	Lab Control Sample Dup	Total/NA	Water	SM 2540C	
280-127107-3 DU	PNMW-13	Total/NA	Water	SM 2540C	

Analysis Batch: 467411

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127107-1	PNMW-1B	Total/NA	Water	9040B	
280-127107-2	PNMW-2B	Total/NA	Water	9040B	
280-127107-3	PNMW-13	Total/NA	Water	9040B	
280-127107-4	PNMW-14	Total/NA	Water	9040B	
280-127107-5	PNMW-15	Total/NA	Water	9040B	
280-127107-6	PNMW-16	Total/NA	Water	9040B	
280-127107-7	PNMW-13-EB	Total/NA	Water	9040B	
280-127107-8	PNMW-P6-DUP	Total/NA	Water	9040B	
280-127107-9	P6	Total/NA	Water	9040B	
280-127107-10	P7	Total/NA	Water	9040B	
280-127107-11	P18B	Total/NA	Water	9040B	
LCS 280-467411/4	Lab Control Sample	Total/NA	Water	9040B	
LCSD 280-467411/5	Lab Control Sample Dup	Total/NA	Water	9040B	

Analysis Batch: 467440

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127107-1	PNMW-1B	Total/NA	Water	9056A	
280-127107-1	PNMW-1B	Total/NA	Water	9056A	
280-127107-2	PNMW-2B	Total/NA	Water	9056A	
280-127107-3	PNMW-13	Total/NA	Water	9056A	
280-127107-4	PNMW-14	Total/NA	Water	9056A	
280-127107-5	PNMW-15	Total/NA	Water	9056A	
280-127107-5	PNMW-15	Total/NA	Water	9056A	
280-127107-6	PNMW-16	Total/NA	Water	9056A	
280-127107-6	PNMW-16	Total/NA	Water	9056A	

General Chemistry (Continued)

Analysis Batch: 467440 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127107-7	PNMW-13-EB	Total/NA	Water	9056A	
280-127107-8	PNMW-P6-DUP	Total/NA	Water	9056A	
280-127107-8	PNMW-P6-DUP	Total/NA	Water	9056A	
280-127107-9	P6	Total/NA	Water	9056A	
280-127107-9	P6	Total/NA	Water	9056A	
280-127107-10	P7	Total/NA	Water	9056A	
280-127107-10	P7	Total/NA	Water	9056A	
280-127107-11	P18B	Total/NA	Water	9056A	
MB 280-467440/6	Method Blank	Total/NA	Water	9056A	
LCS 280-467440/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-467440/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-467440/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 467462

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127107-10	P7	Total/NA	Water	SM 2540D	
280-127107-11	P18B	Total/NA	Water	SM 2540D	
MB 280-467462/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-467462/2	Lab Control Sample	Total/NA	Water	SM 2540D	
LCSD 280-467462/3	Lab Control Sample Dup	Total/NA	Water	SM 2540D	

Analysis Batch: 467637

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127107-1	PNMW-1B	Total/NA	Water	SM 2540D	
280-127107-2	PNMW-2B	Total/NA	Water	SM 2540D	
280-127107-3	PNMW-13	Total/NA	Water	SM 2540D	
280-127107-4	PNMW-14	Total/NA	Water	SM 2540D	
280-127107-5	PNMW-15	Total/NA	Water	SM 2540D	
280-127107-6	PNMW-16	Total/NA	Water	SM 2540D	
280-127107-7	PNMW-13-EB	Total/NA	Water	SM 2540D	
280-127107-8	PNMW-P6-DUP	Total/NA	Water	SM 2540D	
280-127107-9	P6	Total/NA	Water	SM 2540D	
MB 280-467637/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-467637/2	Lab Control Sample	Total/NA	Water	SM 2540D	
LCSD 280-467637/3	Lab Control Sample Dup	Total/NA	Water	SM 2540D	

Rad

Prep Batch: 439523

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127107-1	PNMW-1B	Total/NA	Water	PrecSep-21	
280-127107-3	PNMW-13	Total/NA	Water	PrecSep-21	
280-127107-5	PNMW-15	Total/NA	Water	PrecSep-21	
MB 160-439523/22-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-439523/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-439523/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 439525

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127107-1	PNMW-1B	Total/NA	Water	PrecSep_0	
280-127107-3	PNMW-13	Total/NA	Water	PrecSep_0	

Rad (Continued)

Prep Batch: 439525 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127107-5	PNMW-15	Total/NA	Water	PrecSep_0	
MB 160-439525/22-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-439525/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-439525/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Prep Batch: 439626

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127107-2	PNMW-2B	Total/NA	Water	PrecSep-21	
280-127107-4	PNMW-14	Total/NA	Water	PrecSep-21	
280-127107-6	PNMW-16	Total/NA	Water	PrecSep-21	
280-127107-7	PNMW-13-EB	Total/NA	Water	PrecSep-21	
280-127107-8	PNMW-P6-DUP	Total/NA	Water	PrecSep-21	
280-127107-9	P6	Total/NA	Water	PrecSep-21	
280-127107-10	P7	Total/NA	Water	PrecSep-21	
280-127107-11	P18B	Total/NA	Water	PrecSep-21	
MB 160-439626/17-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-439626/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-439626/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 439658

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127107-2	PNMW-2B	Total/NA	Water	PrecSep_0	
280-127107-4	PNMW-14	Total/NA	Water	PrecSep_0	
280-127107-6	PNMW-16	Total/NA	Water	PrecSep_0	
280-127107-7	PNMW-13-EB	Total/NA	Water	PrecSep_0	
280-127107-8	PNMW-P6-DUP	Total/NA	Water	PrecSep_0	
280-127107-9	P6	Total/NA	Water	PrecSep_0	
280-127107-10	P7	Total/NA	Water	PrecSep_0	
280-127107-11	P18B	Total/NA	Water	PrecSep_0	
MB 160-439658/17-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-439658/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-439658/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Client Sample ID: PNMW-1B
Lab Sample ID: 280-127107-1
Date Collected: 08/07/19 20:01
Matrix: Water
Date Received: 08/09/19 10:42

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	395988	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			396208	08/15/19 17:00	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	395988	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			396231	08/15/19 14:50	RKT	TAL CAN
Total/NA	Analysis	9040B		1			467411	08/12/19 15:37	SPG	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	467440	08/14/19 00:26	TLP	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	467440	08/14/19 00:43	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	467353	08/12/19 14:55	ECL	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	467637	08/14/19 14:42	ECL	TAL DEN
Total/NA	Prep	PrecSep-21			1000.14 mL	1.0 g	439523	08/14/19 09:09	KAW	TAL SL
Total/NA	Analysis	9315		1			441783	09/05/19 21:54	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.14 mL	1.0 g	439525	08/14/19 09:46	KAW	TAL SL
Total/NA	Analysis	9320		1			441799	09/05/19 09:04	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			444147	09/25/19 12:27	SMP	TAL SL

Client Sample ID: PNMW-2B
Lab Sample ID: 280-127107-2
Date Collected: 08/07/19 19:10
Matrix: Water
Date Received: 08/09/19 10:42

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	395988	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			396208	08/15/19 17:05	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	395988	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			396231	08/15/19 14:57	RKT	TAL CAN
Total/NA	Analysis	9040B		1			467411	08/12/19 15:51	SPG	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	467440	08/14/19 00:59	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	467353	08/12/19 14:55	ECL	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	467637	08/14/19 14:42	ECL	TAL DEN
Total/NA	Prep	PrecSep-21			1000.49 mL	1.0 g	439626	08/15/19 10:47	KAW	TAL SL
Total/NA	Analysis	9315		1			442834	09/13/19 07:35	CJQ	TAL SL
Total/NA	Prep	PrecSep_0			1000.49 mL	1.0 g	439658	08/15/19 11:21	KAW	TAL SL
Total/NA	Analysis	9320		1			441816	09/05/19 14:53	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			444147	09/25/19 12:27	SMP	TAL SL

Client Sample ID: PNMW-13
Lab Sample ID: 280-127107-3
Date Collected: 08/08/19 17:30
Matrix: Water
Date Received: 08/09/19 10:42

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	395988	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			396208	08/15/19 16:29	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	395988	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			396231	08/15/19 14:39	RKT	TAL CAN
Total/NA	Analysis	9040B		1			467411	08/12/19 15:54	SPG	TAL DEN

Client Sample ID: PNMW-13
Lab Sample ID: 280-127107-3

Date Collected: 08/08/19 17:30
Matrix: Water
Date Received: 08/09/19 10:42

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1	5 mL	5 mL	467440	08/14/19 01:32	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	467353	08/12/19 14:55	ECL	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	467637	08/14/19 14:42	ECL	TAL DEN
Total/NA	Prep	PrecSep-21			1000.25 mL	1.0 g	439523	08/14/19 09:09	KAW	TAL SL
Total/NA	Analysis	9315		1			441783	09/05/19 21:54	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.25 mL	1.0 g	439525	08/14/19 09:46	KAW	TAL SL
Total/NA	Analysis	9320		1			441799	09/05/19 09:04	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			444147	09/25/19 12:27	SMP	TAL SL

Client Sample ID: PNMW-14
Lab Sample ID: 280-127107-4

Date Collected: 08/08/19 17:50
Matrix: Water
Date Received: 08/09/19 10:42

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	395988	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			396208	08/15/19 17:10	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	395988	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			396231	08/15/19 14:59	RKT	TAL CAN
Total/NA	Analysis	9040B		1			467411	08/12/19 15:58	SPG	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	467440	08/14/19 01:48	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	467353	08/12/19 14:55	ECL	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	467637	08/14/19 14:42	ECL	TAL DEN
Total/NA	Prep	PrecSep-21			500.24 mL	1.0 g	439626	08/15/19 10:47	KAW	TAL SL
Total/NA	Analysis	9315		1			442834	09/13/19 07:35	CJQ	TAL SL
Total/NA	Prep	PrecSep_0			500.24 mL	1.0 g	439658	08/15/19 11:21	KAW	TAL SL
Total/NA	Analysis	9320		1			441816	09/05/19 14:53	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			444147	09/25/19 12:27	SMP	TAL SL

Client Sample ID: PNMW-15
Lab Sample ID: 280-127107-5

Date Collected: 08/07/19 11:39
Matrix: Water
Date Received: 08/09/19 10:42

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	395988	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			396208	08/15/19 17:15	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	395988	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			396231	08/15/19 15:02	RKT	TAL CAN
Total/NA	Analysis	9040B		1			467411	08/12/19 16:02	SPG	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	467440	08/14/19 02:05	TLP	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	467440	08/14/19 02:21	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	467353	08/12/19 14:55	ECL	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	467637	08/14/19 14:42	ECL	TAL DEN

Lab Chronicle

Client: HDR Inc
Job ID: 280-127107-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Client Sample ID: PNMW-15
Date Collected: 08/07/19 11:39
Date Received: 08/09/19 10:42

Lab Sample ID: 280-127107-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.18 mL	1.0 g	439523	08/14/19 09:09	KAW	TAL SL
Total/NA	Analysis	9315		1			441783	09/05/19 21:54	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.18 mL	1.0 g	439525	08/14/19 09:46	KAW	TAL SL
Total/NA	Analysis	9320		1			441799	09/05/19 09:04	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			444147	09/25/19 12:27	SMP	TAL SL

Client Sample ID: PNMW-16
Date Collected: 08/07/19 17:45
Date Received: 08/09/19 10:42

Lab Sample ID: 280-127107-6
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	395988	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			396208	08/15/19 17:19	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	395988	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			396231	08/15/19 15:04	RKT	TAL CAN
Total/NA	Analysis	9040B		1			467411	08/12/19 16:09	SPG	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	467440	08/14/19 03:10	TLP	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	467440	08/14/19 03:27	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	467353	08/12/19 14:55	ECL	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	467637	08/14/19 14:42	ECL	TAL DEN
Total/NA	Prep	PrecSep-21			1000.59 mL	1.0 g	439626	08/15/19 10:47	KAW	TAL SL
Total/NA	Analysis	9315		1			442834	09/13/19 07:35	CJQ	TAL SL
Total/NA	Prep	PrecSep_0			1000.59 mL	1.0 g	439658	08/15/19 11:21	KAW	TAL SL
Total/NA	Analysis	9320		1			441816	09/05/19 14:53	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			444147	09/25/19 12:27	SMP	TAL SL

Client Sample ID: PNMW-13-EB
Date Collected: 08/08/19 09:45
Date Received: 08/09/19 10:42

Lab Sample ID: 280-127107-7
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	395988	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			396208	08/15/19 17:24	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	395988	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			396231	08/15/19 15:06	RKT	TAL CAN
Total/NA	Analysis	9040B		1			467411	08/12/19 16:13	SPG	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	467440	08/14/19 03:43	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	467353	08/12/19 14:55	ECL	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	467637	08/14/19 14:42	ECL	TAL DEN
Total/NA	Prep	PrecSep-21			1000.52 mL	1.0 g	439626	08/15/19 10:47	KAW	TAL SL
Total/NA	Analysis	9315		1			442834	09/13/19 07:35	CJQ	TAL SL
Total/NA	Prep	PrecSep_0			1000.52 mL	1.0 g	439658	08/15/19 11:21	KAW	TAL SL
Total/NA	Analysis	9320		1			441816	09/05/19 14:53	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			444147	09/25/19 12:27	SMP	TAL SL

Client Sample ID: PNMW-P6-DUP
Lab Sample ID: 280-127107-8

Date Collected: 08/07/19 15:20
Matrix: Water
Date Received: 08/09/19 10:42

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	395988	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			396208	08/15/19 17:29	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	395988	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			396231	08/15/19 15:09	RKT	TAL CAN
Total/NA	Analysis	9040B		1			467411	08/12/19 16:16	SPG	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	467440	08/14/19 04:00	TLP	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	467440	08/14/19 04:16	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	467353	08/12/19 14:55	ECL	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	467637	08/14/19 14:42	ECL	TAL DEN
Total/NA	Prep	PrecSep-21			1000.51 mL	1.0 g	439626	08/15/19 10:47	KAW	TAL SL
Total/NA	Analysis	9315		1			442834	09/13/19 07:35	CJQ	TAL SL
Total/NA	Prep	PrecSep_0			1000.51 mL	1.0 g	439658	08/15/19 11:21	KAW	TAL SL
Total/NA	Analysis	9320		1			441816	09/05/19 14:54	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			444147	09/25/19 12:27	SMP	TAL SL

Client Sample ID: P6
Lab Sample ID: 280-127107-9

Date Collected: 08/07/19 15:20
Matrix: Water
Date Received: 08/09/19 10:42

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	395988	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			396208	08/15/19 17:34	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	395988	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			396231	08/15/19 15:11	RKT	TAL CAN
Total/NA	Analysis	9040B		1			467411	08/12/19 16:20	SPG	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	467440	08/14/19 04:32	TLP	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	467440	08/14/19 04:49	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	467353	08/12/19 14:55	ECL	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	467637	08/14/19 14:42	ECL	TAL DEN
Total/NA	Prep	PrecSep-21			1000.83 mL	1.0 g	439626	08/15/19 10:47	KAW	TAL SL
Total/NA	Analysis	9315		1			442834	09/13/19 07:36	CJQ	TAL SL
Total/NA	Prep	PrecSep_0			1000.83 mL	1.0 g	439658	08/15/19 11:21	KAW	TAL SL
Total/NA	Analysis	9320		1			441816	09/05/19 14:54	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			444147	09/25/19 12:27	SMP	TAL SL

Client Sample ID: P7
Lab Sample ID: 280-127107-10

Date Collected: 08/06/19 20:50
Matrix: Water
Date Received: 08/09/19 10:42

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	395988	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			396208	08/15/19 17:38	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	395988	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			396231	08/15/19 15:13	RKT	TAL CAN

Lab Chronicle

Client: HDR Inc
Job ID: 280-127107-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Client Sample ID: P7
Date Collected: 08/06/19 20:50
Date Received: 08/09/19 10:42

Lab Sample ID: 280-127107-10
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9040B		1			467411	08/12/19 16:24	SPG	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	467440	08/14/19 05:05	TLP	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	467440	08/14/19 05:22	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	467353	08/12/19 14:55	ECL	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	467462	08/13/19 11:22	ECL	TAL DEN
Total/NA	Prep	PrecSep-21			1000.49 mL	1.0 g	439626	08/15/19 10:47	KAW	TAL SL
Total/NA	Analysis	9315		1			442834	09/13/19 07:36	CJQ	TAL SL
Total/NA	Prep	PrecSep_0			1000.49 mL	1.0 g	439658	08/15/19 11:21	KAW	TAL SL
Total/NA	Analysis	9320		1			441816	09/05/19 14:54	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			444147	09/25/19 12:27	SMP	TAL SL

Client Sample ID: P18B
Date Collected: 08/06/19 10:30
Date Received: 08/09/19 10:42

Lab Sample ID: 280-127107-11
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	395988	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			396208	08/15/19 17:43	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	395988	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			396231	08/15/19 15:16	RKT	TAL CAN
Total/NA	Analysis	9040B		1			467411	08/12/19 16:28	SPG	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	467440	08/14/19 05:38	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	467353	08/12/19 14:55	ECL	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	467462	08/13/19 11:22	ECL	TAL DEN
Total/NA	Prep	PrecSep-21			1000.22 mL	1.0 g	439626	08/15/19 10:47	KAW	TAL SL
Total/NA	Analysis	9315		1			442834	09/13/19 07:36	CJQ	TAL SL
Total/NA	Prep	PrecSep_0			1000.22 mL	1.0 g	439658	08/15/19 11:21	KAW	TAL SL
Total/NA	Analysis	9320		1			441816	09/05/19 14:55	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			444147	09/25/19 12:27	SMP	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

Accreditation/Certification Summary

Client: HDR Inc
Job ID: 280-127107-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Laboratory: Eurofins TestAmerica, Denver

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

Authority	Program	Identification Number	Expiration Date
A2LA	DoD	2907.01	10-31-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
9040B		Water	Temperature
9056A		Water	Chloride
9056A		Water	Fluoride
9056A		Water	Sulfate

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	02-23-20
California	State Program	2927	02-23-20
Connecticut	State	PH-0590	12-31-19
Connecticut	State Program	PH-0590	12-31-19
Florida	NELAP	E87225	06-30-20
Florida	NELAP	E87225	06-30-20
Georgia	State	4062	02-23-20
Georgia	State Program	N/A	02-23-20
Illinois	NELAP	200004	07-31-20
Illinois	NELAP	004498	07-31-20
Iowa	State	421	06-01-20
Iowa	State Program	421	06-01-21
Kansas	NELAP	E-10336	04-30-20
Kansas	NELAP	E-10336	04-30-20
Kentucky (UST)	State	112225	02-23-20
Kentucky (UST)	State Program	58	02-23-20
Kentucky (WW)	State	KY98016	12-31-19
Kentucky (WW)	State Program	98016	12-31-19
Minnesota	NELAP	039-999-348	12-31-19 *
Minnesota	NELAP	OH00048	12-31-19
Minnesota (Petrofund)	State Program	3506	07-31-21
New Jersey	NELAP	OH001	06-30-20
New Jersey	NELAP	OH001	06-30-20
New York	NELAP	10975	03-31-20
New York	NELAP	10975	03-31-20
Ohio VAP	State	CL0024	06-05-21
Ohio VAP	State Program	CL0024	06-05-21
Oregon	NELAP	4062	02-23-20
Oregon	NELAP	4062	02-23-20
Pennsylvania	NELAP	68-00340	08-31-20
Texas	NELAP	T104704517-19-11	08-31-20
USDA	Federal	P330-16-00404	12-28-19
USDA	US Federal Programs	P330-16-00404	12-28-19
Virginia	NELAP	460175	09-14-20
Washington	State	C971	01-12-20
Washington	State Program	C971	01-12-20 *
West Virginia DEP	State	210	12-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: HDR Inc
Job ID: 280-127107-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Laboratory: Eurofins TestAmerica, Canton (Continued)

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

Authority	Program	Identification Number	Expiration Date
West Virginia DEP	State Program	210	12-31-19

Accreditation/Certification Summary

Client: HDR Inc
Job ID: 280-127107-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

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
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	DoD	L2305	04-06-22
ANAB	DOE	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-19
Arizona	State Program	AZ0813	12-08-19
California	State	2886	06-30-20
California	State Program	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Connecticut	State Program	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
Florida	NELAP	E87689	06-30-20
Hawaii	State Program	NA	06-30-20
HI - RadChem Recognition	State	n/a	06-30-20
Illinois	NELAP	200023	11-30-19
Illinois	NELAP	004553	11-30-19
Iowa	State Program	373	12-01-20
Kansas	NELAP	E-10236	10-31-19 *
Kentucky (DW)	State	KY90125	12-31-19
Kentucky (DW)	State Program	KY90125	12-31-19
Louisiana	NELAP	04080	06-30-20
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	NELAP	LA011	12-31-19
Louisiana (DW)	State	LA011	12-31-19
Maryland	State	310	09-30-20
Maryland	State Program	310	09-30-20
MI - RadChem Recognition	State	9005	06-30-20
Michigan	State Program	9005	06-30-20
Missouri	State	780	06-30-22
Missouri	State Program	780	06-30-20
Nevada	State	MO000542020-1	07-31-20
Nevada	State Program	MO000542018-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	03-31-20
New York	NELAP	11616	04-01-20
North Dakota	State	R-207	06-30-20
North Dakota	State Program	R207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Oklahoma	State Program	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-20
Pennsylvania	NELAP	68-00540	02-28-20
South Carolina	State Program	85002001	06-30-20
Texas	NELAP	T104704193-19-14	07-31-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	Federal	058448	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	Federal	P330-17-0028	02-02-20

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: HDR Inc
Job ID: 280-127107-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

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	Expiration Date
USDA	US Federal Programs	P330-17-00028	02-02-20
Utah	NELAP	MO000542019-11	07-31-20
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	460230	06-14-20
Virginia	NELAP	10310	06-14-20
Washington	State Program	C592	08-30-19 *
West Virginia DEP	State Program	381	10-31-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

Denver #280

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Rainsberger / Fitterer	Lab PM: Bandy, Darlene	Carrier Tracking No(s):	COC No:
Client Contact: Anna Lundin	Phone:	E-Mail: darlene.bandy@testamericainc.com		Page:
Company: HDR Inc				Job #:
Address: 9781 S. Meridian Blvd Suite 400	Due Date Requested:			
City: Englewood	TAT Requested (days):			
State, Zip: CO, 80112				
Phone: 734-263-7138(Tel)	PO #:			
Email: anna.lundin@hdrinc.com	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Pawnee (COC #2)	Project #: 28014378			
Site: Colorado	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Total Metals: Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, ~~Mg~~, Mo, Se, Tl, Ca, B

NLF

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A, 7[illegible]A - Total Metals (see list) 6010C	9315_Ra226, 9320_Ra228, Ra226Ra228_GFPC - TA St Louis	9056A_28D - Fluoride ~~Only~~ Chloride, sulfate, pH	TSS	TDS	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	D	N				
PNMW-~~[illegible]~~ 1B	8-7-19	2001	g	Water	N	N	✓	✓	✓	✓	✓		
PNMW-~~[illegible]~~ 2B	8-7-19	1910	g	Water	N	N	✓	✓	✓	✓	✓		
PNMW-~~[illegible]~~ 13	8-8-19	1730	g	Water	N	N	✓	✓	✓	✓	✓		
PNMW-~~[illegible]~~ 14	8-8-19	1750	g	Water	N	N	✓	✓	✓	✓	✓		
PNMW-~~[illegible]~~ 15	8-7-19	1139	g	Water	N	N	✓	✓	✓	✓	✓		
PNMW-~~[illegible]~~ 16	8-7-19	1745	g	Water	N	N	✓	✓	✓	✓	✓		
PNMW-~~[illegible]~~ 13 -EB	8-8-19	0945	g	Water	N	N	✓	✓	✓	✓	✓		
PNMW-P6-DUP	8-7-19	1520	g	Water	N	N	✓	✓	✓	✓	✓		
P6 ~~[illegible]~~	8-7-19	1520	g	Water	N	N	✓	✓	✓	✓	✓		
P7	8-6-19	2050	g	W	N	N	✓	✓	✓	✓	✓		
P18B	8-6-19	1030	g	W	N	N	✓	✓	✓	✓	✓		

280-127107 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Rainsberger	8/9/19		[signature]	8/9/19 1042	TADEN

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 1.1, 1.6, 0.6, 1.9, +0, 1R8, xfered by SB, ~~8/8/19~~ 8/9/19

Ver: 08/04/2016

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Phone: 303-736-0100 Fax: 303-431-7171

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-494543.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: darlene.bandy@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-127107-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 9/9/2019			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Pawnee	Project #: 28014378			
Site: Xcel Energy - Pawnee	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PrecSep_21 Radium-226 (1/3)	9320_Ra228/PrecSep_0 Radium-228 (2/3)	Ra226Ra228_GFPC/ Ra-226/Ra-228 (3/3)	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
PNMW-1B (280-127107-1)	8/7/19	20:01 Mountain		Water			X	X	X	2	
PNMW-2B (280-127107-2)	8/7/19	19:10 Mountain		Water			X	X	X	2	
PNMW-13 (280-127107-3)	8/8/19	17:30 Mountain		Water			X	X	X	2	
PNMW-14 (280-127107-4)	8/8/19	17:50 Mountain		Water			X	X	X	2	
PNMW-15 (280-127107-5)	8/7/19	11:39 Mountain		Water			X	X	X	2	
PNMW-16 (280-127107-6)	8/7/19	17:45 Mountain		Water			X	X	X	2	
PNMW-13-EB (280-127107-7)	8/8/19	09:45 Mountain		Water			X	X	X	2	
PNMW-P6-DUP (280-127107-8)	8/7/19	15:20 Mountain		Water			X	X	X	2	
P6 (280-127107-9)	8/7/19	15:20 Mountain		Water			X	X	X	2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. 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/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	[signature]	8-12-19 17:15		[signature]	8-14-19 09:00	TAL
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Phone: 303-736-0100 Fax: 303-431-7171

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-494543.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: darlene.bandy@testamericainc.com	State of Origin: Colorado	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-127107-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 9/9/2019			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Pawnee	Project #: 28014378			
Site: Xcel Energy - Pawnee	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PrecSep_21 Radium-226 (1/3)	9320_Ra228/PrecSep_0 Radium-228 (2/3)	Ra226Ra228_GFPC/ Ra-226/Ra-228 (3/3)	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
P7 (280-127107-10)	8/6/19	20:50 Mountain		Water			X	X	X	2	
P18B (280-127107-11)	8/6/19	10:30 Mountain		Water			X	X	X	2	



Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. 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/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
		8-12-19 17:15			8-14-19 09:00	TAST
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Phone: 303-736-0100 Fax: 303-431-7171

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-494542.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: darlene.bandy@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-127107-1
Address: 4101 Shuffel Street NW,	Due Date Requested: 8/29/2019			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Pawnee	Project #: 28014378			
Site: Xcel Energy - Pawnee	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010C/3005A Boron	6020A/3005A (MOD) 13 Total Metals (w/collision cell)	Total Number of containers	Special Instructions/Note:
			Preservation Code:							558
PNMW-1B (280-127107-1)	8/7/19	20:01 Mountain		Water			X	X	1	, Use Collision Cell
PNMW-2B (280-127107-2)	8/7/19	19:10 Mountain		Water			X	X	1	, Use Collision Cell
PNMW-13 (280-127107-3)	8/8/19	17:30 Mountain		Water			X	X	1	, Use Collision Cell
PNMW-14 (280-127107-4)	8/8/19	17:50 Mountain		Water			X	X	1	, Use Collision Cell
PNMW-15 (280-127107-5)	8/7/19	11:39 Mountain		Water			X	X	1	, Use Collision Cell
PNMW-16 (280-127107-6)	8/7/19	17:45 Mountain		Water			X	X	1	, Use Collision Cell
PNMW-13-EB (280-127107-7)	8/8/19	09:45 Mountain		Water			X	X	1	, Use Collision Cell
PNMW-P6-DUP (280-127107-8)	8/7/19	15:20 Mountain		Water			X	X	1	, Use Collision Cell
P6 (280-127107-9)	8/7/19	15:20 Mountain		Water			X	X	1	, Use Collision Cell

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. 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/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Laurene Chavez	8/12/19/1642	TA/DEN		8/13/19 930	TA
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # :** _____

Canton Facility

Client TA Denver Site Name _____ Cooler unpacked by:

Cooler Received on 8/13/19 Opened on 8/13/19

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # 1X 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 — X See Multiple Cooler Form
   IR GUN# IR-8 (CF +0.1 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #36 (CF +0.6°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 — Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? — Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? — Yes No
   -Were tamper/custody seals intact and uncompromised? — Yes No NA
3. Shippers' packing slip attached to the cooler(s)? — Yes No
4. Did custody papers accompany the sample(s)? — Yes No
5. Were the custody papers relinquished & signed in the appropriate place? — Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? — Yes No
7. Did all bottles arrive in good condition (Unbroken)? — Yes No
8. Could all bottle labels be reconciled with the COC? — Yes No
9. Were correct bottle(s) used for the test(s) indicated? — Yes No
10. Sufficient quantity received to perform indicated analyses? — Yes No
11. Are these work share samples? — Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? — Yes No NA pH Strip Lot# HC984738
13. Were VOAs on the COC? — Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. — Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ — Yes No
16. Was a LL Hg or Me Hg trip blank present? _____ — Yes No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by:

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : _____

TestAmerica Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-8 #36	1.8	1.9	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	0.2	0.3	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-127107-1

Login Number: 127107
List Number: 1
Creator: Zimmerman, Steven M

List Source: Eurofins TestAmerica, Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
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	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-127107-1

Login Number: 127107
List Number: 2
Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis
List Creation: 08/13/19 12:45 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
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	19.0
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?	N/A	
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.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-127107-1

Login Number: 127107
List Number: 4
Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis
List Creation: 08/14/19 12:55 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
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	20.0
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?	N/A	
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.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: HDR Inc
Job ID: 280-127107-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Method: 9315 - Radium-226 (GFPC)

Matrix: Water
Prep Type: Total/NA

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)
280-127107-1	PNMW-1B	87.0
280-127107-2	PNMW-2B	99.2
280-127107-3	PNMW-13	88.4
280-127107-4	PNMW-14	82.2
280-127107-5	PNMW-15	87.3
280-127107-6	PNMW-16	90.1
280-127107-7	PNMW-13-EB	97.7
280-127107-8	PNMW-P6-DUP	86.7
280-127107-9	P6	81.9
280-127107-10	P7	93.5
280-127107-11	P18B	97.2
LCS 160-439523/1-A	Lab Control Sample	81.1
LCS 160-439626/1-A	Lab Control Sample	103
LCSD 160-439523/2-A	Lab Control Sample Dup	91.8
LCSD 160-439626/2-A	Lab Control Sample Dup	94.6
MB 160-439523/22-A	Method Blank	92.7
MB 160-439626/17-A	Method Blank	88.7

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water
Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
280-127107-1	PNMW-1B	87.0	96.1
280-127107-2	PNMW-2B	99.2	85.2
280-127107-3	PNMW-13	88.4	86.7
280-127107-4	PNMW-14	82.2	81.1
280-127107-5	PNMW-15	87.3	87.5
280-127107-6	PNMW-16	90.1	82.6
280-127107-7	PNMW-13-EB	97.7	81.1
280-127107-8	PNMW-P6-DUP	86.7	74.4
280-127107-9	P6	81.9	90.5
280-127107-10	P7	93.5	86.0
280-127107-11	P18B	97.2	81.5
LCS 160-439525/1-A	Lab Control Sample	81.1	88.6
LCS 160-439658/1-A	Lab Control Sample	103	80.4
LCSD 160-439525/2-A	Lab Control Sample Dup	91.8	87.5
LCSD 160-439658/2-A	Lab Control Sample Dup	94.6	80.4
MB 160-439525/22-A	Method Blank	92.7	88.2
MB 160-439658/17-A	Method Blank	88.7	81.9

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

eurofins | Environment Testing TestAmerica



ANALYTICAL REPORT

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

Laboratory Job ID: 280-127108-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

For:
HDR Inc
1670 Broadway, Suite 3400
Denver, Colorado 80202

Attn: Molly Reeves

Stephanie Rothmeyer

Authorized for release by:
9/10/2019 9:43:24 AM
Stephanie Rothmeyer, Project Manager I
(303)736-0182
stephanie.rothmeyer@testamericainc.com

Designee for

Darlene Bandy, Project Manager I
(303)736-0188
darlene.bandy@testamericainc.com

LINKS

Review your project results through TotalAccess

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Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 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: 280-127108-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Qualifiers

Metals

Qualifier	Qualifier Description
J	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
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
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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Job ID: 280-127108-1

Laboratory: Eurofins TestAmerica, Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Pawnee

Report Number: 280-127108-1

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.

This report may include data with reporting limits (RLs) less than TestAmerica's standard reporting limit. These data and reporting limits are being used specifically to meet the needs of this project. Note that, data are not customarily reported to these levels without qualifiers, because they are inherently less reliable and potentially less defensible than the latest industry standards require.

RECEIPT

The samples were received on 8/9/2019 at 10:42 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.2° C.

The container labels for the following samples did not match the information listed on the Chain-of-Custody (COC): PNMW20 (280-127108-4) and PNMW21 (280-127108-5). The container labels for PNMW20 list collection time "13:09", while the COC lists "13:05". The container labels for PNMW21 list "18:09", while the COC lists "18:05". The samples were logged per the collection times listed on the COC.

TOTAL RECOVERABLE METALS (ICPMS)

Samples PNMW17 (280-127108-1), PNMW18 (280-127108-2), PNMW19 (280-127108-3), PNMW20 (280-127108-4), PNMW21 (280-127108-5), PNMW22 (280-127108-6) and PNMW23 (280-127108-7) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 08/14/2019 and analyzed on 08/15/2019.

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

TOTAL MERCURY

Samples PNMW17 (280-127108-1), PNMW18 (280-127108-2), PNMW19 (280-127108-3), PNMW20 (280-127108-4), PNMW21 (280-127108-5), PNMW22 (280-127108-6) and PNMW23 (280-127108-7) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared on 08/14/2019 and analyzed on 08/15/2019.

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

ANIONS (28 DAYS)

Samples PNMW17 (280-127108-1), PNMW18 (280-127108-2), PNMW19 (280-127108-3), PNMW20 (280-127108-4), PNMW21 (280-127108-5), PNMW22 (280-127108-6) and PNMW23 (280-127108-7) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 08/14/2019.

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

Job ID: 280-127108-1 (Continued)

Laboratory: Eurofins TestAmerica, Denver (Continued)

RADIUM-226 (GFPC)

Samples PNMW17 (280-127108-1), PNMW18 (280-127108-2), PNMW19 (280-127108-3), PNMW20 (280-127108-4), PNMW21 (280-127108-5), PNMW22 (280-127108-6) and PNMW23 (280-127108-7) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 08/14/2019 and analyzed on 09/05/2019 and 09/06/2019.

Insufficient sample volume was available to perform a sample duplicate associated with batch 160- 439523.

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

The Method Blank (MB) associated with batch 160-439523 exhibited a negative result greater in magnitude than the 3 sigma TPU. This occurrence was evaluated and determined to be random in nature. Sporadic occurrences such as this are statistically expected. No further action is required.

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

RADIUM-228

Samples PNMW17 (280-127108-1), PNMW18 (280-127108-2), PNMW19 (280-127108-3), PNMW20 (280-127108-4), PNMW21 (280-127108-5), PNMW22 (280-127108-6) and PNMW23 (280-127108-7) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 08/14/2019 and analyzed on 09/05/2019.

Insufficient sample volume was available to perform a sample duplicate associated with batch 160- 439525.

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

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

RADIUM-226/RADIUM-228 (GFPC)

Samples PNMW17 (280-127108-1), PNMW18 (280-127108-2), PNMW19 (280-127108-3), PNMW20 (280-127108-4), PNMW21 (280-127108-5), PNMW22 (280-127108-6) and PNMW23 (280-127108-7) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 09/09/2019.

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

Detection Summary

Client: HDR Inc
Job ID: 280-127108-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Client Sample ID: PNMW17 — Lab Sample ID: 280-127108-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.086		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Chromium	0.0080		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0012	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.023		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.041		0.0080	0.0017	mg/L	1		6020A	Total Recoverable

Client Sample ID: PNMW18 — Lab Sample ID: 280-127108-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.068		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Chromium	0.0024		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0020	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0026	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.032		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Fluoride	0.22	J	0.50	0.17	mg/L	1		9056A	Total/NA

Client Sample ID: PNMW19 — Lab Sample ID: 280-127108-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.21		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Chromium	0.0029		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0019	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0021	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.025		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Fluoride	0.29	J	0.50	0.17	mg/L	1		9056A	Total/NA

Client Sample ID: PNMW20 — Lab Sample ID: 280-127108-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.0014	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.038		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cobalt	0.0010		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0047		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Lead	0.0019		0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.0084		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.062		0.0080	0.0017	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Denver

Client Sample ID: PNMW20 (Continued) — Lab Sample ID: 280-127108-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	0.24	J	0.50	0.17	mg/L	1		9056A	Total/NA

Client Sample ID: PNMW21 — Lab Sample ID: 280-127108-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00097	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.052		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cobalt	0.00044	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0051		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0044	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.00074	J	0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.0029	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.050		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Fluoride	0.27	J	0.50	0.17	mg/L	1		9056A	Total/NA

Client Sample ID: PNMW22 — Lab Sample ID: 280-127108-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.079		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Chromium	0.0026		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0033	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0060		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.049		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Fluoride	0.22	J	0.50	0.17	mg/L	1		9056A	Total/NA

Client Sample ID: PNMW23 — Lab Sample ID: 280-127108-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.027		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Chromium	0.0017	J	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Selenium	0.0029	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.039		0.0080	0.0017	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Method Summary

Client: HDR Inc
Job ID: 280-127108-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Method	Method Description	Protocol	Laboratory
6020A	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL CAN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
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
3005A	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

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: 280-127108-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
280-127108-1	PNMW17	Water	08/06/19 18:30	08/09/19 10:42	
280-127108-2	PNMW18	Water	08/06/19 17:00	08/09/19 10:42	
280-127108-3	PNMW19	Water	08/06/19 13:55	08/09/19 10:42	
280-127108-4	PNMW20	Water	08/06/19 13:05	08/09/19 10:42	
280-127108-5	PNMW21	Water	08/06/19 18:05	08/09/19 10:42	
280-127108-6	PNMW22	Water	08/07/19 18:20	08/09/19 10:42	
280-127108-7	PNMW23	Water	08/07/19 13:50	08/09/19 10:42	

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

Client Sample ID: PNMW17
Date Collected: 08/06/19 18:30
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/14/19 14:00	08/15/19 14:03	1
Arsenic	ND		0.0050	0.00075	mg/L		08/14/19 14:00	08/15/19 14:03	1
Barium	**0.086**		0.0050	0.0022	mg/L		08/14/19 14:00	08/15/19 14:03	1
Beryllium	ND		0.0010	0.00031	mg/L		08/14/19 14:00	08/15/19 14:03	1
Cadmium	ND		0.0010	0.00021	mg/L		08/14/19 14:00	08/15/19 14:03	1
Cobalt	ND		0.0010	0.00019	mg/L		08/14/19 14:00	08/15/19 14:03	1
Chromium	**0.0080**		0.0020	0.00098	mg/L		08/14/19 14:00	08/15/19 14:03	1
Molybdenum	**0.0012**	**J**	0.010	0.0011	mg/L		08/14/19 14:00	08/15/19 14:03	1
Lead	ND		0.0010	0.00045	mg/L		08/14/19 14:00	08/15/19 14:03	1
Selenium	**0.023**		0.0050	0.00089	mg/L		08/14/19 14:00	08/15/19 14:03	1
Thallium	ND		0.0010	0.00020	mg/L		08/14/19 14:00	08/15/19 14:03	1
Lithium	**0.041**		0.0080	0.0017	mg/L		08/14/19 14:00	08/15/19 14:03	1

Client Sample ID: PNMW18
Date Collected: 08/06/19 17:00
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/14/19 14:00	08/15/19 14:05	1
Arsenic	ND		0.0050	0.00075	mg/L		08/14/19 14:00	08/15/19 14:05	1
Barium	**0.068**		0.0050	0.0022	mg/L		08/14/19 14:00	08/15/19 14:05	1
Beryllium	ND		0.0010	0.00031	mg/L		08/14/19 14:00	08/15/19 14:05	1
Cadmium	ND		0.0010	0.00021	mg/L		08/14/19 14:00	08/15/19 14:05	1
Cobalt	ND		0.0010	0.00019	mg/L		08/14/19 14:00	08/15/19 14:05	1
Chromium	**0.0024**		0.0020	0.00098	mg/L		08/14/19 14:00	08/15/19 14:05	1
Molybdenum	**0.0020**	**J**	0.010	0.0011	mg/L		08/14/19 14:00	08/15/19 14:05	1
Lead	ND		0.0010	0.00045	mg/L		08/14/19 14:00	08/15/19 14:05	1
Selenium	**0.0026**	**J**	0.0050	0.00089	mg/L		08/14/19 14:00	08/15/19 14:05	1
Thallium	ND		0.0010	0.00020	mg/L		08/14/19 14:00	08/15/19 14:05	1
Lithium	**0.032**		0.0080	0.0017	mg/L		08/14/19 14:00	08/15/19 14:05	1

Client Sample ID: PNMW19
Date Collected: 08/06/19 13:55
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/14/19 14:00	08/15/19 14:08	1
Arsenic	ND		0.0050	0.00075	mg/L		08/14/19 14:00	08/15/19 14:08	1
Barium	**0.21**		0.0050	0.0022	mg/L		08/14/19 14:00	08/15/19 14:08	1
Beryllium	ND		0.0010	0.00031	mg/L		08/14/19 14:00	08/15/19 14:08	1
Cadmium	ND		0.0010	0.00021	mg/L		08/14/19 14:00	08/15/19 14:08	1
Cobalt	ND		0.0010	0.00019	mg/L		08/14/19 14:00	08/15/19 14:08	1
Chromium	**0.0029**		0.0020	0.00098	mg/L		08/14/19 14:00	08/15/19 14:08	1
Molybdenum	**0.0019**	**J**	0.010	0.0011	mg/L		08/14/19 14:00	08/15/19 14:08	1
Lead	ND		0.0010	0.00045	mg/L		08/14/19 14:00	08/15/19 14:08	1
Selenium	**0.0021**	**J**	0.0050	0.00089	mg/L		08/14/19 14:00	08/15/19 14:08	1
Thallium	ND		0.0010	0.00020	mg/L		08/14/19 14:00	08/15/19 14:08	1
Lithium	**0.025**		0.0080	0.0017	mg/L		08/14/19 14:00	08/15/19 14:08	1

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

Client Sample ID: PNMW20
Date Collected: 08/06/19 13:05
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/14/19 14:00	08/15/19 14:10	1
Arsenic	**0.0014**	**J**	0.0050	0.00075	mg/L		08/14/19 14:00	08/15/19 14:10	1
Barium	**0.038**		0.0050	0.0022	mg/L		08/14/19 14:00	08/15/19 14:10	1
Beryllium	ND		0.0010	0.00031	mg/L		08/14/19 14:00	08/15/19 14:10	1
Cadmium	ND		0.0010	0.00021	mg/L		08/14/19 14:00	08/15/19 14:10	1
Cobalt	**0.0010**		0.0010	0.00019	mg/L		08/14/19 14:00	08/15/19 14:10	1
Chromium	**0.0047**		0.0020	0.00098	mg/L		08/14/19 14:00	08/15/19 14:10	1
Molybdenum	ND		0.010	0.0011	mg/L		08/14/19 14:00	08/15/19 14:10	1
Lead	**0.0019**		0.0010	0.00045	mg/L		08/14/19 14:00	08/15/19 14:10	1
Selenium	**0.0084**		0.0050	0.00089	mg/L		08/14/19 14:00	08/15/19 14:10	1
Thallium	ND		0.0010	0.00020	mg/L		08/14/19 14:00	08/15/19 14:10	1
Lithium	**0.062**		0.0080	0.0017	mg/L		08/14/19 14:00	08/15/19 14:10	1

Client Sample ID: PNMW21
Date Collected: 08/06/19 18:05
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/14/19 14:00	08/15/19 14:12	1
Arsenic	**0.00097**	**J**	0.0050	0.00075	mg/L		08/14/19 14:00	08/15/19 14:12	1
Barium	**0.052**		0.0050	0.0022	mg/L		08/14/19 14:00	08/15/19 14:12	1
Beryllium	ND		0.0010	0.00031	mg/L		08/14/19 14:00	08/15/19 14:12	1
Cadmium	ND		0.0010	0.00021	mg/L		08/14/19 14:00	08/15/19 14:12	1
Cobalt	**0.00044**	**J**	0.0010	0.00019	mg/L		08/14/19 14:00	08/15/19 14:12	1
Chromium	**0.0051**		0.0020	0.00098	mg/L		08/14/19 14:00	08/15/19 14:12	1
Molybdenum	**0.0044**	**J**	0.010	0.0011	mg/L		08/14/19 14:00	08/15/19 14:12	1
Lead	**0.00074**	**J**	0.0010	0.00045	mg/L		08/14/19 14:00	08/15/19 14:12	1
Selenium	**0.0029**	**J**	0.0050	0.00089	mg/L		08/14/19 14:00	08/15/19 14:12	1
Thallium	ND		0.0010	0.00020	mg/L		08/14/19 14:00	08/15/19 14:12	1
Lithium	**0.050**		0.0080	0.0017	mg/L		08/14/19 14:00	08/15/19 14:12	1

Client Sample ID: PNMW22
Date Collected: 08/07/19 18:20
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/14/19 14:00	08/15/19 14:15	1
Arsenic	ND		0.0050	0.00075	mg/L		08/14/19 14:00	08/15/19 14:15	1
Barium	**0.079**		0.0050	0.0022	mg/L		08/14/19 14:00	08/15/19 14:15	1
Beryllium	ND		0.0010	0.00031	mg/L		08/14/19 14:00	08/15/19 14:15	1
Cadmium	ND		0.0010	0.00021	mg/L		08/14/19 14:00	08/15/19 14:15	1
Cobalt	ND		0.0010	0.00019	mg/L		08/14/19 14:00	08/15/19 14:15	1
Chromium	**0.0026**		0.0020	0.00098	mg/L		08/14/19 14:00	08/15/19 14:15	1
Molybdenum	**0.0033**	**J**	0.010	0.0011	mg/L		08/14/19 14:00	08/15/19 14:15	1
Lead	ND		0.0010	0.00045	mg/L		08/14/19 14:00	08/15/19 14:15	1
Selenium	**0.0060**		0.0050	0.00089	mg/L		08/14/19 14:00	08/15/19 14:15	1
Thallium	ND		0.0010	0.00020	mg/L		08/14/19 14:00	08/15/19 14:15	1
Lithium	**0.049**		0.0080	0.0017	mg/L		08/14/19 14:00	08/15/19 14:15	1

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

Client Sample ID: PNMW23
Date Collected: 08/07/19 13:50
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/14/19 14:00	08/15/19 14:17	1
Arsenic	ND		0.0050	0.00075	mg/L		08/14/19 14:00	08/15/19 14:17	1
Barium	**0.027**		0.0050	0.0022	mg/L		08/14/19 14:00	08/15/19 14:17	1
Beryllium	ND		0.0010	0.00031	mg/L		08/14/19 14:00	08/15/19 14:17	1
Cadmium	ND		0.0010	0.00021	mg/L		08/14/19 14:00	08/15/19 14:17	1
Cobalt	ND		0.0010	0.00019	mg/L		08/14/19 14:00	08/15/19 14:17	1
Chromium	**0.0017**	**J**	0.0020	0.00098	mg/L		08/14/19 14:00	08/15/19 14:17	1
Molybdenum	ND		0.010	0.0011	mg/L		08/14/19 14:00	08/15/19 14:17	1
Lead	ND		0.0010	0.00045	mg/L		08/14/19 14:00	08/15/19 14:17	1
Selenium	**0.0029**	**J**	0.0050	0.00089	mg/L		08/14/19 14:00	08/15/19 14:17	1
Thallium	ND		0.0010	0.00020	mg/L		08/14/19 14:00	08/15/19 14:17	1
Lithium	**0.039**		0.0080	0.0017	mg/L		08/14/19 14:00	08/15/19 14:17	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: PNMW17
Date Collected: 08/06/19 18:30
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		08/14/19 14:00	08/15/19 10:57	1

Client Sample ID: PNMW18
Date Collected: 08/06/19 17:00
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		08/14/19 14:00	08/15/19 10:59	1

Client Sample ID: PNMW19
Date Collected: 08/06/19 13:55
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		08/14/19 14:00	08/15/19 11:06	1

Client Sample ID: PNMW20
Date Collected: 08/06/19 13:05
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		08/14/19 14:00	08/15/19 11:08	1

Client Sample ID: PNMW21
Date Collected: 08/06/19 18:05
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		08/14/19 14:00	08/15/19 11:10	1

Client Sample ID: PNMW22
Date Collected: 08/07/19 18:20
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		08/14/19 14:00	08/15/19 11:12	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: PNMW23
Date Collected: 08/07/19 13:50
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		08/14/19 14:00	08/15/19 11:14	1

General Chemistry

Client Sample ID: PNMW17
Date Collected: 08/06/19 18:30
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.50	0.17	mg/L			08/14/19 21:16	1

Client Sample ID: PNMW18
Date Collected: 08/06/19 17:00
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	**0.22**	**J**	0.50	0.17	mg/L			08/14/19 21:32	1

Client Sample ID: PNMW19
Date Collected: 08/06/19 13:55
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	**0.29**	**J**	0.50	0.17	mg/L			08/14/19 21:48	1

Client Sample ID: PNMW20
Date Collected: 08/06/19 13:05
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	**0.24**	**J**	0.50	0.17	mg/L			08/14/19 22:54	1

Client Sample ID: PNMW21
Date Collected: 08/06/19 18:05
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	**0.27**	**J**	0.50	0.17	mg/L			08/14/19 23:10	1

Client Sample ID: PNMW22
Date Collected: 08/07/19 18:20
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	**0.22**	**J**	0.50	0.17	mg/L			08/14/19 23:27	1

Client Sample ID: PNMW23
Date Collected: 08/07/19 13:50
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.50	0.17	mg/L			08/14/19 23:43	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: PNMW17
Date Collected: 08/06/19 18:30
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.229	U	0.192	0.193	1.00	0.281	pCi/L	08/14/19 09:09	09/05/19 21:55	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*89.5*		*40 - 110*	*08/14/19 09:09*	*09/05/19 21:55*	*1*

Client Sample ID: PNMW18
Date Collected: 08/06/19 17:00
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0590	U	0.168	0.168	1.00	0.311	pCi/L	08/14/19 09:09	09/05/19 21:56	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*88.1*		*40 - 110*	*08/14/19 09:09*	*09/05/19 21:56*	*1*

Client Sample ID: PNMW19
Date Collected: 08/06/19 13:55
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.387**		0.240	0.243	1.00	0.322	pCi/L	08/14/19 09:09	09/05/19 21:56	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.5*		*40 - 110*	*08/14/19 09:09*	*09/05/19 21:56*	*1*

Client Sample ID: PNMW20
Date Collected: 08/06/19 13:05
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.144	U	0.159	0.160	1.00	0.258	pCi/L	08/14/19 09:09	09/06/19 11:06	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.6*		*40 - 110*	*08/14/19 09:09*	*09/06/19 11:06*	*1*

Client Sample ID: PNMW21
Date Collected: 08/06/19 18:05
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.157	U	0.196	0.196	1.00	0.324	pCi/L	08/14/19 09:09	09/06/19 11:07	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*87.6*		*40 - 110*	*08/14/19 09:09*	*09/06/19 11:07*	*1*

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: PNMW22
Date Collected: 08/07/19 18:20
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.217	U	0.172	0.173	1.00	0.252	pCi/L	08/14/19 09:09	09/06/19 11:07	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*88.4*		*40 - 110*	*08/14/19 09:09*	*09/06/19 11:07*	*1*

Client Sample ID: PNMW23
Date Collected: 08/07/19 13:50
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.313**		0.185	0.187	1.00	0.240	pCi/L	08/14/19 09:09	09/06/19 11:07	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*88.1*		*40 - 110*	*08/14/19 09:09*	*09/06/19 11:07*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: PNMW17
Date Collected: 08/06/19 18:30
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.231	U	0.268	0.269	1.00	0.442	pCi/L	08/14/19 09:46	09/05/19 09:04	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*89.5*		*40 - 110*	*08/14/19 09:46*	*09/05/19 09:04*	*1*
Y Carrier	*86.4*		*40 - 110*	*08/14/19 09:46*	*09/05/19 09:04*	*1*

Client Sample ID: PNMW18
Date Collected: 08/06/19 17:00
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.308	U	0.235	0.237	1.00	0.369	pCi/L	08/14/19 09:46	09/05/19 09:04	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*88.1*		*40 - 110*	*08/14/19 09:46*	*09/05/19 09:04*	*1*
Y Carrier	*89.7*		*40 - 110*	*08/14/19 09:46*	*09/05/19 09:04*	*1*

Client Sample ID: PNMW19
Date Collected: 08/06/19 13:55
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.342	U	0.250	0.252	1.00	0.391	pCi/L	08/14/19 09:46	09/05/19 09:05	1

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

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	84.5		40 - 110	08/14/19 09:46	09/05/19 09:05	1
Y Carrier	94.2		40 - 110	08/14/19 09:46	09/05/19 09:05	1

Client Sample ID: PNMW20
Date Collected: 08/06/19 13:05
Date Received: 08/09/19 10:42

Lab Sample ID: 280-127108-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.301	U	0.232	0.234	1.00	0.366	pCi/L	08/14/19 09:46	09/05/19 09:05	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	96.6		40 - 110	08/14/19 09:46	09/05/19 09:05	1
Y Carrier	90.1		40 - 110	08/14/19 09:46	09/05/19 09:05	1

Client Sample ID: PNMW21
Date Collected: 08/06/19 18:05
Date Received: 08/09/19 10:42

Lab Sample ID: 280-127108-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.421**		0.272	0.275	1.00	0.420	pCi/L	08/14/19 09:46	09/05/19 08:57	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	87.6		40 - 110	08/14/19 09:46	09/05/19 08:57	1
Y Carrier	88.6		40 - 110	08/14/19 09:46	09/05/19 08:57	1

Client Sample ID: PNMW22
Date Collected: 08/07/19 18:20
Date Received: 08/09/19 10:42

Lab Sample ID: 280-127108-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.243	U	0.254	0.255	1.00	0.415	pCi/L	08/14/19 09:46	09/05/19 08:58	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	88.4		40 - 110	08/14/19 09:46	09/05/19 08:58	1
Y Carrier	86.4		40 - 110	08/14/19 09:46	09/05/19 08:58	1

Client Sample ID: PNMW23
Date Collected: 08/07/19 13:50
Date Received: 08/09/19 10:42

Lab Sample ID: 280-127108-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.188	U	0.262	0.263	1.00	0.437	pCi/L	08/14/19 09:46	09/05/19 08:58	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	88.1		40 - 110	08/14/19 09:46	09/05/19 08:58	1
Y Carrier	89.7		40 - 110	08/14/19 09:46	09/05/19 08:58	1

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: PNMW17
Date Collected: 08/06/19 18:30
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.460		0.330	0.331	5.00	0.442	pCi/L		09/09/19 09:42	1

Client Sample ID: PNMW18
Date Collected: 08/06/19 17:00
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.367	U	0.289	0.291	5.00	0.369	pCi/L		09/09/19 09:42	1

Client Sample ID: PNMW19
Date Collected: 08/06/19 13:55
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.729		0.347	0.350	5.00	0.391	pCi/L		09/09/19 09:42	1

Client Sample ID: PNMW20
Date Collected: 08/06/19 13:05
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.445		0.281	0.283	5.00	0.366	pCi/L		09/09/19 09:42	1

Client Sample ID: PNMW21
Date Collected: 08/06/19 18:05
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.578		0.335	0.338	5.00	0.420	pCi/L		09/09/19 09:42	1

Client Sample ID: PNMW22
Date Collected: 08/07/19 18:20
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127108-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.460		0.307	0.308	5.00	0.415	pCi/L		09/09/19 09:42	1

Client: HDR Inc
Job ID: 280-127108-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: PNMW23
Date Collected: 08/07/19 13:50
Date Received: 08/09/19 10:42

Lab Sample ID: 280-127108-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.501		0.321	0.323	5.00	0.437	pCi/L		09/09/19 09:42	1

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-395978/1-A
Matrix: Water
Analysis Batch: 396231

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 395978

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/14/19 14:00	08/15/19 12:34	1
Arsenic	ND		0.0050	0.00075	mg/L		08/14/19 14:00	08/15/19 12:34	1
Barium	ND		0.0050	0.0022	mg/L		08/14/19 14:00	08/15/19 12:34	1
Beryllium	ND		0.0010	0.00031	mg/L		08/14/19 14:00	08/15/19 12:34	1
Cadmium	ND		0.0010	0.00021	mg/L		08/14/19 14:00	08/15/19 12:34	1
Cobalt	ND		0.0010	0.00019	mg/L		08/14/19 14:00	08/15/19 12:34	1
Chromium	ND		0.0020	0.00098	mg/L		08/14/19 14:00	08/15/19 12:34	1
Molybdenum	ND		0.010	0.0011	mg/L		08/14/19 14:00	08/15/19 12:34	1
Lead	ND		0.0010	0.00045	mg/L		08/14/19 14:00	08/15/19 12:34	1
Selenium	ND		0.0050	0.00089	mg/L		08/14/19 14:00	08/15/19 12:34	1
Thallium	ND		0.0010	0.00020	mg/L		08/14/19 14:00	08/15/19 12:34	1
Lithium	ND		0.0080	0.0017	mg/L		08/14/19 14:00	08/15/19 12:34	1

Lab Sample ID: LCS 240-395978/3-A
Matrix: Water
Analysis Batch: 396231

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 395978

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.102		mg/L		102	80 - 120
Arsenic	1.00	0.990		mg/L		99	80 - 120
Barium	1.00	1.05		mg/L		105	80 - 120
Beryllium	0.500	0.518		mg/L		104	80 - 120
Cadmium	0.500	0.513		mg/L		103	80 - 120
Cobalt	0.500	0.497		mg/L		99	80 - 120
Chromium	0.500	0.520		mg/L		104	80 - 120
Molybdenum	0.500	0.526		mg/L		105	80 - 120
Lead	0.500	0.527		mg/L		105	80 - 120
Selenium	1.00	0.970		mg/L		97	80 - 120
Thallium	1.00	0.996		mg/L		100	80 - 120
Lithium	0.500	0.480		mg/L		96	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 240-395986/1-A
Matrix: Water
Analysis Batch: 396281

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 395986

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		08/14/19 14:00	08/15/19 10:45	1

Lab Sample ID: LCS 240-395986/2-A
Matrix: Water
Analysis Batch: 396281

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 395986

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	5.23		ug/L		105	80 - 120

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-467575/6
Matrix: Water
Analysis Batch: 467575

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.50	0.17	mg/L			08/14/19 10:44	1

Lab Sample ID: LCS 280-467575/4
Matrix: Water
Analysis Batch: 467575

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	5.00	4.98		mg/L		100	90 - 110

Lab Sample ID: LCSD 280-467575/5
Matrix: Water
Analysis Batch: 467575

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Fluoride	5.00	4.98		mg/L		100	90 - 110	0	10

Lab Sample ID: MRL 280-467575/3
Matrix: Water
Analysis Batch: 467575

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	0.500	0.509		mg/L		102	50 - 150

Lab Sample ID: 280-127108-3 MS
Matrix: Water
Analysis Batch: 467575

Client Sample ID: PNMW19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	0.29	J	5.00	5.72		mg/L		109	80 - 120

Lab Sample ID: 280-127108-3 MSD
Matrix: Water
Analysis Batch: 467575

Client Sample ID: PNMW19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Fluoride	0.29	J	5.00	5.92		mg/L		112	80 - 120	3	20

Lab Sample ID: 280-127108-3 DU
Matrix: Water
Analysis Batch: 467575

Client Sample ID: PNMW19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Fluoride	0.29	J	0.294	J	mg/L		0.4	15

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-439523/22-A
Matrix: Water
Analysis Batch: 441882

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 439523

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.2228	U	0.0772	0.0797	1.00	0.282	pCi/L	08/14/19 09:09	09/06/19 11:07	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.7*		*40 - 110*	*08/14/19 09:09*	*09/06/19 11:07*	*1*

Lab Sample ID: LCS 160-439523/1-A
Matrix: Water
Analysis Batch: 441783

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 439523

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	10.85		1.42	1.00	0.385	pCi/L	96	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*81.1*		*40 - 110*

Lab Sample ID: LCSD 160-439523/2-A
Matrix: Water
Analysis Batch: 441783

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 439523

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.4	10.12		1.34	1.00	0.347	pCi/L	89	75 - 125	0.27	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*91.8*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-439525/22-A
Matrix: Water
Analysis Batch: 441816

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 439525

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1573	U	0.230	0.230	1.00	0.385	pCi/L	08/14/19 09:46	09/05/19 08:59	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.7*		*40 - 110*	*08/14/19 09:46*	*09/05/19 08:59*	*1*
Y Carrier	*88.2*		*40 - 110*	*08/14/19 09:46*	*09/05/19 08:59*	*1*

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

Lab Sample ID: LCS 160-439525/1-A
Matrix: Water
Analysis Batch: 441799

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 439525

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.62	8.437		1.04	1.00	0.481	pCi/L	88	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*81.1*		*40 - 110*
Y Carrier	*88.6*		*40 - 110*

Lab Sample ID: LCSD 160-439525/2-A
Matrix: Water
Analysis Batch: 441799

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 439525

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			9.62	8.872		1.05	1.00	0.384	pCi/L	92	75 - 125	0.21	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*91.8*		*40 - 110*
Y Carrier	*87.5*		*40 - 110*

QC Association Summary

Client: HDR Inc
Job ID: 280-127108-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Metals

Prep Batch: 395978

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127108-1	PNMW17	Total Recoverable	Water	3005A	
280-127108-2	PNMW18	Total Recoverable	Water	3005A	
280-127108-3	PNMW19	Total Recoverable	Water	3005A	
280-127108-4	PNMW20	Total Recoverable	Water	3005A	
280-127108-5	PNMW21	Total Recoverable	Water	3005A	
280-127108-6	PNMW22	Total Recoverable	Water	3005A	
280-127108-7	PNMW23	Total Recoverable	Water	3005A	
MB 240-395978/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-395978/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 395986

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127108-1	PNMW17	Total/NA	Water	7470A	
280-127108-2	PNMW18	Total/NA	Water	7470A	
280-127108-3	PNMW19	Total/NA	Water	7470A	
280-127108-4	PNMW20	Total/NA	Water	7470A	
280-127108-5	PNMW21	Total/NA	Water	7470A	
280-127108-6	PNMW22	Total/NA	Water	7470A	
280-127108-7	PNMW23	Total/NA	Water	7470A	
MB 240-395986/1-A	Method Blank	Total/NA	Water	7470A	
LCS 240-395986/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 396231

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127108-1	PNMW17	Total Recoverable	Water	6020A	395978
280-127108-2	PNMW18	Total Recoverable	Water	6020A	395978
280-127108-3	PNMW19	Total Recoverable	Water	6020A	395978
280-127108-4	PNMW20	Total Recoverable	Water	6020A	395978
280-127108-5	PNMW21	Total Recoverable	Water	6020A	395978
280-127108-6	PNMW22	Total Recoverable	Water	6020A	395978
280-127108-7	PNMW23	Total Recoverable	Water	6020A	395978
MB 240-395978/1-A	Method Blank	Total Recoverable	Water	6020A	395978
LCS 240-395978/3-A	Lab Control Sample	Total Recoverable	Water	6020A	395978

Analysis Batch: 396281

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127108-1	PNMW17	Total/NA	Water	7470A	395986
280-127108-2	PNMW18	Total/NA	Water	7470A	395986
280-127108-3	PNMW19	Total/NA	Water	7470A	395986
280-127108-4	PNMW20	Total/NA	Water	7470A	395986
280-127108-5	PNMW21	Total/NA	Water	7470A	395986
280-127108-6	PNMW22	Total/NA	Water	7470A	395986
280-127108-7	PNMW23	Total/NA	Water	7470A	395986
MB 240-395986/1-A	Method Blank	Total/NA	Water	7470A	395986
LCS 240-395986/2-A	Lab Control Sample	Total/NA	Water	7470A	395986

General Chemistry

Analysis Batch: 467575

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127108-1	PNMW17	Total/NA	Water	9056A	

General Chemistry (Continued)

Analysis Batch: 467575 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127108-2	PNMW18	Total/NA	Water	9056A	
280-127108-3	PNMW19	Total/NA	Water	9056A	
280-127108-4	PNMW20	Total/NA	Water	9056A	
280-127108-5	PNMW21	Total/NA	Water	9056A	
280-127108-6	PNMW22	Total/NA	Water	9056A	
280-127108-7	PNMW23	Total/NA	Water	9056A	
MB 280-467575/6	Method Blank	Total/NA	Water	9056A	
LCS 280-467575/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-467575/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-467575/3	Lab Control Sample	Total/NA	Water	9056A	
280-127108-3 MS	PNMW19	Total/NA	Water	9056A	
280-127108-3 MSD	PNMW19	Total/NA	Water	9056A	
280-127108-3 DU	PNMW19	Total/NA	Water	9056A	

Rad

Prep Batch: 439523

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127108-1	PNMW17	Total/NA	Water	PrecSep-21	
280-127108-2	PNMW18	Total/NA	Water	PrecSep-21	
280-127108-3	PNMW19	Total/NA	Water	PrecSep-21	
280-127108-4	PNMW20	Total/NA	Water	PrecSep-21	
280-127108-5	PNMW21	Total/NA	Water	PrecSep-21	
280-127108-6	PNMW22	Total/NA	Water	PrecSep-21	
280-127108-7	PNMW23	Total/NA	Water	PrecSep-21	
MB 160-439523/22-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-439523/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-439523/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 439525

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127108-1	PNMW17	Total/NA	Water	PrecSep_0	
280-127108-2	PNMW18	Total/NA	Water	PrecSep_0	
280-127108-3	PNMW19	Total/NA	Water	PrecSep_0	
280-127108-4	PNMW20	Total/NA	Water	PrecSep_0	
280-127108-5	PNMW21	Total/NA	Water	PrecSep_0	
280-127108-6	PNMW22	Total/NA	Water	PrecSep_0	
280-127108-7	PNMW23	Total/NA	Water	PrecSep_0	
MB 160-439525/22-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-439525/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-439525/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: HDR Inc
Job ID: 280-127108-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Client Sample ID: PNMW17
Lab Sample ID: 280-127108-1
Date Collected: 08/06/19 18:30
Matrix: Water
Date Received: 08/09/19 10:42

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	395978	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			396231	08/15/19 14:03	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	395986	08/14/19 14:00	SLD	TAL CAN
Total/NA	Analysis	7470A		1			396281	08/15/19 10:57	DTN	TAL CAN
Total/NA	Analysis	9056A		1	5 mL	5 mL	467575	08/14/19 21:16	TLP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.32 mL	1.0 g	439523	08/14/19 09:09	KAW	TAL SL
Total/NA	Analysis	9315		1			441783	09/05/19 21:55	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.32 mL	1.0 g	439525	08/14/19 09:46	KAW	TAL SL
Total/NA	Analysis	9320		1			441799	09/05/19 09:04	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			442425	09/09/19 09:42	SMP	TAL SL

Client Sample ID: PNMW18
Lab Sample ID: 280-127108-2
Date Collected: 08/06/19 17:00
Matrix: Water
Date Received: 08/09/19 10:42

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	395978	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			396231	08/15/19 14:05	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	395986	08/14/19 14:00	SLD	TAL CAN
Total/NA	Analysis	7470A		1			396281	08/15/19 10:59	DTN	TAL CAN
Total/NA	Analysis	9056A		1	5 mL	5 mL	467575	08/14/19 21:32	TLP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.27 mL	1.0 g	439523	08/14/19 09:09	KAW	TAL SL
Total/NA	Analysis	9315		1			441783	09/05/19 21:56	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.27 mL	1.0 g	439525	08/14/19 09:46	KAW	TAL SL
Total/NA	Analysis	9320		1			441799	09/05/19 09:04	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			442425	09/09/19 09:42	SMP	TAL SL

Client Sample ID: PNMW19
Lab Sample ID: 280-127108-3
Date Collected: 08/06/19 13:55
Matrix: Water
Date Received: 08/09/19 10:42

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	395978	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			396231	08/15/19 14:08	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	395986	08/14/19 14:00	SLD	TAL CAN
Total/NA	Analysis	7470A		1			396281	08/15/19 11:06	DTN	TAL CAN
Total/NA	Analysis	9056A		1	5 mL	5 mL	467575	08/14/19 21:48	TLP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.31 mL	1.0 g	439523	08/14/19 09:09	KAW	TAL SL
Total/NA	Analysis	9315		1			441783	09/05/19 21:56	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.31 mL	1.0 g	439525	08/14/19 09:46	KAW	TAL SL
Total/NA	Analysis	9320		1			441799	09/05/19 09:05	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			442425	09/09/19 09:42	SMP	TAL SL

Lab Chronicle

Client: HDR Inc
Job ID: 280-127108-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Client Sample ID: PNMW20
Lab Sample ID: 280-127108-4
Date Collected: 08/06/19 13:05
Matrix: Water
Date Received: 08/09/19 10:42

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	395978	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			396231	08/15/19 14:10	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	395986	08/14/19 14:00	SLD	TAL CAN
Total/NA	Analysis	7470A		1			396281	08/15/19 11:08	DTN	TAL CAN
Total/NA	Analysis	9056A		1	5 mL	5 mL	467575	08/14/19 22:54	TLP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.71 mL	1.0 g	439523	08/14/19 09:09	KAW	TAL SL
Total/NA	Analysis	9315		1			441882	09/06/19 11:06	KLS	TAL SL
Total/NA	Prep	PrecSep_0			1000.71 mL	1.0 g	439525	08/14/19 09:46	KAW	TAL SL
Total/NA	Analysis	9320		1			441799	09/05/19 09:05	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			442425	09/09/19 09:42	SMP	TAL SL

Client Sample ID: PNMW21
Lab Sample ID: 280-127108-5
Date Collected: 08/06/19 18:05
Matrix: Water
Date Received: 08/09/19 10:42

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	395978	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			396231	08/15/19 14:12	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	395986	08/14/19 14:00	SLD	TAL CAN
Total/NA	Analysis	7470A		1			396281	08/15/19 11:10	DTN	TAL CAN
Total/NA	Analysis	9056A		1	5 mL	5 mL	467575	08/14/19 23:10	TLP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.33 mL	1.0 g	439523	08/14/19 09:09	KAW	TAL SL
Total/NA	Analysis	9315		1			441882	09/06/19 11:07	KLS	TAL SL
Total/NA	Prep	PrecSep_0			1000.33 mL	1.0 g	439525	08/14/19 09:46	KAW	TAL SL
Total/NA	Analysis	9320		1			441816	09/05/19 08:57	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			442425	09/09/19 09:42	SMP	TAL SL

Client Sample ID: PNMW22
Lab Sample ID: 280-127108-6
Date Collected: 08/07/19 18:20
Matrix: Water
Date Received: 08/09/19 10:42

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	395978	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			396231	08/15/19 14:15	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	395986	08/14/19 14:00	SLD	TAL CAN
Total/NA	Analysis	7470A		1			396281	08/15/19 11:12	DTN	TAL CAN
Total/NA	Analysis	9056A		1	5 mL	5 mL	467575	08/14/19 23:27	TLP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.35 mL	1.0 g	439523	08/14/19 09:09	KAW	TAL SL
Total/NA	Analysis	9315		1			441882	09/06/19 11:07	KLS	TAL SL
Total/NA	Prep	PrecSep_0			1000.35 mL	1.0 g	439525	08/14/19 09:46	KAW	TAL SL
Total/NA	Analysis	9320		1			441816	09/05/19 08:58	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			442425	09/09/19 09:42	SMP	TAL SL

Lab Chronicle

Client: HDR Inc
Job ID: 280-127108-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Client Sample ID: PNMW23
Date Collected: 08/07/19 13:50
Date Received: 08/09/19 10:42

Lab Sample ID: 280-127108-7
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	395978	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			396231	08/15/19 14:17	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	395986	08/14/19 14:00	SLD	TAL CAN
Total/NA	Analysis	7470A		1			396281	08/15/19 11:14	DTN	TAL CAN
Total/NA	Analysis	9056A		1	5 mL	5 mL	467575	08/14/19 23:43	TLP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.73 mL	1.0 g	439523	08/14/19 09:09	KAW	TAL SL
Total/NA	Analysis	9315		1			441882	09/06/19 11:07	KLS	TAL SL
Total/NA	Prep	PrecSep_0			1000.73 mL	1.0 g	439525	08/14/19 09:46	KAW	TAL SL
Total/NA	Analysis	9320		1			441816	09/05/19 08:58	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			442425	09/09/19 09:42	SMP	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

Accreditation/Certification Summary

Client: HDR Inc
Job ID: 280-127108-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Laboratory: Eurofins TestAmerica, Denver

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

Authority	Program	Identification Number	Expiration Date
A2LA	DoD	2907.01	10-31-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
9056A		Water	Fluoride

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	02-23-20
California	State Program	2927	02-23-20
Connecticut	State	PH-0590	12-31-19
Connecticut	State Program	PH-0590	12-31-19
Florida	NELAP	E87225	06-30-20
Florida	NELAP	E87225	06-30-20
Georgia	State	4062	02-23-20
Georgia	State Program	N/A	02-23-20
Illinois	NELAP	200004	07-31-20
Illinois	NELAP	004498	07-31-20
Iowa	State Program	421	06-01-21
Kansas	NELAP	E-10336	04-30-20
Kansas	NELAP	E-10336	04-30-20
Kentucky (UST)	State Program	58	02-23-20
Kentucky (WW)	State	KY98016	12-31-19
Kentucky (WW)	State Program	98016	12-31-19
Minnesota	NELAP	039-999-348	12-31-19 *
Minnesota	NELAP	OH00048	12-31-19
Minnesota (Petrofund)	State Program	3506	07-31-21
New Jersey	NELAP	OH001	06-30-20
New Jersey	NELAP	OH001	06-30-20
New York	NELAP	10975	03-31-20
New York	NELAP	10975	03-31-20
Ohio VAP	State	CL0024	06-05-21
Ohio VAP	State Program	CL0024	06-05-21
Oregon	NELAP	4062	02-23-20
Oregon	NELAP	4062	02-23-20
Pennsylvania	NELAP	68-00340	08-31-20
Texas	NELAP	T104704517-19-11	08-31-20
USDA	Federal	P330-16-00404	12-28-19
Virginia	NELAP	460175	09-14-19 *
Virginia	NELAP	010101	09-14-19
Washington	State	C971	01-12-20
Washington	State Program	C971	01-12-20 *
West Virginia DEP	State	210	12-31-19
West Virginia DEP	State Program	210	12-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: HDR Inc
Job ID: 280-127108-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

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
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	DoD	L2305	04-06-22
ANAB	DOE	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-19
Arizona	State Program	AZ0813	12-08-19
California	State	2886	06-30-20
California	State Program	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Connecticut	State Program	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
Florida	NELAP	E87689	06-30-20
Hawaii	State Program	NA	06-30-20
Illinois	NELAP	200023	11-30-19
Illinois	NELAP	004553	11-30-19
Iowa	State Program	373	12-01-20
Kansas	NELAP	E-10236	10-31-19
Kentucky (DW)	State	KY90125	12-31-19
Kentucky (DW)	State Program	KY90125	12-31-19
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	NELAP	LA011	12-31-19
Louisiana (DW)	State	LA011	12-31-19
Maryland	State	310	09-30-20
Maryland	State Program	310	09-30-20
Michigan	State Program	9005	06-30-20
Missouri	State	780	06-30-22
Missouri	State Program	780	06-30-20
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	03-31-20
New York	NELAP	11616	04-01-20
North Dakota	State	R-207	06-30-20
North Dakota	State Program	R207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Oklahoma	State Program	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-20
Pennsylvania	NELAP	68-00540	02-28-20
South Carolina	State Program	85002001	06-30-20
Texas	NELAP	T104704193-19-14	07-31-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	Federal	058448	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	Federal	P330-17-0028	02-02-20
USDA	US Federal Programs	P330-17-00028	02-02-20
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	460230	06-14-20
Virginia	NELAP	10310	06-14-20

Accreditation/Certification Summary

Client: HDR Inc
Job ID: 280-127108-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

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	Expiration Date
Washington	State Program	C592	08-30-19 *
West Virginia DEP	State Program	381	08-31-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

Denver #280

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Rainsberger / Fitterer	Lab PM: Bandy, Darlene	Carrier Tracking No(s):	COC No:
Client Contact: Anna Lundin	Phone:	E-Mail: darlene.bandy@testamericainc.com		Page:
Company: HDR Inc				Job #:
Address: 9781 S. Meridian Blvd Suite 400	Due Date Requested:			
City: Englewood	TAT Requested (days):			
State, Zip: CO, 80112				
Phone: 734-263-7138(Tel)	PO #:			
Email: anna.lundin@hdrinc.com	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Pawnee (COC #2)	Project #: 28014378			
Site: Colorado	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Total Metals: Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Tl

BASP & AWRP
DUP/EB on separate COC

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A, 7470A - Total Metals (see list)	9315_Ra226, 9320_Ra228, Ra226Ra228_GFPC - TA St Louis	9056A_28D - Fluoride Only	Total Number of containers	Special Instructions/Note:
				Preservation Code:			D	D	N		
PNMW17	8·6·19	9 ↔ 1830		Water	N	N	✓	✓	✓		
PNMW18	8·6·19	1700	g	Water	N	N	✓	✓	✓		
PNMW19	8·6·19	1355	g	Water	N	N	✓	✓	✓		
PNMW20	8·6·19	1305	g	Water	N	N	✓	✓	✓		
PNMW21	8·6·19	1805	g	Water	N	N	✓	✓	✓		
PNMW22	8·7·19	1820	g	Water	N	N	✓	✓	✓		
PNMW23	8·7·19	1350	g	Water	N	N	✓	✓	✓		
[illegible]				Water			✓	✓	✓		
				Water			✓	✓	✓		

280-127108 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Rainsberger	8/9/19		[signature]	8/9/19 1042	TADEN

Custody Seals Intact: Δ Yes Δ No

Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 1.2, +0, IR8, xfered by SG, 8/9/19

Ver: 08/04/2016

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Phone: 303-736-0100 Fax: 303-431-7171

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-494551.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: darlene.bandy@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-127108-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 9/9/2019			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Pawnee	Project #: 28014378			
Site: Xcel Energy - Pawnee	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PrecSep_21 Radium-226 (1/3)	9320_Ra228/PrecSep_0 Radium-228 (2/3)	Ra226Ra228_GFPC/ Ra-226/Ra-228 (3/3)	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
PNMW17 (280-127108-1)	8/6/19	18:30 Mountain		Water			X	X	X	2	
PNMW18 (280-127108-2)	8/6/19	17:00 Mountain		Water			X	X	X	2	
PNMW19 (280-127108-3)	8/6/19	13:55 Mountain		Water			X	X	X	2	
PNMW20 (280-127108-4)	8/6/19	13:05 Mountain		Water			X	X	X	2	
PNMW21 (280-127108-5)	8/6/19	18:05 Mountain		Water			X	X	X	2	
PNMW22 (280-127108-6)	8/7/19	18:20 Mountain		Water			X	X	X	2	
PNMW23 (280-127108-7)	8/7/19	13:50 Mountain		Water			X	X	X	2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. 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/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification: Unconfirmed	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:
Empty Kit Relinquished by:	Date: Time: Method of Shipment:

	Date/Time	Company	Received by:	Date/Time	Company
Relinquished by:	8/7/19 17:15			8-14-19 09:00	TA STL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Phone: 303-736-0100 Fax: 303-431-7171

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-494550.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: darlene.bandy@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-127108-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 8/29/2019			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Pawnee	Project #: 28014378			
Site: Xcel Energy - Pawnee	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

558

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A/3005A (MOD) 12 Total Metals (w/collision cell)	7470A/7470A_Prep Mercury - 2/2	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
PNMW17 (280-127108-1)	8/6/19	18:30 Mountain		Water			X	X	1	Use Collision Cell
PNMW18 (280-127108-2)	8/6/19	17:00 Mountain		Water			X	X	1	Use Collision Cell
PNMW19 (280-127108-3)	8/6/19	13:55 Mountain		Water			X	X	1	Use Collision Cell
PNMW20 (280-127108-4)	8/6/19	13:05 Mountain		Water			X	X	1	Use Collision Cell
PNMW21 (280-127108-5)	8/6/19	18:05 Mountain		Water			X	X	1	Use Collision Cell
PNMW22 (280-127108-6)	8/7/19	18:20 Mountain		Water			X	X	1	Use Collision Cell
PNMW23 (280-127108-7)	8/7/19	13:50 Mountain		Water			X	X	1	Use Collision Cell

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. 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/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by: Laurence Chavez	Date/Time: 8/12/19 1642	Company TA/DEN	Received by:	Date/Time: 8/13/19 930	Company TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # :** _____
Canton Facility

Client TA Denver Site Name _____ Cooler unpacked by:

Cooler Received on 8/13/19 Opened on 8/13/19

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # 18 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 Form
   IR GUN# IR-8 (CF +0.1 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #36 (CF +0.6°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 — Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? — Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? — Yes No
   -Were tamper/custody seals intact and uncompromised? — Yes No NA
3. Shippers' packing slip attached to the cooler(s)? — Yes No
4. Did custody papers accompany the sample(s)? — Yes No
5. Were the custody papers relinquished & signed in the appropriate place? — Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? — Yes No
7. Did all bottles arrive in good condition (Unbroken)? — Yes No
8. Could all bottle labels be reconciled with the COC? — Yes No
9. Were correct bottle(s) used for the test(s) indicated? — Yes No
10. Sufficient quantity received to perform indicated analyses? — Yes No
11. Are these work share samples? — Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? — Yes No NA pH Strip Lot# HC984738
13. Were VOAs on the COC? — Yes No
14. Were air bubbles >6 mm in any VOA vials? ⬅ Larger than this. — Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ — Yes No
16. Was a LL Hg or Me Hg trip blank present? _____ — Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by:

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : _____

TestAmerica Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-8 #36	1.8	1.9	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	0.2	0.3	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-127108-1

Login Number: 127108
List Number: 1
Creator: Zimmerman, Steven M

List Source: Eurofins TestAmerica, Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
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	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-127108-1

Login Number: 127108
List Number: 2
Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis
List Creation: 08/13/19 12:45 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
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	19.0
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?	N/A	
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.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: HDR Inc
Job ID: 280-127108-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Method: 9315 - Radium-226 (GFPC)

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

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)
280-127108-1	PNMW17	89.5
280-127108-2	PNMW18	88.1
280-127108-3	PNMW19	84.5
280-127108-4	PNMW20	96.6
280-127108-5	PNMW21	87.6
280-127108-6	PNMW22	88.4
280-127108-7	PNMW23	88.1
LCS 160-439523/1-A	Lab Control Sample	81.1
LCSD 160-439523/2-A	Lab Control Sample Dup	91.8
MB 160-439523/22-A	Method Blank	92.7

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

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

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
280-127108-1	PNMW17	89.5	86.4
280-127108-2	PNMW18	88.1	89.7
280-127108-3	PNMW19	84.5	94.2
280-127108-4	PNMW20	96.6	90.1
280-127108-5	PNMW21	87.6	88.6
280-127108-6	PNMW22	88.4	86.4
280-127108-7	PNMW23	88.1	89.7
LCS 160-439525/1-A	Lab Control Sample	81.1	88.6
LCSD 160-439525/2-A	Lab Control Sample Dup	91.8	87.5
MB 160-439525/22-A	Method Blank	92.7	88.2

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

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ANALYTICAL REPORT

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

Laboratory Job ID: 280-127114-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

For:
HDR Inc
1670 Broadway, Suite 3400
Denver, Colorado 80202

Attn: Molly Reeves

Stephanie Rothmeyer

Authorized for release by:
9/10/2019 9:54:23 AM
Stephanie Rothmeyer, Project Manager I
(303)736-0182
stephanie.rothmeyer@testamericainc.com

Designee for

Darlene Bandy, Project Manager I
(303)736-0188
darlene.bandy@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

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The test results in this report meet all 2003 NELAC and 2009 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: 280-127114-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Qualifiers

Metals

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.
J	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
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
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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Job ID: 280-127114-1

Laboratory: Eurofins TestAmerica, Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Pawnee

Report Number: 280-127114-1

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.

This report may include data with reporting limits (RLs) less than TestAmerica's standard reporting limit. These data and reporting limits are being used specifically to meet the needs of this project. Note that, data are not customarily reported to these levels without qualifiers, because they are inherently less reliable and potentially less defensible than the latest industry standards require.

RECEIPT

The samples were received on 8/9/2019 at 10:42 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.0º C.

TOTAL RECOVERABLE METALS

Samples PNMW12 (280-127114-1) and PNMW6B (280-127114-2) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 08/14/2019 and analyzed on 08/15/2019.

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

TOTAL RECOVERABLE METALS (ICPMS)

Samples PNMW12 (280-127114-1) and PNMW6B (280-127114-2) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 08/14/2019 and analyzed on 08/15/2019.

Calcium failed the recovery criteria high for the MS and MSD of sample PNMW12 (280-127114-1) in batch 240-396231. The presence of the '4' qualifier indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount. Refer to the QC report for details.

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

TOTAL MERCURY

Samples PNMW12 (280-127114-1) and PNMW6B (280-127114-2) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared on 08/14/2019 and analyzed on 08/15/2019.

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

TOTAL DISSOLVED SOLIDS

Samples PNMW12 (280-127114-1) and PNMW6B (280-127114-2) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 08/12/2019.

Job ID: 280-127114-1 (Continued)

Laboratory: Eurofins TestAmerica, Denver (Continued)

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

TOTAL SUSPENDED SOLIDS
Samples PNMW12 (280-127114-1) and PNMW6B (280-127114-2) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 08/13/2019 and 08/15/2019.

Total Suspended Solids exceeded the RPD limit for the duplicate of sample 280-127032-10. Sample non-homogeneity is suspected.

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

CORROSIVITY (PH)
Samples PNMW12 (280-127114-1) and PNMW6B (280-127114-2) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 08/12/2019.

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

ANIONS (28 DAYS)
Samples PNMW12 (280-127114-1) and PNMW6B (280-127114-2) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 08/16/2019.

Samples PNMW12 (280-127114-1)[10X] and PNMW6B (280-127114-2)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

RADIUM-226 (GFPC)
Samples PNMW12 (280-127114-1) and PNMW6B (280-127114-2) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 08/14/2019 and analyzed on 09/06/2019.

Insufficient sample volume was available to perform a sample duplicate associated with batch 160- 439523.

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

The Method Blank (MB) associated with batch 160-439523 exhibited a negative result greater in magnitude than the 3 sigma TPU. This occurrence was evaluated and determined to be random in nature. Sporadic occurrences such as this are statistically expected. No further action is required.

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

RADIUM-228
Samples PNMW12 (280-127114-1) and PNMW6B (280-127114-2) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 08/14/2019 and analyzed on 09/05/2019.

Insufficient sample volume was available to perform a sample duplicate associated with batch 160- 439525.

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

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

RADIUM-226/RADIUM-228 (GFPC)
Samples PNMW12 (280-127114-1) and PNMW6B (280-127114-2) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with

Job ID: 280-127114-1 (Continued)

Laboratory: Eurofins TestAmerica, Denver (Continued)

9315/9320. The samples were analyzed on 09/09/2019.

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

Detection Summary

Client: HDR Inc
Job ID: 280-127114-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Client Sample ID: PNMW12 — Lab Sample ID: 280-127114-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.086	J	0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.14		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	110		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.00050	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.00098	J	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0035	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0098		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.035		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	91		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	0.57		0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	200		50	10	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	670		10	4.7	mg/L	1		SM 2540C	Total/NA

Client Sample ID: PNMW6B — Lab Sample ID: 280-127114-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.32		0.10	0.023	mg/L	1		6010C	Total Recoverable
Antimony	0.00060	J	0.0020	0.00057	mg/L	1		6020A	Total Recoverable
Barium	0.065		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.00045	J	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Calcium	110		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.00076	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0080		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.010		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.00095	J	0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.0015	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Thallium	0.00052	J	0.0010	0.00020	mg/L	1		6020A	Total Recoverable
Lithium	0.081		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.9	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.2	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	170		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	0.72		0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	300		50	10	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	1100		20	9.4	mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Denver

Client Sample ID: PNMW6B (Continued)
Lab Sample ID: 280-127114-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Suspended Solids	22		4.0	1.1	mg/L	1		SM 2540D	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: HDR Inc
Job ID: 280-127114-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

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
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
3005A	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: 280-127114-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
280-127114-1	PNMW12	Water	08/07/19 13:15	08/09/19 10:42	
280-127114-2	PNMW6B	Water	08/08/19 16:50	08/09/19 10:42	

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

Client Sample ID: PNMW12
Date Collected: 08/07/19 13:15
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127114-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.086**	**J**	0.10	0.023	mg/L		08/14/19 14:00	08/15/19 13:01	1

Client Sample ID: PNMW6B
Date Collected: 08/08/19 16:50
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127114-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.32**		0.10	0.023	mg/L		08/14/19 14:00	08/15/19 13:32	1

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

Client Sample ID: PNMW12
Date Collected: 08/07/19 13:15
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127114-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/14/19 14:00	08/15/19 13:45	1
Arsenic	ND		0.0050	0.00075	mg/L		08/14/19 14:00	08/15/19 13:45	1
Barium	**0.14**		0.0050	0.0022	mg/L		08/14/19 14:00	08/15/19 13:45	1
Beryllium	ND		0.0010	0.00031	mg/L		08/14/19 14:00	08/15/19 13:45	1
Calcium	**110**		1.0	0.58	mg/L		08/14/19 14:00	08/15/19 13:45	1
Cadmium	ND		0.0010	0.00021	mg/L		08/14/19 14:00	08/15/19 13:45	1
Cobalt	**0.00050**	**J**	0.0010	0.00019	mg/L		08/14/19 14:00	08/15/19 13:45	1
Chromium	**0.00098**	**J**	0.0020	0.00098	mg/L		08/14/19 14:00	08/15/19 13:45	1
Molybdenum	**0.0035**	**J**	0.010	0.0011	mg/L		08/14/19 14:00	08/15/19 13:45	1
Lead	ND		0.0010	0.00045	mg/L		08/14/19 14:00	08/15/19 13:45	1
Selenium	**0.0098**		0.0050	0.00089	mg/L		08/14/19 14:00	08/15/19 13:45	1
Thallium	ND		0.0010	0.00020	mg/L		08/14/19 14:00	08/15/19 13:45	1
Lithium	**0.035**		0.0080	0.0017	mg/L		08/14/19 14:00	08/15/19 13:45	1

Client Sample ID: PNMW6B
Date Collected: 08/08/19 16:50
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127114-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.00060**	**J**	0.0020	0.00057	mg/L		08/14/19 14:00	08/15/19 14:00	1
Arsenic	ND		0.0050	0.00075	mg/L		08/14/19 14:00	08/15/19 14:00	1
Barium	**0.065**		0.0050	0.0022	mg/L		08/14/19 14:00	08/15/19 14:00	1
Beryllium	**0.00045**	**J**	0.0010	0.00031	mg/L		08/14/19 14:00	08/15/19 14:00	1
Calcium	**110**		1.0	0.58	mg/L		08/14/19 14:00	08/15/19 14:00	1
Cadmium	ND		0.0010	0.00021	mg/L		08/14/19 14:00	08/15/19 14:00	1
Cobalt	**0.00076**	**J**	0.0010	0.00019	mg/L		08/14/19 14:00	08/15/19 14:00	1
Chromium	**0.0080**		0.0020	0.00098	mg/L		08/14/19 14:00	08/15/19 14:00	1
Molybdenum	**0.010**		0.010	0.0011	mg/L		08/14/19 14:00	08/15/19 14:00	1
Lead	**0.00095**	**J**	0.0010	0.00045	mg/L		08/14/19 14:00	08/15/19 14:00	1
Selenium	**0.0015**	**J**	0.0050	0.00089	mg/L		08/14/19 14:00	08/15/19 14:00	1
Thallium	**0.00052**	**J**	0.0010	0.00020	mg/L		08/14/19 14:00	08/15/19 14:00	1
Lithium	**0.081**		0.0080	0.0017	mg/L		08/14/19 14:00	08/15/19 14:00	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: PNMW12
Date Collected: 08/07/19 13:15
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127114-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		08/14/19 14:00	08/15/19 10:49	1

Client Sample ID: PNMW6B
Date Collected: 08/08/19 16:50
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127114-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		08/14/19 14:00	08/15/19 10:55	1

General Chemistry

Client Sample ID: PNMW12
Date Collected: 08/07/19 13:15
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127114-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU			08/12/19 16:55	1
Temperature	21.1	HF	1.0	1.0	Degrees C			08/12/19 16:55	1
Chloride	91		3.0	1.0	mg/L			08/16/19 22:00	1
Fluoride	0.57		0.50	0.17	mg/L			08/16/19 22:00	1
Sulfate	200		50	10	mg/L			08/16/19 22:16	10
Total Dissolved Solids (TDS)	670		10	4.7	mg/L			08/12/19 10:19	1
Total Suspended Solids	ND		4.0	1.1	mg/L			08/13/19 11:22	1

Client Sample ID: PNMW6B
Date Collected: 08/08/19 16:50
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127114-2
Matrix: Water

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			08/12/19 17:03	1
Temperature	21.2	HF	1.0	1.0	Degrees C			08/12/19 17:03	1
Chloride	170		3.0	1.0	mg/L			08/16/19 22:33	1
Fluoride	0.72		0.50	0.17	mg/L			08/16/19 22:33	1
Sulfate	300		50	10	mg/L			08/16/19 22:49	10
Total Dissolved Solids (TDS)	1100		20	9.4	mg/L			08/12/19 10:19	1
Total Suspended Solids	22		4.0	1.1	mg/L			08/15/19 10:57	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: PNMW12
Date Collected: 08/07/19 13:15
Date Received: 08/09/19 10:42
Lab Sample ID: 280-127114-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.317	U	0.233	0.235	1.00	0.349	pCi/L	08/14/19 09:09	09/06/19 11:07	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*85.3*		*40 - 110*	*08/14/19 09:09*	*09/06/19 11:07*	*1*

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: PNMW6B
Date Collected: 08/08/19 16:50
Date Received: 08/09/19 10:42

Lab Sample ID: 280-127114-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.235**		0.168	0.169	1.00	0.235	pCi/L	08/14/19 09:09	09/06/19 11:07	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*88.7*		*40 - 110*	*08/14/19 09:09*	*09/06/19 11:07*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: PNMW12
Date Collected: 08/07/19 13:15
Date Received: 08/09/19 10:42

Lab Sample ID: 280-127114-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.592**		0.283	0.289	1.00	0.415	pCi/L	08/14/19 09:46	09/05/19 08:58	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*85.3*		*40 - 110*	*08/14/19 09:46*	*09/05/19 08:58*	*1*
Y Carrier	*90.1*		*40 - 110*	*08/14/19 09:46*	*09/05/19 08:58*	*1*

Client Sample ID: PNMW6B
Date Collected: 08/08/19 16:50
Date Received: 08/09/19 10:42

Lab Sample ID: 280-127114-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.245	U	0.246	0.247	1.00	0.399	pCi/L	08/14/19 09:46	09/05/19 08:58	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*88.7*		*40 - 110*	*08/14/19 09:46*	*09/05/19 08:58*	*1*
Y Carrier	*89.0*		*40 - 110*	*08/14/19 09:46*	*09/05/19 08:58*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: PNMW12
Date Collected: 08/07/19 13:15
Date Received: 08/09/19 10:42

Lab Sample ID: 280-127114-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.908**		0.367	0.372	5.00	0.415	pCi/L		09/09/19 09:42	1

Client Sample ID: PNMW6B
Date Collected: 08/08/19 16:50
Date Received: 08/09/19 10:42

Lab Sample ID: 280-127114-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.480**		0.298	0.299	5.00	0.399	pCi/L		09/09/19 09:42	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-395978/1-A
Matrix: Water
Analysis Batch: 396208

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 395978

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		08/14/19 14:00	08/15/19 12:52	1

Lab Sample ID: LCS 240-395978/2-A
Matrix: Water
Analysis Batch: 396208

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 395978

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.06		mg/L		106	80 - 120

Lab Sample ID: 280-127114-1 MS
Matrix: Water
Analysis Batch: 396208

Client Sample ID: PNMW12
Prep Type: Total Recoverable
Prep Batch: 395978

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	0.086	J	1.00	1.16		mg/L		108	75 - 125

Lab Sample ID: 280-127114-1 MSD
Matrix: Water
Analysis Batch: 396208

Client Sample ID: PNMW12
Prep Type: Total Recoverable
Prep Batch: 395978

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	0.086	J	1.00	1.15		mg/L		107	75 - 125	1	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-395978/1-A
Matrix: Water
Analysis Batch: 396231

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 395978

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/14/19 14:00	08/15/19 12:34	1
Arsenic	ND		0.0050	0.00075	mg/L		08/14/19 14:00	08/15/19 12:34	1
Barium	ND		0.0050	0.0022	mg/L		08/14/19 14:00	08/15/19 12:34	1
Beryllium	ND		0.0010	0.00031	mg/L		08/14/19 14:00	08/15/19 12:34	1
Calcium	ND		1.0	0.58	mg/L		08/14/19 14:00	08/15/19 12:34	1
Cadmium	ND		0.0010	0.00021	mg/L		08/14/19 14:00	08/15/19 12:34	1
Cobalt	ND		0.0010	0.00019	mg/L		08/14/19 14:00	08/15/19 12:34	1
Chromium	ND		0.0020	0.00098	mg/L		08/14/19 14:00	08/15/19 12:34	1
Molybdenum	ND		0.010	0.0011	mg/L		08/14/19 14:00	08/15/19 12:34	1
Lead	ND		0.0010	0.00045	mg/L		08/14/19 14:00	08/15/19 12:34	1
Selenium	ND		0.0050	0.00089	mg/L		08/14/19 14:00	08/15/19 12:34	1
Thallium	ND		0.0010	0.00020	mg/L		08/14/19 14:00	08/15/19 12:34	1
Lithium	ND		0.0080	0.0017	mg/L		08/14/19 14:00	08/15/19 12:34	1

Lab Sample ID: LCS 240-395978/3-A
Matrix: Water
Analysis Batch: 396231

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 395978

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.102		mg/L		102	80 - 120

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

Lab Sample ID: LCS 240-395978/3-A
Matrix: Water
Analysis Batch: 396231

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 395978

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.00	0.990		mg/L		99	80 - 120
Barium	1.00	1.05		mg/L		105	80 - 120
Beryllium	0.500	0.518		mg/L		104	80 - 120
Calcium	25.0	26.0		mg/L		104	80 - 120
Cadmium	0.500	0.513		mg/L		103	80 - 120
Cobalt	0.500	0.497		mg/L		99	80 - 120
Chromium	0.500	0.520		mg/L		104	80 - 120
Molybdenum	0.500	0.526		mg/L		105	80 - 120
Lead	0.500	0.527		mg/L		105	80 - 120
Selenium	1.00	0.970		mg/L		97	80 - 120
Thallium	1.00	0.996		mg/L		100	80 - 120
Lithium	0.500	0.480		mg/L		96	80 - 120

Lab Sample ID: 280-127114-1 MS
Matrix: Water
Analysis Batch: 396231

Client Sample ID: PNMW12
Prep Type: Total Recoverable
Prep Batch: 395978

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	ND		0.100	0.0999		mg/L		100	75 - 125
Arsenic	ND		1.00	1.00		mg/L		100	75 - 125
Barium	0.14		1.00	1.16		mg/L		102	75 - 125
Beryllium	ND		0.500	0.472		mg/L		94	75 - 125
Calcium	110		25.0	150	4	mg/L		147	75 - 125
Cadmium	ND		0.500	0.490		mg/L		98	75 - 125
Cobalt	0.00050	J	0.500	0.489		mg/L		98	75 - 125
Chromium	0.00098	J	0.500	0.497		mg/L		99	75 - 125
Molybdenum	0.0035	J	0.500	0.539		mg/L		107	75 - 125
Lead	ND		0.500	0.506		mg/L		101	75 - 125
Selenium	0.0098		1.00	0.955		mg/L		94	75 - 125
Thallium	ND		1.00	0.958		mg/L		96	75 - 125
Lithium	0.035		0.500	0.491		mg/L		91	75 - 125

Lab Sample ID: 280-127114-1 MSD
Matrix: Water
Analysis Batch: 396231

Client Sample ID: PNMW12
Prep Type: Total Recoverable
Prep Batch: 395978

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	ND		0.100	0.103		mg/L		103	75 - 125	3	20
Arsenic	ND		1.00	1.04		mg/L		104	75 - 125	3	20
Barium	0.14		1.00	1.21		mg/L		108	75 - 125	5	20
Beryllium	ND		0.500	0.497		mg/L		99	75 - 125	5	20
Calcium	110		25.0	155	4	mg/L		165	75 - 125	3	20
Cadmium	ND		0.500	0.508		mg/L		102	75 - 125	4	20
Cobalt	0.00050	J	0.500	0.500		mg/L		100	75 - 125	2	20
Chromium	0.00098	J	0.500	0.513		mg/L		103	75 - 125	3	20
Molybdenum	0.0035	J	0.500	0.552		mg/L		110	75 - 125	2	20
Lead	ND		0.500	0.519		mg/L		104	75 - 125	3	20
Selenium	0.0098		1.00	1.01		mg/L		100	75 - 125	6	20
Thallium	ND		1.00	0.989		mg/L		99	75 - 125	3	20

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

Lab Sample ID: 280-127114-1 MSD
Matrix: Water
Analysis Batch: 396231

Client Sample ID: PNMW12
Prep Type: Total Recoverable
Prep Batch: 395978

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lithium	0.035		0.500	0.511		mg/L		95	75 - 125	4	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 240-395986/1-A
Matrix: Water
Analysis Batch: 396281

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 395986

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		08/14/19 14:00	08/15/19 10:45	1

Lab Sample ID: LCS 240-395986/2-A
Matrix: Water
Analysis Batch: 396281

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 395986

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	5.23		ug/L		105	80 - 120

Lab Sample ID: 280-127114-1 MS
Matrix: Water
Analysis Batch: 396281

Client Sample ID: PNMW12
Prep Type: Total/NA
Prep Batch: 395986

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		1.00	1.06		ug/L		106	80 - 120

Lab Sample ID: 280-127114-1 MSD
Matrix: Water
Analysis Batch: 396281

Client Sample ID: PNMW12
Prep Type: Total/NA
Prep Batch: 395986

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		1.00	1.01		ug/L		101	80 - 120	6	20

Method: 9040B - pH

Lab Sample ID: LCS 280-467411/31
Matrix: Water
Analysis Batch: 467411

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101

Lab Sample ID: LCSD 280-467411/32
Matrix: Water
Analysis Batch: 467411

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101	0	5

Method: 9040B - pH (Continued)

Lab Sample ID: 280-127114-1 DU
Matrix: Water
Analysis Batch: 467411

Client Sample ID: PNMW12
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH adj. to 25 deg C	7.8	HF	7.8		SU		0.3	5
Temperature	21.1	HF	21.0		Degrees C		0.6	10

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-467879/6
Matrix: Water
Analysis Batch: 467879

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	1.0	mg/L			08/16/19 12:06	1
Fluoride	ND		0.50	0.17	mg/L			08/16/19 12:06	1
Sulfate	ND		5.0	1.0	mg/L			08/16/19 12:06	1

Lab Sample ID: LCS 280-467879/4
Matrix: Water
Analysis Batch: 467879

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	97.9		mg/L		98	90 - 110
Fluoride	5.00	5.04		mg/L		101	90 - 110
Sulfate	100	92.2		mg/L		92	90 - 110

Lab Sample ID: LCSD 280-467879/5
Matrix: Water
Analysis Batch: 467879

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	97.9		mg/L		98	90 - 110	0	10
Fluoride	5.00	5.05		mg/L		101	90 - 110	0	10
Sulfate	100	92.1		mg/L		92	90 - 110	0	10

Lab Sample ID: MRL 280-467879/3
Matrix: Water
Analysis Batch: 467879

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.03		mg/L		81	50 - 150
Fluoride	0.500	0.528		mg/L		106	50 - 150
Sulfate	5.00	4.23	J	mg/L		85	50 - 150

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

Lab Sample ID: MB 280-467316/1
Matrix: Water
Analysis Batch: 467316

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			08/12/19 10:19	1

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

Lab Sample ID: LCS 280-467316/2
Matrix: Water
Analysis Batch: 467316

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	500	497		mg/L		99	93 - 110

Lab Sample ID: LCSD 280-467316/3
Matrix: Water
Analysis Batch: 467316

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Dissolved Solids (TDS)	500	492		mg/L		98	93 - 110	1	20

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

Lab Sample ID: MB 280-467462/1
Matrix: Water
Analysis Batch: 467462

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			08/13/19 11:22	1

Lab Sample ID: LCS 280-467462/2
Matrix: Water
Analysis Batch: 467462

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	80.8		mg/L		81	79 - 114

Lab Sample ID: LCSD 280-467462/3
Matrix: Water
Analysis Batch: 467462

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Suspended Solids	100	84.8		mg/L		85	79 - 114	5	20

Lab Sample ID: MB 280-467762/1
Matrix: Water
Analysis Batch: 467762

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			08/15/19 10:57	1

Lab Sample ID: LCS 280-467762/2
Matrix: Water
Analysis Batch: 467762

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	84.0		mg/L		84	79 - 114

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

Lab Sample ID: LCSD 280-467762/3
Matrix: Water
Analysis Batch: 467762

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Suspended Solids			100	86.8		mg/L		87	79 - 114	3	20

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-439523/22-A
Matrix: Water
Analysis Batch: 441882

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 439523

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.2228	U	0.0772	0.0797	1.00	0.282	pCi/L	08/14/19 09:09	09/06/19 11:07	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.7*		*40 - 110*	*08/14/19 09:09*	*09/06/19 11:07*	*1*

Lab Sample ID: LCS 160-439523/1-A
Matrix: Water
Analysis Batch: 441783

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 439523

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	10.85		1.42	1.00	0.385	pCi/L	96	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*81.1*		*40 - 110*

Lab Sample ID: LCSD 160-439523/2-A
Matrix: Water
Analysis Batch: 441783

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 439523

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.4	10.12		1.34	1.00	0.347	pCi/L	89	75 - 125	0.27	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*91.8*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-439525/22-A
Matrix: Water
Analysis Batch: 441816

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 439525

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1573	U	0.230	0.230	1.00	0.385	pCi/L	08/14/19 09:46	09/05/19 08:59	1

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

Lab Sample ID: MB 160-439525/22-A
Matrix: Water
Analysis Batch: 441816

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 439525

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	92.7		40 - 110	08/14/19 09:46	09/05/19 08:59	1
Y Carrier	88.2		40 - 110	08/14/19 09:46	09/05/19 08:59	1

Lab Sample ID: LCS 160-439525/1-A
Matrix: Water
Analysis Batch: 441799

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 439525

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.62	8.437		1.04	1.00	0.481	pCi/L	88	75 - 125		

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	81.1		40 - 110
Y Carrier	88.6		40 - 110

Lab Sample ID: LCSD 160-439525/2-A
Matrix: Water
Analysis Batch: 441799

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 439525

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			9.62	8.872		1.05	1.00	0.384	pCi/L	92	75 - 125	0.21	1

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Ba Carrier	91.8		40 - 110
Y Carrier	87.5		40 - 110

QC Association Summary

Client: HDR Inc
Job ID: 280-127114-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Metals

Prep Batch: 395978

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127114-1	PNMW12	Total Recoverable	Water	3005A	
280-127114-2	PNMW6B	Total Recoverable	Water	3005A	
MB 240-395978/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-395978/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-395978/3-A	Lab Control Sample	Total Recoverable	Water	3005A	
280-127114-1 MS	PNMW12	Total Recoverable	Water	3005A	
280-127114-1 MS	PNMW12	Total Recoverable	Water	3005A	
280-127114-1 MSD	PNMW12	Total Recoverable	Water	3005A	
280-127114-1 MSD	PNMW12	Total Recoverable	Water	3005A	

Prep Batch: 395986

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127114-1	PNMW12	Total/NA	Water	7470A	
280-127114-2	PNMW6B	Total/NA	Water	7470A	
MB 240-395986/1-A	Method Blank	Total/NA	Water	7470A	
LCS 240-395986/2-A	Lab Control Sample	Total/NA	Water	7470A	
280-127114-1 MS	PNMW12	Total/NA	Water	7470A	
280-127114-1 MSD	PNMW12	Total/NA	Water	7470A	

Analysis Batch: 396208

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127114-1	PNMW12	Total Recoverable	Water	6010C	395978
280-127114-2	PNMW6B	Total Recoverable	Water	6010C	395978
MB 240-395978/1-A	Method Blank	Total Recoverable	Water	6010C	395978
LCS 240-395978/2-A	Lab Control Sample	Total Recoverable	Water	6010C	395978
280-127114-1 MS	PNMW12	Total Recoverable	Water	6010C	395978
280-127114-1 MSD	PNMW12	Total Recoverable	Water	6010C	395978

Analysis Batch: 396231

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127114-1	PNMW12	Total Recoverable	Water	6020A	395978
280-127114-2	PNMW6B	Total Recoverable	Water	6020A	395978
MB 240-395978/1-A	Method Blank	Total Recoverable	Water	6020A	395978
LCS 240-395978/3-A	Lab Control Sample	Total Recoverable	Water	6020A	395978
280-127114-1 MS	PNMW12	Total Recoverable	Water	6020A	395978
280-127114-1 MSD	PNMW12	Total Recoverable	Water	6020A	395978

Analysis Batch: 396281

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127114-1	PNMW12	Total/NA	Water	7470A	395986
280-127114-2	PNMW6B	Total/NA	Water	7470A	395986
MB 240-395986/1-A	Method Blank	Total/NA	Water	7470A	395986
LCS 240-395986/2-A	Lab Control Sample	Total/NA	Water	7470A	395986
280-127114-1 MS	PNMW12	Total/NA	Water	7470A	395986
280-127114-1 MSD	PNMW12	Total/NA	Water	7470A	395986

General Chemistry

Analysis Batch: 467316

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127114-1	PNMW12	Total/NA	Water	SM 2540C	

General Chemistry (Continued)

Analysis Batch: 467316 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127114-2	PNMW6B	Total/NA	Water	SM 2540C	
MB 280-467316/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-467316/2	Lab Control Sample	Total/NA	Water	SM 2540C	
LCSD 280-467316/3	Lab Control Sample Dup	Total/NA	Water	SM 2540C	

Analysis Batch: 467411

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127114-1	PNMW12	Total/NA	Water	9040B	
280-127114-2	PNMW6B	Total/NA	Water	9040B	
LCS 280-467411/31	Lab Control Sample	Total/NA	Water	9040B	
LCSD 280-467411/32	Lab Control Sample Dup	Total/NA	Water	9040B	
280-127114-1 DU	PNMW12	Total/NA	Water	9040B	

Analysis Batch: 467462

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127114-1	PNMW12	Total/NA	Water	SM 2540D	
MB 280-467462/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-467462/2	Lab Control Sample	Total/NA	Water	SM 2540D	
LCSD 280-467462/3	Lab Control Sample Dup	Total/NA	Water	SM 2540D	

Analysis Batch: 467762

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127114-2	PNMW6B	Total/NA	Water	SM 2540D	
MB 280-467762/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-467762/2	Lab Control Sample	Total/NA	Water	SM 2540D	
LCSD 280-467762/3	Lab Control Sample Dup	Total/NA	Water	SM 2540D	

Analysis Batch: 467879

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127114-1	PNMW12	Total/NA	Water	9056A	
280-127114-1	PNMW12	Total/NA	Water	9056A	
280-127114-2	PNMW6B	Total/NA	Water	9056A	
280-127114-2	PNMW6B	Total/NA	Water	9056A	
MB 280-467879/6	Method Blank	Total/NA	Water	9056A	
LCS 280-467879/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-467879/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-467879/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 439523

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127114-1	PNMW12	Total/NA	Water	PrecSep-21	
280-127114-2	PNMW6B	Total/NA	Water	PrecSep-21	
MB 160-439523/22-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-439523/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-439523/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 439525

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127114-1	PNMW12	Total/NA	Water	PrecSep_0	

Rad (Continued)

Prep Batch: 439525 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-127114-2	PNMW6B	Total/NA	Water	PrecSep_0	
MB 160-439525/22-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-439525/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-439525/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: HDR Inc
Job ID: 280-127114-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Client Sample ID: PNMW12
Date Collected: 08/07/19 13:15
Date Received: 08/09/19 10:42

Lab Sample ID: 280-127114-1
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	395978	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			396208	08/15/19 13:01	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	395978	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			396231	08/15/19 13:45	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	395986	08/14/19 14:00	SLD	TAL CAN
Total/NA	Analysis	7470A		1			396281	08/15/19 10:49	DTN	TAL CAN
Total/NA	Analysis	9040B		1			467411	08/12/19 16:55	SPG	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	467879	08/16/19 22:00	TLP	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	467879	08/16/19 22:16	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	467316	08/12/19 10:19	ECL	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	467462	08/13/19 11:22	ECL	TAL DEN
Total/NA	Prep	PrecSep-21			1000.12 mL	1.0 g	439523	08/14/19 09:09	KAW	TAL SL
Total/NA	Analysis	9315		1			441882	09/06/19 11:07	KLS	TAL SL
Total/NA	Prep	PrecSep_0			1000.12 mL	1.0 g	439525	08/14/19 09:46	KAW	TAL SL
Total/NA	Analysis	9320		1			441816	09/05/19 08:58	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			442425	09/09/19 09:42	SMP	TAL SL

Client Sample ID: PNMW6B
Date Collected: 08/08/19 16:50
Date Received: 08/09/19 10:42

Lab Sample ID: 280-127114-2
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	395978	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			396208	08/15/19 13:32	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	395978	08/14/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			396231	08/15/19 14:00	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	395986	08/14/19 14:00	SLD	TAL CAN
Total/NA	Analysis	7470A		1			396281	08/15/19 10:55	DTN	TAL CAN
Total/NA	Analysis	9040B		1			467411	08/12/19 17:03	SPG	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	467879	08/16/19 22:33	TLP	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	467879	08/16/19 22:49	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	467316	08/12/19 10:19	ECL	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	467762	08/15/19 10:57	ECL	TAL DEN
Total/NA	Prep	PrecSep-21			1000.11 mL	1.0 g	439523	08/14/19 09:09	KAW	TAL SL
Total/NA	Analysis	9315		1			441882	09/06/19 11:07	KLS	TAL SL
Total/NA	Prep	PrecSep_0			1000.11 mL	1.0 g	439525	08/14/19 09:46	KAW	TAL SL
Total/NA	Analysis	9320		1			441816	09/05/19 08:58	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			442425	09/09/19 09:42	SMP	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

Accreditation/Certification Summary

Client: HDR Inc
Job ID: 280-127114-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Laboratory: Eurofins TestAmerica, Denver

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

Authority	Program	Identification Number	Expiration Date
A2LA	DoD	2907.01	10-31-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
9040B		Water	Temperature
9056A		Water	Chloride
9056A		Water	Fluoride
9056A		Water	Sulfate

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	02-23-20
California	State Program	2927	02-23-20
Connecticut	State	PH-0590	12-31-19
Connecticut	State Program	PH-0590	12-31-19
Florida	NELAP	E87225	06-30-20
Florida	NELAP	E87225	06-30-20
Georgia	State	4062	02-23-20
Georgia	State Program	N/A	02-23-20
Illinois	NELAP	200004	07-31-20
Illinois	NELAP	004498	07-31-20
Iowa	State Program	421	06-01-21
Kansas	NELAP	E-10336	04-30-20
Kansas	NELAP	E-10336	04-30-20
Kentucky (UST)	State Program	58	02-23-20
Kentucky (WW)	State	KY98016	12-31-19
Kentucky (WW)	State Program	98016	12-31-19
Minnesota	NELAP	039-999-348	12-31-19 *
Minnesota	NELAP	OH00048	12-31-19
Minnesota (Petrofund)	State Program	3506	07-31-21
New Jersey	NELAP	OH001	06-30-20
New Jersey	NELAP	OH001	06-30-20
New York	NELAP	10975	03-31-20
New York	NELAP	10975	03-31-20
Ohio VAP	State	CL0024	06-05-21
Ohio VAP	State Program	CL0024	06-05-21
Oregon	NELAP	4062	02-23-20
Oregon	NELAP	4062	02-23-20
Pennsylvania	NELAP	68-00340	08-31-20
Texas	NELAP	T104704517-19-11	08-31-20
USDA	Federal	P330-16-00404	12-28-19
Virginia	NELAP	460175	09-14-19 *
Virginia	NELAP	010101	09-14-19
Washington	State	C971	01-12-20
Washington	State Program	C971	01-12-20 *
West Virginia DEP	State	210	12-31-19
West Virginia DEP	State Program	210	12-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: HDR Inc
Job ID: 280-127114-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

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
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	DoD	L2305	04-06-22
ANAB	DOE	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-19
Arizona	State Program	AZ0813	12-08-19
California	State	2886	06-30-20
California	State Program	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Connecticut	State Program	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
Florida	NELAP	E87689	06-30-20
Hawaii	State Program	NA	06-30-20
Illinois	NELAP	200023	11-30-19
Illinois	NELAP	004553	11-30-19
Iowa	State Program	373	12-01-20
Kansas	NELAP	E-10236	10-31-19
Kentucky (DW)	State	KY90125	12-31-19
Kentucky (DW)	State Program	KY90125	12-31-19
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	NELAP	LA011	12-31-19
Louisiana (DW)	State	LA011	12-31-19
Maryland	State	310	09-30-20
Maryland	State Program	310	09-30-20
Michigan	State Program	9005	06-30-20
Missouri	State	780	06-30-22
Missouri	State Program	780	06-30-20
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	03-31-20
New York	NELAP	11616	04-01-20
North Dakota	State	R-207	06-30-20
North Dakota	State Program	R207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Oklahoma	State Program	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-20
Pennsylvania	NELAP	68-00540	02-28-20
South Carolina	State Program	85002001	06-30-20
Texas	NELAP	T104704193-19-14	07-31-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	Federal	058448	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	Federal	P330-17-0028	02-02-20
USDA	US Federal Programs	P330-17-00028	02-02-20
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	460230	06-14-20
Virginia	NELAP	10310	06-14-20

Accreditation/Certification Summary

Client: HDR Inc
Job ID: 280-127114-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

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	Expiration Date
Washington	State Program	C592	08-30-19 *
West Virginia DEP	State Program	381	08-31-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Ransberger	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No:
Client Contact: Anna Lundin	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com		Page: Page ___ of ___
Company: HDR Inc				Job #:

Address: 9781 S. Meridian Blve Suite 400	Due Date Requested:	Analysis Requested
City: Englewood	TAT Requested (days): Standard	
State, Zip: CO, 80112		
Phone: 720-633-2380(Tel)	PO #: DEN-001	
Email: anna.lundin@hdrinc.com	WO #:	
Project Name: Xcel Energy GW CCR Monitoring - Pawnee	Project #: 28014378	
Site: Colorado	SSOW#:	

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2SO3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - ph 4-5
L - EDA	Z - other (specify)

Other:

Special Instructions/Note: Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl, Ca, B, Hg

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	2540C - Total Dissolved Solids (TDS)	Metals - 6020A, 6010C, 7470A	pH - 9040B, Anions - 9056A_28D Fluoride, Chloride, Sulfate, pH	2540D - Total Suspended Solids	9315_Ra226, 9320_Ra228	Total Number of containers
			Preservation Code:				N	D	N	N	D	
~~PNMW 1B~~ PNMW 12 time: 1315	8-7-19	~~1315~~	G	Water	N	N	✓	✓	✓	✓	✓	
~~PNMW 2B~~ PNMW 6B	8-8-19	1650	G	Water	N	N	✓	✓	✓	✓	✓	
~~PNMW 1B~~				Water		N						
~~PNMW 1~~				Water		N						
~~PNMW 1B~~				Water		N						
~~PNMW 1~~				Water		N						
~~PNMW 1~~				Water		N						
~~Field Duplicate~~				Water		N						
~~Equipment Blank~~				Water		N						

280-127114 Chain of Custody

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify)	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Ransberger	8/9/19			8/9/19 1042	TAL-EN
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 3.0, IR8, CBO, PVT, 08/09/19

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Phone: 303-736-0100 Fax: 303-431-7171

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-494521.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: darlene.bandy@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-127114-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 9/9/2019			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Pawnee	Project #: 28014378			
Site: Xcel Energy - Pawnee	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PrecSep_21 Radium-226 (1/3)	9320_Ra228/PrecSep_0 Radium-228 (2/3)	Ra226Ra228_GFPC/ Ra-226/Ra-228 (3/3)	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
PNMW12 (280-127114-1)	8/7/19	13:15 Mountain		Water			X	X	X	2	
PNMW6B (280-127114-2)	8/8/19	16:50 Mountain		Water			X	X	X	2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. 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/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		8-12-19 17:15			8-14-19 09:00	TA SLC
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Phone: 303-736-0100 Fax: 303-431-7171

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-494520.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: darlene.bandy@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-127114-1
Address: 4101 Shuffel Street NW,	Due Date Requested: 8/29/2019			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Pawnee	Project #: 28014378			
Site: Xcel Energy - Pawnee	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010C/3005A Boron	6020A/3005A (MOD) 13 Total Metals (w/collision cell)	7470A/7470A_Prep Mercury - 2/2	Total Number of containers	Special Instructions/Note:
Preservation Code:											558
PNMW12 (280-127114-1)	8/7/19	13:15 Mountain		Water			X	X	X	1	, Use Collision Cell
PNMW6B (280-127114-2)	8/8/19	16:50 Mountain		Water			X	X	X	1	, Use Collision Cell

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. 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/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification: Unconfirmed	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Lawrence Chaney	8/12/19 1642	TA/DEN		8/13/19 930	TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # :** _____
Canton Facility

Client TA Denver Site Name _____ Cooler unpacked by:

Cooler Received on 8/13/15 Opened on 8/13/15

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # 1 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 Form
   IR GUN# IR-8 (CF +0.1 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #36 (CF +0.6°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 — Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? — Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? — Yes No
   -Were tamper/custody seals intact and uncompromised? — Yes No NA
3. Shippers' packing slip attached to the cooler(s)? — Yes No
4. Did custody papers accompany the sample(s)? — Yes No
5. Were the custody papers relinquished & signed in the appropriate place? — Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? — Yes No
7. Did all bottles arrive in good condition (Unbroken)? — Yes No
8. Could all bottle labels be reconciled with the COC? — Yes No
9. Were correct bottle(s) used for the test(s) indicated? — Yes No
10. Sufficient quantity received to perform indicated analyses? — Yes No
11. Are these work share samples? — Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? — Yes No NA pH Strip Lot# **HC984738**
13. Were VOAs on the COC? — Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. — Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ — Yes No
16. Was a LL Hg or Me Hg trip blank present? _____ — Yes No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by:

_____

_____

_____

_____

_____

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s):_____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : _____

TestAmerica Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-8 #36	1.8	1.9	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	0.2	0.3	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-127114-1

Login Number: 127114
List Number: 1
Creator: Petunin, Peter

List Source: Eurofins TestAmerica, Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	False	Not present
Sample custody seals, if present, are intact.	N/A	
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").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-127114-1

Login Number: 127114
List Number: 2
Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis
List Creation: 08/13/19 12:45 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
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	19.0
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?	N/A	
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.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: HDR Inc
Job ID: 280-127114-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Method: 9315 - Radium-226 (GFPC)

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

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)
280-127114-1	PNMW12	85.3
280-127114-2	PNMW6B	88.7
LCS 160-439523/1-A	Lab Control Sample	81.1
LCSD 160-439523/2-A	Lab Control Sample Dup	91.8
MB 160-439523/22-A	Method Blank	92.7

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

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

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
280-127114-1	PNMW12	85.3	90.1
280-127114-2	PNMW6B	88.7	89.0
LCS 160-439525/1-A	Lab Control Sample	81.1	88.6
LCSD 160-439525/2-A	Lab Control Sample Dup	91.8	87.5
MB 160-439525/22-A	Method Blank	92.7	88.2

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

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ANALYTICAL REPORT

Eurofins TestAmerica, Denver
4955 Yarrow Street
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Laboratory Job ID: 280-130629-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

For:
HDR Inc
1670 Broadway, Suite 3400
Denver, Colorado 80202

Attn: Molly Reeves

Stephanie Rothmeyer

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LINKS

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The test results in this report meet all 2003 NELAC and 2009 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: 280-130629-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Qualifiers

Metals

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.
J	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
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
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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Job ID: 280-130629-1

Laboratory: Eurofins TestAmerica, Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Pawnee

Report Number: 280-130629-1

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.

This report may include data with reporting limits (RLs) less than TestAmerica's standard reporting limit. These data and reporting limits are being used specifically to meet the needs of this project. Note that, data are not customarily reported to these levels without qualifiers, because they are inherently less reliable and potentially less defensible than the latest industry standards require.

RECEIPT

The samples were received on 11/7/2019 at 4:56 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.3º C, 1.6º C and 3.0º C.

1 x 1L Nitric Acid preserved plastic container submitted for sample PNMW-23 (280-130629-7) was received without a collection time documented on it's container labels. The sample was logged per the collection time listed on the COC.

1 x 500mL Nitric Acid preserved plastic container submitted for sample PNMW-22 (280-130629-6) was received without a collection time documented on it's container label. The sample was logged per the collection time listed on the COC.

Samples requesting Total Metals were logged for B, Ca, As, Ba, Cr, Co, Pb, Li, Mb, and Se per client note on the COC.

TOTAL RECOVERABLE METALS

Samples PNMW-17 (280-130629-1), PNMW-18 (280-130629-2), PNMW-19 (280-130629-3), PNMW-20 (280-130629-4), PNMW-21 (280-130629-5), PNMW-22 (280-130629-6), PNMW-23 (280-130629-7), PNMW-20DUP (280-130629-8) and PNMW-22EB (280-130629-9) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 11/14/2019 and analyzed on 11/15/2019.

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

TOTAL RECOVERABLE METALS (ICPMS)

Samples PNMW-17 (280-130629-1), PNMW-18 (280-130629-2), PNMW-19 (280-130629-3), PNMW-20 (280-130629-4), PNMW-21 (280-130629-5), PNMW-22 (280-130629-6), PNMW-23 (280-130629-7), PNMW-20DUP (280-130629-8) and PNMW-22EB (280-130629-9) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 11/14/2019 and analyzed on 11/15/2019.

Calcium failed the recovery criteria high for the MS and MSD of sample PNMW-18 (280-130629-2) in batch 240-411345. The presence of the '4' qualifier indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount. Refer to the QC report for details.

Job ID: 280-130629-1 (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 DISSOLVED SOLIDS
Samples PNMW-17 (280-130629-1), PNMW-18 (280-130629-2), PNMW-19 (280-130629-3), PNMW-20 (280-130629-4), PNMW-21 (280-130629-5), PNMW-22 (280-130629-6), PNMW-23 (280-130629-7), PNMW-20DUP (280-130629-8) and PNMW-22EB (280-130629-9) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 11/12/2019.

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

TOTAL SUSPENDED SOLIDS
Samples PNMW-17 (280-130629-1), PNMW-18 (280-130629-2), PNMW-19 (280-130629-3), PNMW-20 (280-130629-4), PNMW-21 (280-130629-5), PNMW-22 (280-130629-6), PNMW-23 (280-130629-7), PNMW-20DUP (280-130629-8) and PNMW-22EB (280-130629-9) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 11/11/2019.

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

CORROSIVITY (PH)
Samples PNMW-17 (280-130629-1), PNMW-18 (280-130629-2), PNMW-19 (280-130629-3), PNMW-20 (280-130629-4), PNMW-21 (280-130629-5), PNMW-22 (280-130629-6), PNMW-23 (280-130629-7), PNMW-20DUP (280-130629-8) and PNMW-22EB (280-130629-9) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 11/26/2019 and 11/27/2019.

The following sample's pH did not equilibrate to 0.05 pH units after three measurements: PNMW-22EB (280-130629-9). This was observed in a previous batch; thus, the sample was not rerun.

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

ANIONS (28 DAYS)
Samples PNMW-17 (280-130629-1), PNMW-18 (280-130629-2), PNMW-19 (280-130629-3), PNMW-20 (280-130629-4), PNMW-21 (280-130629-5), PNMW-22 (280-130629-6), PNMW-23 (280-130629-7), PNMW-20DUP (280-130629-8) and PNMW-22EB (280-130629-9) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 12/02/2019 and 12/03/2019.

Samples PNMW-17 (280-130629-1)[5X], PNMW-18 (280-130629-2)[10X], PNMW-18 (280-130629-2)[5X], PNMW-20 (280-130629-4)[10X], PNMW-20 (280-130629-4)[100X], PNMW-21 (280-130629-5)[5X], PNMW-22 (280-130629-6)[5X], PNMW-23 (280-130629-7)[10X], PNMW-23 (280-130629-7)[5X], PNMW-20DUP (280-130629-8)[10X] and PNMW-20DUP (280-130629-8)[100X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

RADIUM-226 (GFPC)
Samples PNMW-17 (280-130629-1), PNMW-18 (280-130629-2), PNMW-19 (280-130629-3), PNMW-20 (280-130629-4), PNMW-21 (280-130629-5), PNMW-22 (280-130629-6), PNMW-23 (280-130629-7), PNMW-20DUP (280-130629-8) and PNMW-22EB (280-130629-9) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 11/13/2019 and analyzed on 12/05/2019.

Insufficient sample volume was available to perform a sample duplicate associated with batch 160-450339.

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

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

RADIUM-228

Job ID: 280-130629-1 (Continued)

Laboratory: Eurofins TestAmerica, Denver (Continued)

Samples PNMW-17 (280-130629-1), PNMW-18 (280-130629-2), PNMW-19 (280-130629-3), PNMW-20 (280-130629-4), PNMW-21 (280-130629-5), PNMW-22 (280-130629-6), PNMW-23 (280-130629-7), PNMW-20DUP (280-130629-8) and PNMW-22EB (280-130629-9) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 11/13/2019 and analyzed on 11/18/2019.

Insufficient sample volume was available to perform a sample duplicate associated with batch 160-450343.

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

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

RADIUM-226/RADIUM-228 (GFPC)

Samples PNMW-17 (280-130629-1), PNMW-18 (280-130629-2), PNMW-19 (280-130629-3), PNMW-20 (280-130629-4), PNMW-21 (280-130629-5), PNMW-22 (280-130629-6), PNMW-23 (280-130629-7), PNMW-20DUP (280-130629-8) and PNMW-22EB (280-130629-9) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 12/06/2019.

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

Detection Summary

Client: HDR Inc
Job ID: 280-130629-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Client Sample ID: PNMW-17 — Lab Sample ID: 280-130629-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.32		0.10	0.023	mg/L	1		6010C	Total Recoverable
Arsenic	0.00098	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Calcium	250		1.0	0.58	mg/L	1		6020A	Total Recoverable
Chromium	0.0052		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0014	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.020		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.044		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Barium	0.066		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.5	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	340		15	5.1	mg/L	5		9056A	Total/NA
Fluoride	0.22	J	0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	560		25	5.2	mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	1500		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	8.4		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-18 — Lab Sample ID: 280-130629-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.20		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	230		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.00024	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0013	J	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Selenium	0.0026	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.035		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Barium	0.066		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.8	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	380		15	5.1	mg/L	5		9056A	Total/NA
Fluoride	0.29	J	0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	1000		50	10	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	2400		40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	6.4		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-19 — Lab Sample ID: 280-130629-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.029	J	0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	92		1.0	0.58	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Denver

Client Sample ID: PNMW-19 (Continued)
Lab Sample ID: 280-130629-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	0.00019	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0014	J	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0014	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0026	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.027		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Barium	0.18		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	48		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	0.29	J	0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	120		5.0	1.0	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	520		10	4.7	mg/L	1		SM 2540C	Total/NA

Client Sample ID: PNMW-20
Lab Sample ID: 280-130629-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.8		0.10	0.023	mg/L	1		6010C	Total Recoverable
Arsenic	0.00087	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Calcium	390		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.00022	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Selenium	0.0068		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.068		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Barium	0.016		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.9	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	980		30	10	mg/L	10		9056A	Total/NA
Sulfate	5100		500	100	mg/L	100		9056A	Total/NA
Total Dissolved Solids (TDS)	9000		200	94	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	6.8		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-21
Lab Sample ID: 280-130629-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.18		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	170		1.0	0.58	mg/L	1		6020A	Total Recoverable
Chromium	0.0015	J	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0037	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0026	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: PNMW-21 (Continued)
Lab Sample ID: 280-130629-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lithium	0.057		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Barium	0.042		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.2	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	280		15	5.1	mg/L	5		9056A	Total/NA
Sulfate	680		25	5.2	mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	1800		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	7.2		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-22
Lab Sample ID: 280-130629-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.11		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	260		1.0	0.58	mg/L	1		6020A	Total Recoverable
Chromium	0.0017	J	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0031	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0052		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.055		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Barium	0.065		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	220		15	5.1	mg/L	5		9056A	Total/NA
Sulfate	830		25	5.2	mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	1800		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	5.6		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-23
Lab Sample ID: 280-130629-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.11		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	280		1.0	0.58	mg/L	1		6020A	Total Recoverable
Chromium	0.0015	J	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Selenium	0.0025	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.045		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Barium	0.026		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	110		15	5.1	mg/L	5		9056A	Total/NA
Sulfate	1200		50	10	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	2300		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	4.8		4.0	1.1	mg/L	1		SM 2540D	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: HDR Inc
Job ID: 280-130629-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Client Sample ID: PNMW-20DUP
Lab Sample ID: 280-130629-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.9		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	430		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.00022	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0011	J	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Selenium	0.0067		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.073		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Barium	0.017		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.7	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	930		30	10	mg/L	10		9056A	Total/NA
Sulfate	5000		500	100	mg/L	100		9056A	Total/NA
Total Dissolved Solids (TDS)	8900		200	94	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	7.6		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-22EB
Lab Sample ID: 280-130629-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
pH adj. to 25 deg C	7.2	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.5	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Total Dissolved Solids (TDS)	20		10	4.7	mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: HDR Inc
Job ID: 280-130629-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	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
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
3005A	Preparation, Total Recoverable or Dissolved Metals	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: 280-130629-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
280-130629-1	PNMW-17	Water	11/06/19 13:55	11/07/19 16:56	
280-130629-2	PNMW-18	Water	11/07/19 12:15	11/07/19 16:56	
280-130629-3	PNMW-19	Water	11/07/19 14:10	11/07/19 16:56	
280-130629-4	PNMW-20	Water	11/05/19 16:20	11/07/19 16:56	
280-130629-5	PNMW-21	Water	11/05/19 12:55	11/07/19 16:56	
280-130629-6	PNMW-22	Water	11/06/19 17:15	11/07/19 16:56	
280-130629-7	PNMW-23	Water	11/06/19 10:40	11/07/19 16:56	
280-130629-8	PNMW-20DUP	Water	11/05/19 16:20	11/07/19 16:56	
280-130629-9	PNMW-22EB	Water	11/07/19 10:00	11/07/19 16:56	

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

Client Sample ID: PNMW-17
Date Collected: 11/06/19 13:55
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.32		0.10	0.023	mg/L		11/14/19 14:00	11/15/19 12:07	1

Client Sample ID: PNMW-18
Date Collected: 11/07/19 12:15
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.20		0.10	0.023	mg/L		11/14/19 14:00	11/15/19 12:29	1

Client Sample ID: PNMW-19
Date Collected: 11/07/19 14:10
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.029	J	0.10	0.023	mg/L		11/14/19 14:00	11/15/19 12:34	1

Client Sample ID: PNMW-20
Date Collected: 11/05/19 16:20
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1.8		0.10	0.023	mg/L		11/14/19 14:00	11/15/19 12:39	1

Client Sample ID: PNMW-21
Date Collected: 11/05/19 12:55
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.18		0.10	0.023	mg/L		11/14/19 14:00	11/15/19 12:44	1

Client Sample ID: PNMW-22
Date Collected: 11/06/19 17:15
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.11		0.10	0.023	mg/L		11/14/19 14:00	11/15/19 12:49	1

Client Sample ID: PNMW-23
Date Collected: 11/06/19 10:40
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.11		0.10	0.023	mg/L		11/14/19 14:00	11/15/19 13:02	1

Client Sample ID: PNMW-20DUP
Date Collected: 11/05/19 16:20
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1.9		0.10	0.023	mg/L		11/14/19 14:00	11/15/19 13:07	1

Client Sample ID: PNMW-22EB
Date Collected: 11/07/19 10:00
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		11/14/19 14:00	11/15/19 13:12	1

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

Client Sample ID: PNMW-17
Date Collected: 11/06/19 13:55
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00098	J	0.0050	0.00075	mg/L		11/14/19 14:00	11/15/19 12:42	1
Calcium	250		1.0	0.58	mg/L		11/14/19 14:00	11/15/19 12:42	1
Cobalt	ND		0.0010	0.00019	mg/L		11/14/19 14:00	11/15/19 12:42	1
Chromium	0.0052		0.0020	0.00098	mg/L		11/14/19 14:00	11/15/19 12:42	1
Molybdenum	0.0014	J	0.010	0.0011	mg/L		11/14/19 14:00	11/15/19 12:42	1
Lead	ND		0.0010	0.00045	mg/L		11/14/19 14:00	11/15/19 12:42	1
Selenium	0.020		0.0050	0.00089	mg/L		11/14/19 14:00	11/15/19 12:42	1
Lithium	0.044		0.0080	0.0017	mg/L		11/14/19 14:00	11/15/19 12:42	1
Barium	0.066		0.0050	0.0022	mg/L		11/14/19 14:00	11/15/19 12:42	1

Client Sample ID: PNMW-18
Date Collected: 11/07/19 12:15
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050	0.00075	mg/L		11/14/19 14:00	11/15/19 12:45	1
Calcium	230		1.0	0.58	mg/L		11/14/19 14:00	11/15/19 12:45	1
Cobalt	0.00024	J	0.0010	0.00019	mg/L		11/14/19 14:00	11/15/19 12:45	1
Chromium	0.0013	J	0.0020	0.00098	mg/L		11/14/19 14:00	11/15/19 12:45	1
Molybdenum	ND		0.010	0.0011	mg/L		11/14/19 14:00	11/15/19 12:45	1
Lead	ND		0.0010	0.00045	mg/L		11/14/19 14:00	11/15/19 12:45	1
Selenium	0.0026	J	0.0050	0.00089	mg/L		11/14/19 14:00	11/15/19 12:45	1
Lithium	0.035		0.0080	0.0017	mg/L		11/14/19 14:00	11/15/19 12:45	1
Barium	0.066		0.0050	0.0022	mg/L		11/14/19 14:00	11/15/19 12:45	1

Client Sample ID: PNMW-19
Date Collected: 11/07/19 14:10
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050	0.00075	mg/L		11/14/19 14:00	11/15/19 12:55	1
Calcium	92		1.0	0.58	mg/L		11/14/19 14:00	11/15/19 12:55	1
Cobalt	0.00019	J	0.0010	0.00019	mg/L		11/14/19 14:00	11/15/19 12:55	1
Chromium	0.0014	J	0.0020	0.00098	mg/L		11/14/19 14:00	11/15/19 12:55	1
Molybdenum	0.0014	J	0.010	0.0011	mg/L		11/14/19 14:00	11/15/19 12:55	1
Lead	ND		0.0010	0.00045	mg/L		11/14/19 14:00	11/15/19 12:55	1
Selenium	0.0026	J	0.0050	0.00089	mg/L		11/14/19 14:00	11/15/19 12:55	1
Lithium	0.027		0.0080	0.0017	mg/L		11/14/19 14:00	11/15/19 12:55	1
Barium	0.18		0.0050	0.0022	mg/L		11/14/19 14:00	11/15/19 12:55	1

Client Sample ID: PNMW-20
Date Collected: 11/05/19 16:20
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00087	J	0.0050	0.00075	mg/L		11/14/19 14:00	11/15/19 13:02	1
Calcium	390		1.0	0.58	mg/L		11/14/19 14:00	11/15/19 13:02	1
Cobalt	0.00022	J	0.0010	0.00019	mg/L		11/14/19 14:00	11/15/19 13:02	1
Chromium	ND		0.0020	0.00098	mg/L		11/14/19 14:00	11/15/19 13:02	1
Molybdenum	ND		0.010	0.0011	mg/L		11/14/19 14:00	11/15/19 13:02	1
Lead	ND		0.0010	0.00045	mg/L		11/14/19 14:00	11/15/19 13:02	1
Selenium	0.0068		0.0050	0.00089	mg/L		11/14/19 14:00	11/15/19 13:02	1
Lithium	0.068		0.0080	0.0017	mg/L		11/14/19 14:00	11/15/19 13:02	1

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

Client Sample ID: PNMW-20
Date Collected: 11/05/19 16:20
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.016**		0.0050	0.0022	mg/L		11/14/19 14:00	11/15/19 13:02	1

Client Sample ID: PNMW-21
Date Collected: 11/05/19 12:55
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050	0.00075	mg/L		11/14/19 14:00	11/15/19 13:04	1
Calcium	**170**		1.0	0.58	mg/L		11/14/19 14:00	11/15/19 13:04	1
Cobalt	ND		0.0010	0.00019	mg/L		11/14/19 14:00	11/15/19 13:04	1
Chromium	**0.0015**	**J**	0.0020	0.00098	mg/L		11/14/19 14:00	11/15/19 13:04	1
Molybdenum	**0.0037**	**J**	0.010	0.0011	mg/L		11/14/19 14:00	11/15/19 13:04	1
Lead	ND		0.0010	0.00045	mg/L		11/14/19 14:00	11/15/19 13:04	1
Selenium	**0.0026**	**J**	0.0050	0.00089	mg/L		11/14/19 14:00	11/15/19 13:04	1
Lithium	**0.057**		0.0080	0.0017	mg/L		11/14/19 14:00	11/15/19 13:04	1
Barium	**0.042**		0.0050	0.0022	mg/L		11/14/19 14:00	11/15/19 13:04	1

Client Sample ID: PNMW-22
Date Collected: 11/06/19 17:15
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050	0.00075	mg/L		11/14/19 14:00	11/15/19 13:07	1
Calcium	**260**		1.0	0.58	mg/L		11/14/19 14:00	11/15/19 13:07	1
Cobalt	ND		0.0010	0.00019	mg/L		11/14/19 14:00	11/15/19 13:07	1
Chromium	**0.0017**	**J**	0.0020	0.00098	mg/L		11/14/19 14:00	11/15/19 13:07	1
Molybdenum	**0.0031**	**J**	0.010	0.0011	mg/L		11/14/19 14:00	11/15/19 13:07	1
Lead	ND		0.0010	0.00045	mg/L		11/14/19 14:00	11/15/19 13:07	1
Selenium	**0.0052**		0.0050	0.00089	mg/L		11/14/19 14:00	11/15/19 13:07	1
Lithium	**0.055**		0.0080	0.0017	mg/L		11/14/19 14:00	11/15/19 13:07	1
Barium	**0.065**		0.0050	0.0022	mg/L		11/14/19 14:00	11/15/19 13:07	1

Client Sample ID: PNMW-23
Date Collected: 11/06/19 10:40
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050	0.00075	mg/L		11/14/19 14:00	11/15/19 13:09	1
Calcium	**280**		1.0	0.58	mg/L		11/14/19 14:00	11/15/19 13:09	1
Cobalt	ND		0.0010	0.00019	mg/L		11/14/19 14:00	11/15/19 13:09	1
Chromium	**0.0015**	**J**	0.0020	0.00098	mg/L		11/14/19 14:00	11/15/19 13:09	1
Molybdenum	ND		0.010	0.0011	mg/L		11/14/19 14:00	11/15/19 13:09	1
Lead	ND		0.0010	0.00045	mg/L		11/14/19 14:00	11/15/19 13:09	1
Selenium	**0.0025**	**J**	0.0050	0.00089	mg/L		11/14/19 14:00	11/15/19 13:09	1
Lithium	**0.045**		0.0080	0.0017	mg/L		11/14/19 14:00	11/15/19 13:09	1
Barium	**0.026**		0.0050	0.0022	mg/L		11/14/19 14:00	11/15/19 13:09	1

Client Sample ID: PNMW-20DUP
Date Collected: 11/05/19 16:20
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050	0.00075	mg/L		11/14/19 14:00	11/15/19 13:11	1
Calcium	**430**		1.0	0.58	mg/L		11/14/19 14:00	11/15/19 13:11	1

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

Client Sample ID: PNMW-20DUP
Date Collected: 11/05/19 16:20
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	0.00022	J	0.0010	0.00019	mg/L		11/14/19 14:00	11/15/19 13:11	1
Chromium	0.0011	J	0.0020	0.00098	mg/L		11/14/19 14:00	11/15/19 13:11	1
Molybdenum	ND		0.010	0.0011	mg/L		11/14/19 14:00	11/15/19 13:11	1
Lead	ND		0.0010	0.00045	mg/L		11/14/19 14:00	11/15/19 13:11	1
Selenium	0.0067		0.0050	0.00089	mg/L		11/14/19 14:00	11/15/19 13:11	1
Lithium	0.073		0.0080	0.0017	mg/L		11/14/19 14:00	11/15/19 13:11	1
Barium	0.017		0.0050	0.0022	mg/L		11/14/19 14:00	11/15/19 13:11	1

Client Sample ID: PNMW-22EB
Date Collected: 11/07/19 10:00
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050	0.00075	mg/L		11/14/19 14:00	11/15/19 13:14	1
Calcium	ND		1.0	0.58	mg/L		11/14/19 14:00	11/15/19 13:14	1
Cobalt	ND		0.0010	0.00019	mg/L		11/14/19 14:00	11/15/19 13:14	1
Chromium	ND		0.0020	0.00098	mg/L		11/14/19 14:00	11/15/19 13:14	1
Molybdenum	ND		0.010	0.0011	mg/L		11/14/19 14:00	11/15/19 13:14	1
Lead	ND		0.0010	0.00045	mg/L		11/14/19 14:00	11/15/19 13:14	1
Selenium	ND		0.0050	0.00089	mg/L		11/14/19 14:00	11/15/19 13:14	1
Lithium	ND		0.0080	0.0017	mg/L		11/14/19 14:00	11/15/19 13:14	1
Barium	ND		0.0050	0.0022	mg/L		11/14/19 14:00	11/15/19 13:14	1

General Chemistry

Client Sample ID: PNMW-17
Date Collected: 11/06/19 13:55
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-1
Matrix: Water

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			11/26/19 15:33	1
Temperature	22.5	HF	1.0	1.0	Degrees C			11/26/19 15:33	1
Chloride	340		15	5.1	mg/L			12/02/19 21:48	5
Fluoride	0.22	J	0.50	0.17	mg/L			12/02/19 20:09	1
Sulfate	560		25	5.2	mg/L			12/02/19 21:48	5
Total Dissolved Solids (TDS)	1500		20	9.4	mg/L			11/12/19 15:05	1
Total Suspended Solids	8.4		4.0	1.1	mg/L			11/11/19 10:05	1

Client Sample ID: PNMW-18
Date Collected: 11/07/19 12:15
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-2
Matrix: Water

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			11/26/19 15:42	1
Temperature	21.8	HF	1.0	1.0	Degrees C			11/26/19 15:42	1
Chloride	380		15	5.1	mg/L			12/02/19 23:10	5
Fluoride	0.29	J	0.50	0.17	mg/L			12/02/19 22:54	1
Sulfate	1000		50	10	mg/L			12/02/19 23:26	10
Total Dissolved Solids (TDS)	2400		40	19	mg/L			11/12/19 15:05	1
Total Suspended Solids	6.4		4.0	1.1	mg/L			11/11/19 10:05	1

General Chemistry

Client Sample ID: PNMW-19
Date Collected: 11/07/19 14:10
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU			11/26/19 15:47	1
Temperature	21.6	HF	1.0	1.0	Degrees C			11/26/19 15:47	1
Chloride	48		3.0	1.0	mg/L			12/02/19 23:43	1
Fluoride	0.29	J	0.50	0.17	mg/L			12/02/19 23:43	1
Sulfate	120		5.0	1.0	mg/L			12/02/19 23:43	1
Total Dissolved Solids (TDS)	520		10	4.7	mg/L			11/12/19 15:05	1
Total Suspended Solids	ND		4.0	1.1	mg/L			11/11/19 10:05	1

Client Sample ID: PNMW-20
Date Collected: 11/05/19 16:20
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-4
Matrix: Water

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			11/26/19 15:51	1
Temperature	21.9	HF	1.0	1.0	Degrees C			11/26/19 15:51	1
Chloride	980		30	10	mg/L			12/02/19 23:59	10
Fluoride	ND		5.0	1.7	mg/L			12/02/19 23:59	10
Sulfate	5100		500	100	mg/L			12/03/19 00:16	100
Total Dissolved Solids (TDS)	9000		200	94	mg/L			11/12/19 15:05	1
Total Suspended Solids	6.8		4.0	1.1	mg/L			11/11/19 10:05	1

Client Sample ID: PNMW-21
Date Collected: 11/05/19 12:55
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU			11/26/19 15:56	1
Temperature	22.2	HF	1.0	1.0	Degrees C			11/26/19 15:56	1
Chloride	280		15	5.1	mg/L			12/03/19 01:05	5
Fluoride	ND		2.5	0.83	mg/L			12/03/19 01:05	5
Sulfate	680		25	5.2	mg/L			12/03/19 01:05	5
Total Dissolved Solids (TDS)	1800		20	9.4	mg/L			11/12/19 15:05	1
Total Suspended Solids	7.2		4.0	1.1	mg/L			11/11/19 10:05	1

Client Sample ID: PNMW-22
Date Collected: 11/06/19 17:15
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-6
Matrix: Water

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			11/26/19 16:00	1
Temperature	22.0	HF	1.0	1.0	Degrees C			11/26/19 16:00	1
Chloride	220		15	5.1	mg/L			12/03/19 01:38	5
Fluoride	ND		2.5	0.83	mg/L			12/03/19 01:38	5
Sulfate	830		25	5.2	mg/L			12/03/19 01:38	5
Total Dissolved Solids (TDS)	1800		20	9.4	mg/L			11/12/19 15:05	1
Total Suspended Solids	5.6		4.0	1.1	mg/L			11/11/19 10:05	1

Client Sample ID: PNMW-23
Date Collected: 11/06/19 10:40
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU			11/26/19 16:04	1
Temperature	21.6	HF	1.0	1.0	Degrees C			11/26/19 16:04	1

General Chemistry (Continued)

Client Sample ID: PNMW-23
Date Collected: 11/06/19 10:40
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**110**		15	5.1	mg/L			12/03/19 02:11	5
Fluoride	ND		2.5	0.83	mg/L			12/03/19 02:11	5
Sulfate	**1200**		50	10	mg/L			12/03/19 02:27	10
Total Dissolved Solids (TDS)	**2300**		20	9.4	mg/L			11/12/19 15:05	1
Total Suspended Solids	**4.8**		4.0	1.1	mg/L			11/11/19 10:05	1

Client Sample ID: PNMW-20DUP
Date Collected: 11/05/19 16:20
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-8
Matrix: Water

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			11/26/19 16:09	1
Temperature	**21.7**	**HF**	1.0	1.0	Degrees C			11/26/19 16:09	1
Chloride	**930**		30	10	mg/L			12/03/19 02:44	10
Fluoride	ND		5.0	1.7	mg/L			12/03/19 02:44	10
Sulfate	**5000**		500	100	mg/L			12/03/19 03:00	100
Total Dissolved Solids (TDS)	**8900**		200	94	mg/L			11/12/19 15:05	1
Total Suspended Solids	**7.6**		4.0	1.1	mg/L			11/11/19 10:05	1

Client Sample ID: PNMW-22EB
Date Collected: 11/07/19 10:00
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	**7.2**	**HF**	0.1	0.1	SU			11/27/19 12:55	1
Temperature	**22.5**	**HF**	1.0	1.0	Degrees C			11/27/19 12:55	1
Chloride	ND		3.0	1.0	mg/L			12/03/19 03:16	1
Fluoride	ND		0.50	0.17	mg/L			12/03/19 03:16	1
Sulfate	ND		5.0	1.0	mg/L			12/03/19 03:16	1
Total Dissolved Solids (TDS)	**20**		10	4.7	mg/L			11/12/19 15:05	1
Total Suspended Solids	ND		4.0	1.1	mg/L			11/11/19 10:05	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: PNMW-17
Date Collected: 11/06/19 13:55
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.156**		0.0969	0.0979	1.00	0.137	pCi/L	11/13/19 16:41	12/05/19 06:25	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*80.3*		*40 - 110*	*11/13/19 16:41*	*12/05/19 06:25*	*1*

Client Sample ID: PNMW-18
Date Collected: 11/07/19 12:15
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.169**		0.0844	0.0858	1.00	0.0992	pCi/L	11/13/19 16:41	12/05/19 06:25	1

Method: 9315 - Radium-226 (GFPC) (Continued)

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	78.8		40 - 110	11/13/19 16:41	12/05/19 06:25	1

Client Sample ID: PNMW-19
Date Collected: 11/07/19 14:10
Date Received: 11/07/19 16:56

Lab Sample ID: 280-130629-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.169		0.0894	0.0907	1.00	0.118	pCi/L	11/13/19 16:41	12/05/19 06:25	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	87.8		40 - 110	11/13/19 16:41	12/05/19 06:25	1

Client Sample ID: PNMW-20
Date Collected: 11/05/19 16:20
Date Received: 11/07/19 16:56

Lab Sample ID: 280-130629-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.121	U	0.0928	0.0935	1.00	0.139	pCi/L	11/13/19 16:41	12/05/19 06:25	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	84.2		40 - 110	11/13/19 16:41	12/05/19 06:25	1

Client Sample ID: PNMW-21
Date Collected: 11/05/19 12:55
Date Received: 11/07/19 16:56

Lab Sample ID: 280-130629-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0844	U	0.0878	0.0881	1.00	0.141	pCi/L	11/13/19 16:41	12/05/19 06:25	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	77.0		40 - 110	11/13/19 16:41	12/05/19 06:25	1

Client Sample ID: PNMW-22
Date Collected: 11/06/19 17:15
Date Received: 11/07/19 16:56

Lab Sample ID: 280-130629-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.175		0.101	0.102	1.00	0.139	pCi/L	11/13/19 16:41	12/05/19 06:26	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	83.0		40 - 110	11/13/19 16:41	12/05/19 06:26	1

Client Sample ID: PNMW-23
Date Collected: 11/06/19 10:40
Date Received: 11/07/19 16:56

Lab Sample ID: 280-130629-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0733	U	0.0793	0.0796	1.00	0.128	pCi/L	11/13/19 16:41	12/05/19 06:26	1

Method: 9315 - Radium-226 (GFPC) (Continued)

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	85.1		40 - 110	11/13/19 16:41	12/05/19 06:26	1

Client Sample ID: PNMW-20DUP
Date Collected: 11/05/19 16:20
Date Received: 11/07/19 16:56

Lab Sample ID: 280-130629-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0400	U	0.0742	0.0743	1.00	0.130	pCi/L	11/13/19 16:41	12/05/19 08:19	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	79.7		40 - 110	11/13/19 16:41	12/05/19 08:19	1

Client Sample ID: PNMW-22EB
Date Collected: 11/07/19 10:00
Date Received: 11/07/19 16:56

Lab Sample ID: 280-130629-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0282	U	0.0564	0.0564	1.00	0.121	pCi/L	11/13/19 16:41	12/05/19 08:19	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	94.9		40 - 110	11/13/19 16:41	12/05/19 08:19	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: PNMW-17
Date Collected: 11/06/19 13:55
Date Received: 11/07/19 16:56

Lab Sample ID: 280-130629-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.318	U	0.309	0.311	1.00	0.501	pCi/L	11/13/19 18:20	11/18/19 12:54	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	80.3		40 - 110	11/13/19 18:20	11/18/19 12:54	1
Y Carrier	76.6		40 - 110	11/13/19 18:20	11/18/19 12:54	1

Client Sample ID: PNMW-18
Date Collected: 11/07/19 12:15
Date Received: 11/07/19 16:56

Lab Sample ID: 280-130629-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.255	U	0.337	0.338	1.00	0.561	pCi/L	11/13/19 18:20	11/18/19 12:54	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	78.8		40 - 110	11/13/19 18:20	11/18/19 12:54	1
Y Carrier	80.7		40 - 110	11/13/19 18:20	11/18/19 12:54	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: PNMW-19
Date Collected: 11/07/19 14:10
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.418	U	0.295	0.297	1.00	0.459	pCi/L	11/13/19 18:20	11/18/19 12:54	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*87.8*		*40 - 110*	*11/13/19 18:20*	*11/18/19 12:54*	*1*
Y Carrier	*79.3*		*40 - 110*	*11/13/19 18:20*	*11/18/19 12:54*	*1*

Client Sample ID: PNMW-20
Date Collected: 11/05/19 16:20
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.367	U	0.313	0.315	1.00	0.501	pCi/L	11/13/19 18:20	11/18/19 12:54	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.2*		*40 - 110*	*11/13/19 18:20*	*11/18/19 12:54*	*1*
Y Carrier	*84.1*		*40 - 110*	*11/13/19 18:20*	*11/18/19 12:54*	*1*

Client Sample ID: PNMW-21
Date Collected: 11/05/19 12:55
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.219	U	0.335	0.336	1.00	0.564	pCi/L	11/13/19 18:20	11/18/19 12:54	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*77.0*		*40 - 110*	*11/13/19 18:20*	*11/18/19 12:54*	*1*
Y Carrier	*78.5*		*40 - 110*	*11/13/19 18:20*	*11/18/19 12:54*	*1*

Client Sample ID: PNMW-22
Date Collected: 11/06/19 17:15
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.444	U	0.303	0.306	1.00	0.468	pCi/L	11/13/19 18:20	11/18/19 12:54	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*83.0*		*40 - 110*	*11/13/19 18:20*	*11/18/19 12:54*	*1*
Y Carrier	*81.1*		*40 - 110*	*11/13/19 18:20*	*11/18/19 12:54*	*1*

Client Sample ID: PNMW-23
Date Collected: 11/06/19 10:40
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.182	U	0.277	0.278	1.00	0.466	pCi/L	11/13/19 18:20	11/18/19 12:55	1

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

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	85.1		40 - 110	11/13/19 18:20	11/18/19 12:55	1
Y Carrier	85.2		40 - 110	11/13/19 18:20	11/18/19 12:55	1

Client Sample ID: PNMW-20DUP
Date Collected: 11/05/19 16:20
Date Received: 11/07/19 16:56

Lab Sample ID: 280-130629-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.208	U	0.344	0.345	1.00	0.580	pCi/L	11/13/19 18:20	11/18/19 12:55	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	79.7		40 - 110	11/13/19 18:20	11/18/19 12:55	1
Y Carrier	81.1		40 - 110	11/13/19 18:20	11/18/19 12:55	1

Client Sample ID: PNMW-22EB
Date Collected: 11/07/19 10:00
Date Received: 11/07/19 16:56

Lab Sample ID: 280-130629-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.154	U	0.325	0.325	1.00	0.551	pCi/L	11/13/19 18:20	11/18/19 12:50	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	94.9		40 - 110	11/13/19 18:20	11/18/19 12:50	1
Y Carrier	81.1		40 - 110	11/13/19 18:20	11/18/19 12:50	1

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: PNMW-17
Date Collected: 11/06/19 13:55
Date Received: 11/07/19 16:56

Lab Sample ID: 280-130629-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.473	U	0.324	0.326	5.00	0.501	pCi/L		12/06/19 09:22	1

Client Sample ID: PNMW-18
Date Collected: 11/07/19 12:15
Date Received: 11/07/19 16:56

Lab Sample ID: 280-130629-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.424	U	0.347	0.349	5.00	0.561	pCi/L		12/06/19 09:22	1

Client Sample ID: PNMW-19
Date Collected: 11/07/19 14:10
Date Received: 11/07/19 16:56

Lab Sample ID: 280-130629-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.587**		0.308	0.311	5.00	0.459	pCi/L		12/06/19 09:22	1

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: PNMW-20
Date Collected: 11/05/19 16:20
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.488	U	0.326	0.329	5.00	0.501	pCi/L		12/06/19 09:22	1

Client Sample ID: PNMW-21
Date Collected: 11/05/19 12:55
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.303	U	0.346	0.347	5.00	0.564	pCi/L		12/06/19 09:22	1

Client Sample ID: PNMW-22
Date Collected: 11/06/19 17:15
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.620**		0.319	0.323	5.00	0.468	pCi/L		12/06/19 09:22	1

Client Sample ID: PNMW-23
Date Collected: 11/06/19 10:40
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.255	U	0.288	0.289	5.00	0.466	pCi/L		12/06/19 09:22	1

Client Sample ID: PNMW-20DUP
Date Collected: 11/05/19 16:20
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.248	U	0.352	0.353	5.00	0.580	pCi/L		12/06/19 09:22	1

Client Sample ID: PNMW-22EB
Date Collected: 11/07/19 10:00
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130629-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.126	U	0.330	0.330	5.00	0.551	pCi/L		12/06/19 09:22	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-410858/1-A
Matrix: Water
Analysis Batch: 411129

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 410858

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		11/14/19 14:00	11/15/19 11:32	1

Lab Sample ID: LCS 240-410858/2-A
Matrix: Water
Analysis Batch: 411129

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 410858

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.02		mg/L		102	80 - 120

Lab Sample ID: 280-130629-1 MS
Matrix: Water
Analysis Batch: 411129

Client Sample ID: PNMW-17
Prep Type: Total Recoverable
Prep Batch: 410858

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	0.32		1.00	1.39		mg/L		107	75 - 125

Lab Sample ID: 280-130629-1 MSD
Matrix: Water
Analysis Batch: 411129

Client Sample ID: PNMW-17
Prep Type: Total Recoverable
Prep Batch: 410858

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	0.32		1.00	1.41		mg/L		109	75 - 125	1	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-410858/1-A
Matrix: Water
Analysis Batch: 411345

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 410858

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050	0.00075	mg/L		11/14/19 14:00	11/15/19 12:38	1
Calcium	ND		1.0	0.58	mg/L		11/14/19 14:00	11/15/19 12:38	1
Cobalt	ND		0.0010	0.00019	mg/L		11/14/19 14:00	11/15/19 12:38	1
Chromium	ND		0.0020	0.00098	mg/L		11/14/19 14:00	11/15/19 12:38	1
Molybdenum	ND		0.010	0.0011	mg/L		11/14/19 14:00	11/15/19 12:38	1
Lead	ND		0.0010	0.00045	mg/L		11/14/19 14:00	11/15/19 12:38	1
Selenium	ND		0.0050	0.00089	mg/L		11/14/19 14:00	11/15/19 12:38	1
Lithium	ND		0.0080	0.0017	mg/L		11/14/19 14:00	11/15/19 12:38	1
Barium	ND		0.0050	0.0022	mg/L		11/14/19 14:00	11/15/19 12:38	1

Lab Sample ID: LCS 240-410858/3-A
Matrix: Water
Analysis Batch: 411345

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 410858

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.00	0.819		mg/L		82	80 - 120
Calcium	25.0	20.3		mg/L		81	80 - 120
Cobalt	0.500	0.423		mg/L		85	80 - 120
Chromium	0.500	0.426		mg/L		85	80 - 120
Molybdenum	0.500	0.421		mg/L		84	80 - 120

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

Lab Sample ID: LCS 240-410858/3-A
Matrix: Water
Analysis Batch: 411345

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 410858

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	0.500	0.422		mg/L		84	80 - 120
Selenium	1.00	0.804		mg/L		80	80 - 120
Lithium	0.500	0.477		mg/L		95	80 - 120
Barium	1.00	0.842		mg/L		84	80 - 120

Lab Sample ID: 280-130629-2 MS
Matrix: Water
Analysis Batch: 411345

Client Sample ID: PNMW-18
Prep Type: Total Recoverable
Prep Batch: 410858

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	ND		1.00	0.849		mg/L		85	75 - 125
Calcium	230		25.0	277	4	mg/L		169	75 - 125
Cobalt	0.00024	J	0.500	0.424		mg/L		85	75 - 125
Chromium	0.0013	J	0.500	0.429		mg/L		86	75 - 125
Molybdenum	ND		0.500	0.449		mg/L		90	75 - 125
Lead	ND		0.500	0.411		mg/L		82	75 - 125
Selenium	0.0026	J	1.00	0.811		mg/L		81	75 - 125
Lithium	0.035		0.500	0.533		mg/L		100	75 - 125
Barium	0.066		1.00	0.928		mg/L		86	75 - 125

Lab Sample ID: 280-130629-2 MSD
Matrix: Water
Analysis Batch: 411345

Client Sample ID: PNMW-18
Prep Type: Total Recoverable
Prep Batch: 410858

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	ND		1.00	0.833		mg/L		83	75 - 125	2	20
Calcium	230		25.0	270	4	mg/L		139	75 - 125	3	20
Cobalt	0.00024	J	0.500	0.431		mg/L		86	75 - 125	2	20
Chromium	0.0013	J	0.500	0.424		mg/L		84	75 - 125	1	20
Molybdenum	ND		0.500	0.453		mg/L		91	75 - 125	1	20
Lead	ND		0.500	0.416		mg/L		83	75 - 125	1	20
Selenium	0.0026	J	1.00	0.825		mg/L		82	75 - 125	2	20
Lithium	0.035		0.500	0.526		mg/L		98	75 - 125	1	20
Barium	0.066		1.00	0.931		mg/L		86	75 - 125	0	20

Method: 9040B - pH

Lab Sample ID: LCS 280-478946/4
Matrix: Water
Analysis Batch: 478946

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

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

Lab Sample ID: 280-130629-1 DU
Matrix: Water
Analysis Batch: 478946

Client Sample ID: PNMW-17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH adj. to 25 deg C	7.6	HF	7.7		SU		0.4	5

Method: 9040B - pH (Continued)

Lab Sample ID: 280-130629-1 DU
Matrix: Water
Analysis Batch: 478946

Client Sample ID: PNMW-17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Temperature	22.5	HF		22.1		Degrees C				2	10

Lab Sample ID: LCS 280-479011/4
Matrix: Water
Analysis Batch: 479011

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

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

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-479298/6
Matrix: Water
Analysis Batch: 479298

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	1.0	mg/L			12/02/19 12:31	1
Fluoride	ND		0.50	0.17	mg/L			12/02/19 12:31	1
Sulfate	ND		5.0	1.0	mg/L			12/02/19 12:31	1

Lab Sample ID: LCS 280-479298/4
Matrix: Water
Analysis Batch: 479298

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride			100	97.4		mg/L		97	90 - 110		
Fluoride			5.00	4.96		mg/L		99	90 - 110		
Sulfate			100	99.7		mg/L		100	90 - 110		

Lab Sample ID: LCSD 280-479298/5
Matrix: Water
Analysis Batch: 479298

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride			100	98.1		mg/L		98	90 - 110	1	10
Fluoride			5.00	4.99		mg/L		100	90 - 110	1	10
Sulfate			100	99.7		mg/L		100	90 - 110	0	10

Lab Sample ID: MRL 280-479298/3
Matrix: Water
Analysis Batch: 479298

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

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride			5.00	4.74		mg/L		95	50 - 150		
Fluoride			0.500	0.514		mg/L		103	50 - 150		
Sulfate			5.00	4.67	J	mg/L		93	50 - 150		

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

Lab Sample ID: 280-130629-1 MS
Matrix: Water
Analysis Batch: 479298

Client Sample ID: PNMW-17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Fluoride	0.22	J	5.00	4.86		mg/L		93	80 - 120		

Lab Sample ID: 280-130629-1 MS
Matrix: Water
Analysis Batch: 479298

Client Sample ID: PNMW-17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride	340		250	590		mg/L		98	80 - 120		
Sulfate	560		250	815		mg/L		101	80 - 120		

Lab Sample ID: 280-130629-1 MSD
Matrix: Water
Analysis Batch: 479298

Client Sample ID: PNMW-17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Fluoride	0.22	J	5.00	4.81		mg/L		92	80 - 120	1	20

Lab Sample ID: 280-130629-1 MSD
Matrix: Water
Analysis Batch: 479298

Client Sample ID: PNMW-17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	340		250	580		mg/L		94	80 - 120	2	20
Sulfate	560		250	799		mg/L		94	80 - 120	2	20

Lab Sample ID: 280-130629-1 DU
Matrix: Water
Analysis Batch: 479298

Client Sample ID: PNMW-17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Fluoride	0.22	J		0.224	J	mg/L				1	15

Lab Sample ID: 280-130629-1 DU
Matrix: Water
Analysis Batch: 479298

Client Sample ID: PNMW-17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Chloride	340			341		mg/L				1	15
Sulfate	560			561		mg/L				0.5	15

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

Lab Sample ID: MB 280-477339/1
Matrix: Water
Analysis Batch: 477339

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			11/12/19 15:05	1

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

Lab Sample ID: LCS 280-477339/2
Matrix: Water
Analysis Batch: 477339

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids (TDS)			500	515		mg/L		103	93 - 110		

Lab Sample ID: LCSD 280-477339/3
Matrix: Water
Analysis Batch: 477339

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Dissolved Solids (TDS)			500	519		mg/L		104	93 - 110	1	20

Lab Sample ID: 280-130629-1 DU
Matrix: Water
Analysis Batch: 477339

Client Sample ID: PNMW-17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids (TDS)	1500			1540		mg/L				0.5	10

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

Lab Sample ID: MB 280-477131/1
Matrix: Water
Analysis Batch: 477131

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			11/11/19 10:05	1

Lab Sample ID: LCS 280-477131/2
Matrix: Water
Analysis Batch: 477131

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Suspended Solids			100	84.8		mg/L		85	79 - 114		

Lab Sample ID: LCSD 280-477131/3
Matrix: Water
Analysis Batch: 477131

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Suspended Solids			100	102		mg/L		102	79 - 114	18	20

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-450339/12-A
Matrix: Water
Analysis Batch: 453148

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 450339

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.02711	U	0.0656	0.0656	1.00	0.118	pCi/L	11/13/19 16:41	12/05/19 08:19	1

Method: 9315 - Radium-226 (GFPC) (Continued)

Lab Sample ID: MB 160-450339/12-A
Matrix: Water
Analysis Batch: 453148

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 450339

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	95.8		40 - 110	11/13/19 16:41	12/05/19 08:19	1

Lab Sample ID: LCS 160-450339/1-A
Matrix: Water
Analysis Batch: 453148

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 450339

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.3	10.60		1.09	1.00	0.114	pCi/L	93	75 - 125		

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	93.1		40 - 110

Lab Sample ID: LCSD 160-450339/2-A
Matrix: Water
Analysis Batch: 453148

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 450339

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.3	10.49		1.08	1.00	0.125	pCi/L	92	75 - 125	0.05	1

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Ba Carrier	91.6		40 - 110

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-450343/12-A
Matrix: Water
Analysis Batch: 450983

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 450343

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.2417	U	0.311	0.311	1.00	0.515	pCi/L	11/13/19 18:20	11/18/19 12:50	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	95.8		40 - 110	11/13/19 18:20	11/18/19 12:50	1
Y Carrier	75.5		40 - 110	11/13/19 18:20	11/18/19 12:50	1

Lab Sample ID: LCS 160-450343/1-A
Matrix: Water
Analysis Batch: 450937

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 450343

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.38	8.426		1.02	1.00	0.419	pCi/L	90	75 - 125		

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

Lab Sample ID: LCS 160-450343/1-A
Matrix: Water
Analysis Batch: 450937

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 450343

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	93.1		40 - 110
Y Carrier	83.0		40 - 110

Lab Sample ID: LCSD 160-450343/2-A
Matrix: Water
Analysis Batch: 450937

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 450343

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			9.38	9.690		1.15	1.00	0.446	pCi/L	103	75 - 125	0.58	1

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Ba Carrier	91.6		40 - 110
Y Carrier	82.6		40 - 110

QC Association Summary

Client: HDR Inc
Job ID: 280-130629-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Metals

Prep Batch: 410858

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-130629-1	PNMW-17	Total Recoverable	Water	3005A	
280-130629-2	PNMW-18	Total Recoverable	Water	3005A	
280-130629-3	PNMW-19	Total Recoverable	Water	3005A	
280-130629-4	PNMW-20	Total Recoverable	Water	3005A	
280-130629-5	PNMW-21	Total Recoverable	Water	3005A	
280-130629-6	PNMW-22	Total Recoverable	Water	3005A	
280-130629-7	PNMW-23	Total Recoverable	Water	3005A	
280-130629-8	PNMW-20DUP	Total Recoverable	Water	3005A	
280-130629-9	PNMW-22EB	Total Recoverable	Water	3005A	
MB 240-410858/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-410858/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-410858/3-A	Lab Control Sample	Total Recoverable	Water	3005A	
280-130629-1 MS	PNMW-17	Total Recoverable	Water	3005A	
280-130629-1 MSD	PNMW-17	Total Recoverable	Water	3005A	
280-130629-2 MS	PNMW-18	Total Recoverable	Water	3005A	
280-130629-2 MSD	PNMW-18	Total Recoverable	Water	3005A	

Analysis Batch: 411129

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-130629-1	PNMW-17	Total Recoverable	Water	6010C	410858
280-130629-2	PNMW-18	Total Recoverable	Water	6010C	410858
280-130629-3	PNMW-19	Total Recoverable	Water	6010C	410858
280-130629-4	PNMW-20	Total Recoverable	Water	6010C	410858
280-130629-5	PNMW-21	Total Recoverable	Water	6010C	410858
280-130629-6	PNMW-22	Total Recoverable	Water	6010C	410858
280-130629-7	PNMW-23	Total Recoverable	Water	6010C	410858
280-130629-8	PNMW-20DUP	Total Recoverable	Water	6010C	410858
280-130629-9	PNMW-22EB	Total Recoverable	Water	6010C	410858
MB 240-410858/1-A	Method Blank	Total Recoverable	Water	6010C	410858
LCS 240-410858/2-A	Lab Control Sample	Total Recoverable	Water	6010C	410858
280-130629-1 MS	PNMW-17	Total Recoverable	Water	6010C	410858
280-130629-1 MSD	PNMW-17	Total Recoverable	Water	6010C	410858

Analysis Batch: 411345

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-130629-1	PNMW-17	Total Recoverable	Water	6020A	410858
280-130629-2	PNMW-18	Total Recoverable	Water	6020A	410858
280-130629-3	PNMW-19	Total Recoverable	Water	6020A	410858
280-130629-4	PNMW-20	Total Recoverable	Water	6020A	410858
280-130629-5	PNMW-21	Total Recoverable	Water	6020A	410858
280-130629-6	PNMW-22	Total Recoverable	Water	6020A	410858
280-130629-7	PNMW-23	Total Recoverable	Water	6020A	410858
280-130629-8	PNMW-20DUP	Total Recoverable	Water	6020A	410858
280-130629-9	PNMW-22EB	Total Recoverable	Water	6020A	410858
MB 240-410858/1-A	Method Blank	Total Recoverable	Water	6020A	410858
LCS 240-410858/3-A	Lab Control Sample	Total Recoverable	Water	6020A	410858
280-130629-2 MS	PNMW-18	Total Recoverable	Water	6020A	410858
280-130629-2 MSD	PNMW-18	Total Recoverable	Water	6020A	410858

General Chemistry

Analysis Batch: 477131

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-130629-1	PNMW-17	Total/NA	Water	SM 2540D	
280-130629-2	PNMW-18	Total/NA	Water	SM 2540D	
280-130629-3	PNMW-19	Total/NA	Water	SM 2540D	
280-130629-4	PNMW-20	Total/NA	Water	SM 2540D	
280-130629-5	PNMW-21	Total/NA	Water	SM 2540D	
280-130629-6	PNMW-22	Total/NA	Water	SM 2540D	
280-130629-7	PNMW-23	Total/NA	Water	SM 2540D	
280-130629-8	PNMW-20DUP	Total/NA	Water	SM 2540D	
280-130629-9	PNMW-22EB	Total/NA	Water	SM 2540D	
MB 280-477131/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-477131/2	Lab Control Sample	Total/NA	Water	SM 2540D	
LCSD 280-477131/3	Lab Control Sample Dup	Total/NA	Water	SM 2540D	

Analysis Batch: 477339

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-130629-1	PNMW-17	Total/NA	Water	SM 2540C	
280-130629-2	PNMW-18	Total/NA	Water	SM 2540C	
280-130629-3	PNMW-19	Total/NA	Water	SM 2540C	
280-130629-4	PNMW-20	Total/NA	Water	SM 2540C	
280-130629-5	PNMW-21	Total/NA	Water	SM 2540C	
280-130629-6	PNMW-22	Total/NA	Water	SM 2540C	
280-130629-7	PNMW-23	Total/NA	Water	SM 2540C	
280-130629-8	PNMW-20DUP	Total/NA	Water	SM 2540C	
280-130629-9	PNMW-22EB	Total/NA	Water	SM 2540C	
MB 280-477339/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-477339/2	Lab Control Sample	Total/NA	Water	SM 2540C	
LCSD 280-477339/3	Lab Control Sample Dup	Total/NA	Water	SM 2540C	
280-130629-1 DU	PNMW-17	Total/NA	Water	SM 2540C	

Analysis Batch: 478946

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-130629-1	PNMW-17	Total/NA	Water	9040B	
280-130629-2	PNMW-18	Total/NA	Water	9040B	
280-130629-3	PNMW-19	Total/NA	Water	9040B	
280-130629-4	PNMW-20	Total/NA	Water	9040B	
280-130629-5	PNMW-21	Total/NA	Water	9040B	
280-130629-6	PNMW-22	Total/NA	Water	9040B	
280-130629-7	PNMW-23	Total/NA	Water	9040B	
280-130629-8	PNMW-20DUP	Total/NA	Water	9040B	
LCS 280-478946/4	Lab Control Sample	Total/NA	Water	9040B	
280-130629-1 DU	PNMW-17	Total/NA	Water	9040B	

Analysis Batch: 479011

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-130629-9	PNMW-22EB	Total/NA	Water	9040B	
LCS 280-479011/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 479298

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-130629-1	PNMW-17	Total/NA	Water	9056A	
280-130629-1	PNMW-17	Total/NA	Water	9056A	

General Chemistry (Continued)

Analysis Batch: 479298 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-130629-2	PNMW-18	Total/NA	Water	9056A	
280-130629-2	PNMW-18	Total/NA	Water	9056A	
280-130629-2	PNMW-18	Total/NA	Water	9056A	
280-130629-3	PNMW-19	Total/NA	Water	9056A	
280-130629-4	PNMW-20	Total/NA	Water	9056A	
280-130629-4	PNMW-20	Total/NA	Water	9056A	
280-130629-5	PNMW-21	Total/NA	Water	9056A	
280-130629-6	PNMW-22	Total/NA	Water	9056A	
280-130629-7	PNMW-23	Total/NA	Water	9056A	
280-130629-7	PNMW-23	Total/NA	Water	9056A	
280-130629-8	PNMW-20DUP	Total/NA	Water	9056A	
280-130629-8	PNMW-20DUP	Total/NA	Water	9056A	
280-130629-9	PNMW-22EB	Total/NA	Water	9056A	
MB 280-479298/6	Method Blank	Total/NA	Water	9056A	
LCS 280-479298/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-479298/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-479298/3	Lab Control Sample	Total/NA	Water	9056A	
280-130629-1 MS	PNMW-17	Total/NA	Water	9056A	
280-130629-1 MS	PNMW-17	Total/NA	Water	9056A	
280-130629-1 MSD	PNMW-17	Total/NA	Water	9056A	
280-130629-1 MSD	PNMW-17	Total/NA	Water	9056A	
280-130629-1 DU	PNMW-17	Total/NA	Water	9056A	
280-130629-1 DU	PNMW-17	Total/NA	Water	9056A	

Rad

Prep Batch: 450339

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-130629-1	PNMW-17	Total/NA	Water	PrecSep-21	
280-130629-2	PNMW-18	Total/NA	Water	PrecSep-21	
280-130629-3	PNMW-19	Total/NA	Water	PrecSep-21	
280-130629-4	PNMW-20	Total/NA	Water	PrecSep-21	
280-130629-5	PNMW-21	Total/NA	Water	PrecSep-21	
280-130629-6	PNMW-22	Total/NA	Water	PrecSep-21	
280-130629-7	PNMW-23	Total/NA	Water	PrecSep-21	
280-130629-8	PNMW-20DUP	Total/NA	Water	PrecSep-21	
280-130629-9	PNMW-22EB	Total/NA	Water	PrecSep-21	
MB 160-450339/12-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-450339/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-450339/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 450343

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-130629-1	PNMW-17	Total/NA	Water	PrecSep_0	
280-130629-2	PNMW-18	Total/NA	Water	PrecSep_0	
280-130629-3	PNMW-19	Total/NA	Water	PrecSep_0	
280-130629-4	PNMW-20	Total/NA	Water	PrecSep_0	
280-130629-5	PNMW-21	Total/NA	Water	PrecSep_0	
280-130629-6	PNMW-22	Total/NA	Water	PrecSep_0	
280-130629-7	PNMW-23	Total/NA	Water	PrecSep_0	
280-130629-8	PNMW-20DUP	Total/NA	Water	PrecSep_0	

Rad (Continued)

Prep Batch: 450343 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-130629-9	PNMW-22EB	Total/NA	Water	PrecSep_0	
MB 160-450343/12-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-450343/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-450343/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: HDR Inc
Job ID: 280-130629-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Client Sample ID: PNMW-17
Date Collected: 11/06/19 13:55
Date Received: 11/07/19 16:56

Lab Sample ID: 280-130629-1
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	410858	11/14/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			411129	11/15/19 12:07	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	410858	11/14/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			411345	11/15/19 12:42	DSH	TAL CAN
Total/NA	Analysis	9040B		1			478946	11/26/19 15:33	SPG	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	479298	12/02/19 20:09	JAP	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	479298	12/02/19 21:48	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	477339	11/12/19 15:05	FRG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	477131	11/11/19 10:05	FRG	TAL DEN
Total/NA	Prep	PrecSep-21			1000.5 mL	1.0 g	450339	11/13/19 16:41	ORM	TAL SL
Total/NA	Analysis	9315		1			453148	12/05/19 06:25	AJD	TAL SL
Total/NA	Prep	PrecSep_0			1000.5 mL	1.0 g	450343	11/13/19 18:20	ORM	TAL SL
Total/NA	Analysis	9320		1			450937	11/18/19 12:54	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			453289	12/06/19 09:22	SMP	TAL SL

Client Sample ID: PNMW-18
Date Collected: 11/07/19 12:15
Date Received: 11/07/19 16:56

Lab Sample ID: 280-130629-2
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	410858	11/14/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			411129	11/15/19 12:29	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	410858	11/14/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			411345	11/15/19 12:45	DSH	TAL CAN
Total/NA	Analysis	9040B		1			478946	11/26/19 15:42	SPG	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	479298	12/02/19 22:54	JAP	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	479298	12/02/19 23:10	JAP	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	479298	12/02/19 23:26	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	477339	11/12/19 15:05	FRG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	477131	11/11/19 10:05	FRG	TAL DEN
Total/NA	Prep	PrecSep-21			1000.3 mL	1.0 g	450339	11/13/19 16:41	ORM	TAL SL
Total/NA	Analysis	9315		1			453148	12/05/19 06:25	AJD	TAL SL
Total/NA	Prep	PrecSep_0			1000.3 mL	1.0 g	450343	11/13/19 18:20	ORM	TAL SL
Total/NA	Analysis	9320		1			450937	11/18/19 12:54	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			453289	12/06/19 09:22	SMP	TAL SL

Client Sample ID: PNMW-19
Date Collected: 11/07/19 14:10
Date Received: 11/07/19 16:56

Lab Sample ID: 280-130629-3
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	410858	11/14/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			411129	11/15/19 12:34	RKT	TAL CAN

Lab Chronicle

Client: HDR Inc
Job ID: 280-130629-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Client Sample ID: PNMW-19
Lab Sample ID: 280-130629-3
Date Collected: 11/07/19 14:10
Matrix: Water
Date Received: 11/07/19 16:56

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	410858	11/14/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			411345	11/15/19 12:55	DSH	TAL CAN
Total/NA	Analysis	9040B		1			478946	11/26/19 15:47	SPG	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	479298	12/02/19 23:43	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	477339	11/12/19 15:05	FRG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	477131	11/11/19 10:05	FRG	TAL DEN
Total/NA	Prep	PrecSep-21			1000.4 mL	1.0 g	450339	11/13/19 16:41	ORM	TAL SL
Total/NA	Analysis	9315		1			453148	12/05/19 06:25	AJD	TAL SL
Total/NA	Prep	PrecSep_0			1000.4 mL	1.0 g	450343	11/13/19 18:20	ORM	TAL SL
Total/NA	Analysis	9320		1			450937	11/18/19 12:54	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			453289	12/06/19 09:22	SMP	TAL SL

Client Sample ID: PNMW-20
Lab Sample ID: 280-130629-4
Date Collected: 11/05/19 16:20
Matrix: Water
Date Received: 11/07/19 16:56

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	410858	11/14/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			411129	11/15/19 12:39	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	410858	11/14/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			411345	11/15/19 13:02	DSH	TAL CAN
Total/NA	Analysis	9040B		1			478946	11/26/19 15:51	SPG	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	479298	12/02/19 23:59	JAP	TAL DEN
Total/NA	Analysis	9056A		100	5 mL	5 mL	479298	12/03/19 00:16	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	5 mL	100 mL	477339	11/12/19 15:05	FRG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	477131	11/11/19 10:05	FRG	TAL DEN
Total/NA	Prep	PrecSep-21			1000.0 mL	1.0 g	450339	11/13/19 16:41	ORM	TAL SL
Total/NA	Analysis	9315		1			453148	12/05/19 06:25	AJD	TAL SL
Total/NA	Prep	PrecSep_0			1000.0 mL	1.0 g	450343	11/13/19 18:20	ORM	TAL SL
Total/NA	Analysis	9320		1			450937	11/18/19 12:54	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			453289	12/06/19 09:22	SMP	TAL SL

Client Sample ID: PNMW-21
Lab Sample ID: 280-130629-5
Date Collected: 11/05/19 12:55
Matrix: Water
Date Received: 11/07/19 16:56

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	410858	11/14/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			411129	11/15/19 12:44	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	410858	11/14/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			411345	11/15/19 13:04	DSH	TAL CAN
Total/NA	Analysis	9040B		1			478946	11/26/19 15:56	SPG	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	479298	12/03/19 01:05	JAP	TAL DEN

Lab Chronicle

Client: HDR Inc
Job ID: 280-130629-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Client Sample ID: PNMW-21
Lab Sample ID: 280-130629-5
Date Collected: 11/05/19 12:55
Matrix: Water
Date Received: 11/07/19 16:56

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	477339	11/12/19 15:05	FRG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	477131	11/11/19 10:05	FRG	TAL DEN
Total/NA	Prep	PrecSep-21			1000.5 mL	1.0 g	450339	11/13/19 16:41	ORM	TAL SL
Total/NA	Analysis	9315		1			453148	12/05/19 06:25	AJD	TAL SL
Total/NA	Prep	PrecSep_0			1000.5 mL	1.0 g	450343	11/13/19 18:20	ORM	TAL SL
Total/NA	Analysis	9320		1			450937	11/18/19 12:54	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			453289	12/06/19 09:22	SMP	TAL SL

Client Sample ID: PNMW-22
Lab Sample ID: 280-130629-6
Date Collected: 11/06/19 17:15
Matrix: Water
Date Received: 11/07/19 16:56

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	410858	11/14/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			411129	11/15/19 12:49	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	410858	11/14/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			411345	11/15/19 13:07	DSH	TAL CAN
Total/NA	Analysis	9040B		1			478946	11/26/19 16:00	SPG	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	479298	12/03/19 01:38	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	477339	11/12/19 15:05	FRG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	477131	11/11/19 10:05	FRG	TAL DEN
Total/NA	Prep	PrecSep-21			1000.1 mL	1.0 g	450339	11/13/19 16:41	ORM	TAL SL
Total/NA	Analysis	9315		1			453148	12/05/19 06:26	AJD	TAL SL
Total/NA	Prep	PrecSep_0			1000.1 mL	1.0 g	450343	11/13/19 18:20	ORM	TAL SL
Total/NA	Analysis	9320		1			450937	11/18/19 12:54	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			453289	12/06/19 09:22	SMP	TAL SL

Client Sample ID: PNMW-23
Lab Sample ID: 280-130629-7
Date Collected: 11/06/19 10:40
Matrix: Water
Date Received: 11/07/19 16:56

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	410858	11/14/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			411129	11/15/19 13:02	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	410858	11/14/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			411345	11/15/19 13:09	DSH	TAL CAN
Total/NA	Analysis	9040B		1			478946	11/26/19 16:04	SPG	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	479298	12/03/19 02:11	JAP	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	479298	12/03/19 02:27	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	477339	11/12/19 15:05	FRG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	477131	11/11/19 10:05	FRG	TAL DEN
Total/NA	Prep	PrecSep-21			1000.2 mL	1.0 g	450339	11/13/19 16:41	ORM	TAL SL
Total/NA	Analysis	9315		1			453148	12/05/19 06:26	AJD	TAL SL

Lab Chronicle

Client: HDR Inc
Job ID: 280-130629-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Client Sample ID: PNMW-23
Lab Sample ID: 280-130629-7
Date Collected: 11/06/19 10:40
Matrix: Water
Date Received: 11/07/19 16:56

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep_0			1000.2 mL	1.0 g	450343	11/13/19 18:20	ORM	TAL SL
Total/NA	Analysis	9320		1			450937	11/18/19 12:55	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			453289	12/06/19 09:22	SMP	TAL SL

Client Sample ID: PNMW-20DUP
Lab Sample ID: 280-130629-8
Date Collected: 11/05/19 16:20
Matrix: Water
Date Received: 11/07/19 16:56

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	410858	11/14/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			411129	11/15/19 13:07	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	410858	11/14/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			411345	11/15/19 13:11	DSH	TAL CAN
Total/NA	Analysis	9040B		1			478946	11/26/19 16:09	SPG	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	479298	12/03/19 02:44	JAP	TAL DEN
Total/NA	Analysis	9056A		100	5 mL	5 mL	479298	12/03/19 03:00	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	5 mL	100 mL	477339	11/12/19 15:05	FRG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	477131	11/11/19 10:05	FRG	TAL DEN
Total/NA	Prep	PrecSep-21			1000.7 mL	1.0 g	450339	11/13/19 16:41	ORM	TAL SL
Total/NA	Analysis	9315		1			453148	12/05/19 08:19	AJD	TAL SL
Total/NA	Prep	PrecSep_0			1000.7 mL	1.0 g	450343	11/13/19 18:20	ORM	TAL SL
Total/NA	Analysis	9320		1			450937	11/18/19 12:55	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			453289	12/06/19 09:22	SMP	TAL SL

Client Sample ID: PNMW-22EB
Lab Sample ID: 280-130629-9
Date Collected: 11/07/19 10:00
Matrix: Water
Date Received: 11/07/19 16:56

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	410858	11/14/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			411129	11/15/19 13:12	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	410858	11/14/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			411345	11/15/19 13:14	DSH	TAL CAN
Total/NA	Analysis	9040B		1			479011	11/27/19 12:55	SPG	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	479298	12/03/19 03:16	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	477339	11/12/19 15:05	FRG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	477131	11/11/19 10:05	FRG	TAL DEN
Total/NA	Prep	PrecSep-21			1000.0 mL	1.0 g	450339	11/13/19 16:41	ORM	TAL SL
Total/NA	Analysis	9315		1			453148	12/05/19 08:19	AJD	TAL SL
Total/NA	Prep	PrecSep_0			1000.0 mL	1.0 g	450343	11/13/19 18:20	ORM	TAL SL
Total/NA	Analysis	9320		1			450983	11/18/19 12:50	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			453289	12/06/19 09:22	SMP	TAL SL

Lab Chronicle

Client: HDR Inc
Job ID: 280-130629-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

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

Accreditation/Certification Summary

Client: HDR Inc
Job ID: 280-130629-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Laboratory: Eurofins TestAmerica, Denver

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

Authority	Program	Identification Number	Expiration Date
A2LA	DoD	2907.01	10-31-21

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
9040B		Water	Temperature
9056A		Water	Chloride
9056A		Water	Fluoride
9056A		Water	Sulfate

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	02-23-20
Connecticut	State	PH-0590	12-31-19
Florida	NELAP	E87225	06-30-20
Georgia	State	4062	02-23-20
Illinois	NELAP	004498	07-31-20
Iowa	State	421	06-01-20
Kansas	NELAP	E-10336	04-30-20
Kentucky (UST)	State	112225	02-23-20
Kentucky (WW)	State	KY98016	12-31-19
Minnesota	NELAP	OH00048	12-31-19
Minnesota (Petrofund)	State Program	3506	07-31-21
New Jersey	NELAP	OH001	06-30-20
New York	NELAP	10975	03-31-20
Ohio VAP	State	CL0024	06-05-21
Oregon	NELAP	4062	02-23-20
Pennsylvania	NELAP	68-00340	08-31-20
Texas	NELAP	T104704517-18-10	08-31-20
USDA	US Federal Programs	P330-16-00404	12-28-19
Virginia	NELAP	010101	09-14-20
Washington	State	C971	01-12-20
West Virginia DEP	State	210	12-31-19

Accreditation/Certification Summary

Client: HDR Inc
Job ID: 280-130629-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

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
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	12-08-19
California	Los Angeles County Sanitation Districts	10259	06-30-20
California	State	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
HI - RadChem Recognition	State	n/a	06-30-20
Iowa	State	373	09-17-20
Kansas	NELAP	E-10236	10-31-20
Kentucky (DW)	State	KY90125	12-31-19
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	State	LA011	12-31-19
Maryland	State	310	09-30-20
MI - RadChem Recognition	State	9005	06-30-20
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	04-01-20
North Dakota	State	R-207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-20
South Carolina	State	85002001	06-30-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-17-00028	02-02-20
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	10310	06-14-20
Washington	State	C592	08-30-20

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Phone: 303-736-0100 Fax: 303-431-7171

Chain of Custody Record

Denver #280

eurofins | Environment Testing TestAmerica

Client Information	Sampler: Rainsberger	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):
Client Contact: Molly Reeves	Phone: 208 841 9707	E-Mail: darlene.bandy@testamericainc.com	
Company: HDR Inc			
Address: 9781 S. Meridian Blvd Suite 400	Due Date Requested:		
City: Englewood	TAT Requested (days):		
State, Zip: CO, 80112			
Phone: 734-263-7138(Tel)	PO #: DEN-018		
Email: Molly.Reeves@hdrinc.com	WO #:		
Project Name: Xcel Energy GW CCR Monitoring - Pawnee	Project #: 28014378		
Site: Colorado	SSOW#:		

COC No: 280-93687-28864.1
Page: Page 1 of 2
Job #:

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

BASP & AWRP 3 coolers

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9056A_28D - (MOD) Copy Analytes (Anions (pH))	2540C_Calcd, 2540D TDS/TSS	9315_Ra226, 9320_Ra228, Ra226Ra228_GFPC	6020A, 7470A Metals (see List)	Total Number of containers	Special Instructions/Note: B, Ca, As, Ba, Cr, Co, Pb, Li, Mb, Se
			Preservation Code:				N	N	D	D		
PNMW-17	11-6	1355	g	Water	N	N	X	X	X	X		
PNMW-18	11-7	1215		Water			X	X	X	X		
PNMW-19	11-7	1410		Water			X	X	X	X		
PNMW-20	11-5	1620		Water			X	X	X	X		
~~DUP~~ PNMW-21	11-5	1255		Water			X	X	X	X		
~~EB~~ PNMW-22	11-6	1715		Water			X	X	X	X		
PNMW-23	11-6	1040		Water			X	X	X	X		
PNMW-20 DUP	11-5	1620		Water			X	X	X	X		
PNMW-22EB	11-7	1000		Water			X	X	X	X		
				Water								
				Water								

280-130629 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:
Relinquished by: K Rainsberger [signature]	Date/Time: 11-7-19 1650	Company	Received by: [signature] Date/Time: 11-7-19 16:56 Company: TA Den
Relinquished by:	Date/Time:	Company	Received by: Date/Time: Company
Relinquished by:	Date/Time:	Company	Received by: Date/Time: Company

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks: 0.4, 0.7, 2.1, +0.9, 1R8, SE, 11/8/19

Ver: 01/16/2019

12/6/2019

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Phone: 303-736-0100 Fax: 303-431-7171

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-505866.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: darlene.bandy@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD - A2LA		Job #: 280-130629-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 12/9/2019			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Pawnee	Project #: 28014378			
Site: Xcel Energy - Pawnee	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PrecSep_21 Radium-226 (1/3)	9320_Ra228/PrecSep_0 Radium-228 (2/3)	Ra226Ra228_GFPC/ Ra-226/Ra-228 (3/3)	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
PNMW-17 (280-130629-1)	11/6/19	13:55 Mountain		Water			X	X	X	2	
PNMW-18 (280-130629-2)	11/7/19	12:15 Mountain		Water			X	X	X	2	
PNMW-19 (280-130629-3)	11/7/19	14:10 Mountain		Water			X	X	X	2	
PNMW-20 (280-130629-4)	11/5/19	16:20 Mountain		Water			X	X	X	2	
PNMW-21 (280-130629-5)	11/5/19	12:55 Mountain		Water			X	X	X	2	
PNMW-22 (280-130629-6)	11/6/19	17:15 Mountain		Water			X	X	X	2	
PNMW-23 (280-130629-7)	11/6/19	10:40 Mountain		Water			X	X	X	2	
PNMW-20DUP (280-130629-8)	11/5/19	16:20 Mountain		Water			X	X	X	2	
PNMW-22EB (280-130629-9)	11/7/19	10:00 Mountain		Water			X	X	X	2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. 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/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:
			M+I 11-12-19

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Laurence Chang	11/11/19 1335		MM	11-12-19 1040	TA SR
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Phone: 303-736-0100 Fax: 303-431-7171

2.6/3.3

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-505865.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: darlene.bandy@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD - A2LA		Job #: 280-130629-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 11/29/2019			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Pawnee	Project #: 28014378			
Site: Xcel Energy - Pawnee	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

S61

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A/3005A (MOD) Total Metals - Custom(w/collision	6010C/3005A Boron	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
PNMW-17 (280-130629-1)	11/6/19	13:55 Mountain		Water			X	X	1	Use Collision Cell
PNMW-18 (280-130629-2)	11/7/19	12:15 Mountain		Water			X	X	1	Use Collision Cell
PNMW-19 (280-130629-3)	11/7/19	14:10 Mountain		Water			X	X	1	Use Collision Cell
PNMW-20 (280-130629-4)	11/5/19	16:20 Mountain		Water			X	X	1	Use Collision Cell
PNMW-21 (280-130629-5)	11/5/19	12:55 Mountain		Water			X	X	1	Use Collision Cell
PNMW-22 (280-130629-6)	11/6/19	17:15 Mountain		Water			X	X	1	Use Collision Cell
PNMW-23 (280-130629-7)	11/6/19	10:40 Mountain		Water			X	X	1	Use Collision Cell
PNMW-20DUP (280-130629-8)	11/5/19	16:20 Mountain		Water			X	X	1	Use Collision Cell
PNMW-22EB (280-130629-9)	11/7/19	10:00 Mountain		Water			X	X	1	Use Collision Cell

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. 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/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Laurence Chang	11/11/19 1420			11-13-19 1030	TAC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # :** _____

Canton Facility

Client EIA Denver Site Name _____ Cooler unpacked by:

Cooler Received on 11-13-19 Opened on 11-13-19

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # 14 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 Form

IR GUN# IR-10 (CF +0.7 °C) Observed Cooler Temp. 2.6 °C Corrected Cooler Temp. 3.3 °C

IR GUN #IR-11 (CF +0.9°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels be reconciled with the COC?	Yes	No
9. Were correct bottle(s) used for the test(s) indicated?	Yes	No
10. Sufficient quantity received to perform indicated analyses?	Yes	No
11. Are these work share samples?	Yes	No
If yes, Questions 12-16 have been checked at the originating laboratory.		
12. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC991818
13. Were VOAs on the COC?	Yes	No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	Yes	No
16. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by:

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-130629-1

Login Number: 130629
List Number: 1
Creator: Zimmerman, Steven M

List Source: Eurofins TestAmerica, Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
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	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-130629-1

Login Number: 130629
List Number: 2
Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis
List Creation: 11/12/19 02:24 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	6.0
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?	N/A	
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.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: HDR Inc
Job ID: 280-130629-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Method: 9315 - Radium-226 (GFPC)

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

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits) Ba Carrier (40-110)
280-130629-1	PNMW-17	80.3
280-130629-2	PNMW-18	78.8
280-130629-3	PNMW-19	87.8
280-130629-4	PNMW-20	84.2
280-130629-5	PNMW-21	77.0
280-130629-6	PNMW-22	83.0
280-130629-7	PNMW-23	85.1
280-130629-8	PNMW-20DUP	79.7
280-130629-9	PNMW-22EB	94.9
LCS 160-450339/1-A	Lab Control Sample	93.1
LCSD 160-450339/2-A	Lab Control Sample Dup	91.6
MB 160-450339/12-A	Method Blank	95.8

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

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

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits) Ba Carrier (40-110)	Y Carrier (40-110)
280-130629-1	PNMW-17	80.3	76.6
280-130629-2	PNMW-18	78.8	80.7
280-130629-3	PNMW-19	87.8	79.3
280-130629-4	PNMW-20	84.2	84.1
280-130629-5	PNMW-21	77.0	78.5
280-130629-6	PNMW-22	83.0	81.1
280-130629-7	PNMW-23	85.1	85.2
280-130629-8	PNMW-20DUP	79.7	81.1
280-130629-9	PNMW-22EB	94.9	81.1
LCS 160-450343/1-A	Lab Control Sample	93.1	83.0
LCSD 160-450343/2-A	Lab Control Sample Dup	91.6	82.6
MB 160-450343/12-A	Method Blank	95.8	75.5

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

eurofins | Environment Testing TestAmerica



ANALYTICAL REPORT

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

Laboratory Job ID: 280-130648-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

For:
HDR Inc
1670 Broadway, Suite 3400
Denver, Colorado 80202

Attn: Molly Reeves

Darlene Bandy

Authorized for release by:
12/4/2019 6:35:28 PM

Darlene Bandy, Project Manager I
(303)736-0188
darlene.bandy@testamericainc.com

LINKS

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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: 280-130648-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Qualifiers

General Chemistry

Qualifier	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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Job ID: 280-130648-1

Laboratory: Eurofins TestAmerica, Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Pawnee

Report Number: 280-130648-1

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 11/7/2019 4:56 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.1º C.

TOTAL RECOVERABLE METALS
Samples PNMW-17 (280-130648-1), PNMW-21 (280-130648-2), PNMW-22 (280-130648-3) and PNMW-23 (280-130648-4) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 11/14/2019 and analyzed on 11/15/2019.

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

TOTAL RECOVERABLE METALS (ICPMS)
Samples PNMW-17 (280-130648-1), PNMW-21 (280-130648-2), PNMW-22 (280-130648-3) and PNMW-23 (280-130648-4) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 11/14/2019 and analyzed on 11/15/2019.

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

TOTAL DISSOLVED SOLIDS
Samples PNMW-17 (280-130648-1), PNMW-21 (280-130648-2), PNMW-22 (280-130648-3) and PNMW-23 (280-130648-4) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 11/11/2019.

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

CORROSIVITY (PH)
Samples PNMW-17 (280-130648-1), PNMW-21 (280-130648-2), PNMW-22 (280-130648-3) and PNMW-23 (280-130648-4) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 11/26/2019.

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

ANIONS (28 DAYS)
Samples PNMW-17 (280-130648-1), PNMW-21 (280-130648-2), PNMW-22 (280-130648-3) and PNMW-23 (280-130648-4) were analyzed

Job ID: 280-130648-1 (Continued)

Laboratory: Eurofins TestAmerica, Denver (Continued)

for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 12/02/2019.

Samples PNMW-17 (280-130648-1)[5X], PNMW-21 (280-130648-2)[5X], PNMW-22 (280-130648-3)[5X], PNMW-23 (280-130648-4)[20X] and PNMW-23 (280-130648-4)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

Detection Summary

Client: HDR Inc
Job ID: 280-130648-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Client Sample ID: PNMW-17 — Lab Sample ID: 280-130648-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.30		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	230		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.8	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	350		15	5.1	mg/L	5		9056A	Total/NA
Sulfate	580		25	5.2	mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	1500		20	9.4	mg/L	1		SM 2540C	Total/NA

Client Sample ID: PNMW-21 — Lab Sample ID: 280-130648-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.17		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	170		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.3	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	260		15	5.1	mg/L	5		9056A	Total/NA
Sulfate	640		25	5.2	mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	1700		20	9.4	mg/L	1		SM 2540C	Total/NA

Client Sample ID: PNMW-22 — Lab Sample ID: 280-130648-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.11		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	250		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.9	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	220		15	5.1	mg/L	5		9056A	Total/NA
Sulfate	870		25	5.2	mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	1800		20	9.4	mg/L	1		SM 2540C	Total/NA

Client Sample ID: PNMW-23 — Lab Sample ID: 280-130648-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.10		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	260		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.9	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	100		15	5.1	mg/L	5		9056A	Total/NA
Sulfate	1200		100	21	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	2300		20	9.4	mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: HDR Inc
Job ID: 280-130648-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
9040B	pH	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN

Protocol References:

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: 280-130648-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
280-130648-1	PNMW-17	Water	11/06/19 14:15	11/07/19 16:56	
280-130648-2	PNMW-21	Water	11/05/19 13:20	11/07/19 16:56	
280-130648-3	PNMW-22	Water	11/06/19 17:05	11/07/19 16:56	
280-130648-4	PNMW-23	Water	11/06/19 11:15	11/07/19 16:56	

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

Client Sample ID: PNMW-17
Date Collected: 11/06/19 14:15
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130648-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.30		0.10	0.023	mg/L		11/14/19 14:00	11/15/19 13:17	1

Client Sample ID: PNMW-21
Date Collected: 11/05/19 13:20
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130648-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.17		0.10	0.023	mg/L		11/14/19 14:00	11/15/19 13:22	1

Client Sample ID: PNMW-22
Date Collected: 11/06/19 17:05
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130648-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.11		0.10	0.023	mg/L		11/14/19 14:00	11/15/19 13:26	1

Client Sample ID: PNMW-23
Date Collected: 11/06/19 11:15
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130648-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.10		0.10	0.023	mg/L		11/14/19 14:00	11/15/19 13:31	1

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

Client Sample ID: PNMW-17
Date Collected: 11/06/19 14:15
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130648-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	230		1.0	0.58	mg/L		11/14/19 14:00	11/15/19 13:16	1

Client Sample ID: PNMW-21
Date Collected: 11/05/19 13:20
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130648-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	170		1.0	0.58	mg/L		11/14/19 14:00	11/15/19 13:18	1

Client Sample ID: PNMW-22
Date Collected: 11/06/19 17:05
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130648-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	250		1.0	0.58	mg/L		11/14/19 14:00	11/15/19 13:21	1

Client Sample ID: PNMW-23
Date Collected: 11/06/19 11:15
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130648-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	260		1.0	0.58	mg/L		11/14/19 14:00	11/15/19 13:23	1

General Chemistry

Client Sample ID: PNMW-17
Date Collected: 11/06/19 14:15
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130648-1
Matrix: Water

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			11/26/19 16:31	1
Temperature	22.8	HF	1.0	1.0	Degrees C			11/26/19 16:31	1
Chloride	350		15	5.1	mg/L			12/02/19 20:11	5
Fluoride	ND		2.5	0.83	mg/L			12/02/19 20:11	5
Sulfate	580		25	5.2	mg/L			12/02/19 20:11	5
Total Dissolved Solids (TDS)	1500		20	9.4	mg/L			11/11/19 09:48	1

Client Sample ID: PNMW-21
Date Collected: 11/05/19 13:20
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130648-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU			11/26/19 16:36	1
Temperature	22.3	HF	1.0	1.0	Degrees C			11/26/19 16:36	1
Chloride	260		15	5.1	mg/L			12/02/19 20:46	5
Fluoride	ND		2.5	0.83	mg/L			12/02/19 20:46	5
Sulfate	640		25	5.2	mg/L			12/02/19 20:46	5
Total Dissolved Solids (TDS)	1700		20	9.4	mg/L			11/11/19 09:48	1

Client Sample ID: PNMW-22
Date Collected: 11/06/19 17:05
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130648-3
Matrix: Water

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			11/26/19 16:40	1
Temperature	21.9	HF	1.0	1.0	Degrees C			11/26/19 16:40	1
Chloride	220		15	5.1	mg/L			12/02/19 21:21	5
Fluoride	ND		2.5	0.83	mg/L			12/02/19 21:21	5
Sulfate	870		25	5.2	mg/L			12/02/19 21:21	5
Total Dissolved Solids (TDS)	1800		20	9.4	mg/L			11/11/19 09:48	1

Client Sample ID: PNMW-23
Date Collected: 11/06/19 11:15
Date Received: 11/07/19 16:56
Lab Sample ID: 280-130648-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU			11/26/19 16:45	1
Temperature	21.9	HF	1.0	1.0	Degrees C			11/26/19 16:45	1
Chloride	100		15	5.1	mg/L			12/02/19 21:56	5
Fluoride	ND		2.5	0.83	mg/L			12/02/19 21:56	5
Sulfate	1200		100	21	mg/L			12/02/19 23:41	20
Total Dissolved Solids (TDS)	2300		20	9.4	mg/L			11/11/19 09:48	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-410858/1-A
Matrix: Water
Analysis Batch: 411129

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 410858

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		11/14/19 14:00	11/15/19 11:32	1

Lab Sample ID: LCS 240-410858/2-A
Matrix: Water
Analysis Batch: 411129

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 410858

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.02		mg/L		102	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-410858/1-A
Matrix: Water
Analysis Batch: 411345

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 410858

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		1.0	0.58	mg/L		11/14/19 14:00	11/15/19 12:38	1

Lab Sample ID: LCS 240-410858/3-A
Matrix: Water
Analysis Batch: 411345

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 410858

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	25.0	20.3		mg/L		81	80 - 120

Method: 9040B - pH

Lab Sample ID: LCS 280-478946/4
Matrix: Water
Analysis Batch: 478946

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

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

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-479302/6
Matrix: Water
Analysis Batch: 479302

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	1.0	mg/L			12/02/19 13:08	1
Fluoride	ND		0.50	0.17	mg/L			12/02/19 13:08	1
Sulfate	ND		5.0	1.0	mg/L			12/02/19 13:08	1

Lab Sample ID: LCS 280-479302/4
Matrix: Water
Analysis Batch: 479302

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	98.2		mg/L		98	90 - 110

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

Lab Sample ID: LCS 280-479302/4
Matrix: Water
Analysis Batch: 479302

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	5.00	5.01		mg/L		100	90 - 110
Sulfate	100	97.4		mg/L		97	90 - 110

Lab Sample ID: LCSD 280-479302/5
Matrix: Water
Analysis Batch: 479302

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	98.4		mg/L		98	90 - 110	0	10
Fluoride	5.00	4.90		mg/L		98	90 - 110	2	10
Sulfate	100	97.5		mg/L		98	90 - 110	0	10

Lab Sample ID: MRL 280-479302/3
Matrix: Water
Analysis Batch: 479302

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.31		mg/L		86	50 - 150
Fluoride	0.500	0.506		mg/L		101	50 - 150
Sulfate	5.00	4.06	J	mg/L		81	50 - 150

Lab Sample ID: 280-130648-4 MS
Matrix: Water
Analysis Batch: 479302

Client Sample ID: PNMW-23
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100		250	354		mg/L		101	80 - 120
Fluoride	ND		25.0	21.3		mg/L		85	80 - 120

Lab Sample ID: 280-130648-4 MS
Matrix: Water
Analysis Batch: 479302

Client Sample ID: PNMW-23
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	1200		1000	2130		mg/L		95	80 - 120

Lab Sample ID: 280-130648-4 MSD
Matrix: Water
Analysis Batch: 479302

Client Sample ID: PNMW-23
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100		250	355		mg/L		101	80 - 120	0	20
Fluoride	ND		25.0	21.3		mg/L		85	80 - 120	0	20

Lab Sample ID: 280-130648-4 MSD
Matrix: Water
Analysis Batch: 479302

Client Sample ID: PNMW-23
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	1200		1000	2140		mg/L		96	80 - 120	0	20

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

Lab Sample ID: 280-130648-4 DU
Matrix: Water
Analysis Batch: 479302

Client Sample ID: PNMW-23
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Chloride	100			102		mg/L				0.8	15
Fluoride	ND			ND		mg/L				NC	15

Lab Sample ID: 280-130648-4 DU
Matrix: Water
Analysis Batch: 479302

Client Sample ID: PNMW-23
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Sulfate	1200			1160		mg/L				2	15

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

Lab Sample ID: MB 280-477129/1
Matrix: Water
Analysis Batch: 477129

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			11/11/19 09:48	1

Lab Sample ID: LCS 280-477129/2
Matrix: Water
Analysis Batch: 477129

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids (TDS)			500	490		mg/L		98	93 - 110		

Lab Sample ID: LCSD 280-477129/3
Matrix: Water
Analysis Batch: 477129

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Dissolved Solids (TDS)			500	488		mg/L		98	93 - 110	0	20

QC Association Summary

Client: HDR Inc
Job ID: 280-130648-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Metals

Prep Batch: 410858

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-130648-1	PNMW-17	Total Recoverable	Water	3005A	
280-130648-2	PNMW-21	Total Recoverable	Water	3005A	
280-130648-3	PNMW-22	Total Recoverable	Water	3005A	
280-130648-4	PNMW-23	Total Recoverable	Water	3005A	
MB 240-410858/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-410858/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-410858/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 411129

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-130648-1	PNMW-17	Total Recoverable	Water	6010C	410858
280-130648-2	PNMW-21	Total Recoverable	Water	6010C	410858
280-130648-3	PNMW-22	Total Recoverable	Water	6010C	410858
280-130648-4	PNMW-23	Total Recoverable	Water	6010C	410858
MB 240-410858/1-A	Method Blank	Total Recoverable	Water	6010C	410858
LCS 240-410858/2-A	Lab Control Sample	Total Recoverable	Water	6010C	410858

Analysis Batch: 411345

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-130648-1	PNMW-17	Total Recoverable	Water	6020A	410858
280-130648-2	PNMW-21	Total Recoverable	Water	6020A	410858
280-130648-3	PNMW-22	Total Recoverable	Water	6020A	410858
280-130648-4	PNMW-23	Total Recoverable	Water	6020A	410858
MB 240-410858/1-A	Method Blank	Total Recoverable	Water	6020A	410858
LCS 240-410858/3-A	Lab Control Sample	Total Recoverable	Water	6020A	410858

General Chemistry

Analysis Batch: 477129

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-130648-1	PNMW-17	Total/NA	Water	SM 2540C	
280-130648-2	PNMW-21	Total/NA	Water	SM 2540C	
280-130648-3	PNMW-22	Total/NA	Water	SM 2540C	
280-130648-4	PNMW-23	Total/NA	Water	SM 2540C	
MB 280-477129/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-477129/2	Lab Control Sample	Total/NA	Water	SM 2540C	
LCSD 280-477129/3	Lab Control Sample Dup	Total/NA	Water	SM 2540C	

Analysis Batch: 478946

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-130648-1	PNMW-17	Total/NA	Water	9040B	
280-130648-2	PNMW-21	Total/NA	Water	9040B	
280-130648-3	PNMW-22	Total/NA	Water	9040B	
280-130648-4	PNMW-23	Total/NA	Water	9040B	
LCS 280-478946/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 479302

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-130648-1	PNMW-17	Total/NA	Water	9056A	
280-130648-2	PNMW-21	Total/NA	Water	9056A	
280-130648-3	PNMW-22	Total/NA	Water	9056A	

General Chemistry (Continued)

Analysis Batch: 479302 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-130648-4	PNMW-23	Total/NA	Water	9056A	
280-130648-4	PNMW-23	Total/NA	Water	9056A	
MB 280-479302/6	Method Blank	Total/NA	Water	9056A	
LCS 280-479302/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-479302/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-479302/3	Lab Control Sample	Total/NA	Water	9056A	
280-130648-4 MS	PNMW-23	Total/NA	Water	9056A	
280-130648-4 MS	PNMW-23	Total/NA	Water	9056A	
280-130648-4 MSD	PNMW-23	Total/NA	Water	9056A	
280-130648-4 MSD	PNMW-23	Total/NA	Water	9056A	
280-130648-4 DU	PNMW-23	Total/NA	Water	9056A	
280-130648-4 DU	PNMW-23	Total/NA	Water	9056A	

Lab Chronicle

Client: HDR Inc
Job ID: 280-130648-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Client Sample ID: PNMW-17
Lab Sample ID: 280-130648-1
Date Collected: 11/06/19 14:15
Matrix: Water
Date Received: 11/07/19 16:56

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	410858	11/14/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			411129	11/15/19 13:17	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	410858	11/14/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			411345	11/15/19 13:16	DSH	TAL CAN
Total/NA	Analysis	9040B		1			478946	11/26/19 16:31	SPG	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	479302	12/02/19 20:11	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	477129	11/11/19 09:48	ECL	TAL DEN

Client Sample ID: PNMW-21
Lab Sample ID: 280-130648-2
Date Collected: 11/05/19 13:20
Matrix: Water
Date Received: 11/07/19 16:56

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	410858	11/14/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			411129	11/15/19 13:22	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	410858	11/14/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			411345	11/15/19 13:18	DSH	TAL CAN
Total/NA	Analysis	9040B		1			478946	11/26/19 16:36	SPG	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	479302	12/02/19 20:46	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	477129	11/11/19 09:48	ECL	TAL DEN

Client Sample ID: PNMW-22
Lab Sample ID: 280-130648-3
Date Collected: 11/06/19 17:05
Matrix: Water
Date Received: 11/07/19 16:56

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	410858	11/14/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			411129	11/15/19 13:26	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	410858	11/14/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			411345	11/15/19 13:21	DSH	TAL CAN
Total/NA	Analysis	9040B		1			478946	11/26/19 16:40	SPG	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	479302	12/02/19 21:21	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	477129	11/11/19 09:48	ECL	TAL DEN

Client Sample ID: PNMW-23
Lab Sample ID: 280-130648-4
Date Collected: 11/06/19 11:15
Matrix: Water
Date Received: 11/07/19 16:56

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	410858	11/14/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			411129	11/15/19 13:31	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	410858	11/14/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			411345	11/15/19 13:23	DSH	TAL CAN
Total/NA	Analysis	9040B		1			478946	11/26/19 16:45	SPG	TAL DEN

Lab Chronicle

Client: HDR Inc
Job ID: 280-130648-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Client Sample ID: PNMW-23
Lab Sample ID: 280-130648-4
Date Collected: 11/06/19 11:15
Matrix: Water
Date Received: 11/07/19 16:56

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	5 mL	5 mL	479302	12/02/19 21:56	JAP	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	479302	12/02/19 23:41	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	477129	11/11/19 09:48	ECL	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: 280-130648-1
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Laboratory: Eurofins TestAmerica, Denver

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

Authority	Program	Identification Number	Expiration Date
A2LA	DoD	2907.01	10-31-21

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
9040B		Water	Temperature
9056A		Water	Chloride
9056A		Water	Fluoride
9056A		Water	Sulfate

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	02-23-20
Connecticut	State	PH-0590	12-31-19
Florida	NELAP	E87225	06-30-20
Georgia	State	4062	02-23-20
Illinois	NELAP	004498	07-31-20
Iowa	State	421	06-01-20
Kansas	NELAP	E-10336	04-30-20
Kentucky (UST)	State	112225	02-23-20
Kentucky (WW)	State	KY98016	12-31-19
Minnesota	NELAP	OH00048	12-31-19
Minnesota (Petrofund)	State Program	3506	07-31-21
New Jersey	NELAP	OH001	06-30-20
New York	NELAP	10975	03-31-20
Ohio VAP	State	CL0024	06-05-21
Oregon	NELAP	4062	02-23-20
Pennsylvania	NELAP	68-00340	08-31-20
Texas	NELAP	T104704517-18-10	08-31-20
USDA	US Federal Programs	P330-16-00404	12-28-19
Virginia	NELAP	010101	09-14-20
Washington	State	C971	01-12-20
West Virginia DEP	State	210	12-31-19

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Phone: 303-736-0100 Fax: 303-431-7171

Chain of Custody Record

Denver #280

eurofins | Environment Testing TestAmerica

Client Information	Sampler: Rainsberger	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-93687-28864.1
Client Contact: Molly Reeves	Phone: 208-841-9707	E-Mail: darlene.bandy@testamericainc.com		Page: Page 1 of 2
Company: HDR Inc				Job #:
Address: 9781 S. Meridian Blvd Suite 400	Due Date Requested:			
City: Englewood	TAT Requested (days):			
State, Zip: CO, 80112				
Phone: 734-263-7138(Tel)	PO #: DEN-018			
Email: Molly.Reeves@hdrinc.com	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Pawnee	Project #: 28014378			
Site: Colorado	SSOW#:			

280-130648 Chain of Custody

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M -, N -, O -, P -, Q -, R -, S -, T -, U -, V -, W -, Z -
Other:

East Landfill single cooler

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9056A_28D - (MOD) Copy Analytes (Anions/pH)	2540C_Calcd, ~~2540D~~ (TDS)	~~9315_Ra226, 9320_Ra228, Ra226Ra228_GFPC~~	6020A, ~~7470A~~ B, Ca	Total Number of containers	Special Instructions/Note:
				Preservation Code:	X	X	N	N	D	D	X	
PNMW-17	11-6	1415	g	Water			X	X		X		
PNMW-~~16~~ 21	11-5	1320		Water			X	X		X		
PNMW-~~18~~ 22	11-6	1705		Water			X	X		X		
PNMW-~~20~~ 23	11-6	1115		Water			X	X		X		
~~DUP~~				Water								
~~EB~~				Water								
				Water								
dup & eb on sep. COC				Water								
				Water								
				Water								
				Water								

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by: ~~[illegible]~~ | Date: | Time: | Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
K Rainsberger [signature]	11-7-19 1650	HDR	[signature]	11-7-19 1656	TA Den

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: ~~16~~ 0.2, IR8, +0.9, DW, 11/07/19

Ver: 01/16/2019

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Phone: 303-736-0100 Fax: 303-431-7171

2.6/3.3

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-505870.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: darlene.bandy@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD - A2LA		Job #: 280-130648-1
Address: 4101 Shuffel Street NW, .	Due Date Requested: 12/4/2019			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Xcel Energy GW CCR Monitoring - Pawnee	Project #: 28014378			
Site: Xcel Energy - Pawnee	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

561

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010C/3005A Boron	6020A/3005A Calcium	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
PNMW-17 (280-130648-1)	11/6/19	14:15 Mountain		Water			X	X	1	
PNMW-21 (280-130648-2)	11/5/19	13:20 Mountain		Water			X	X	1	
PNMW-22 (280-130648-3)	11/6/19	17:05 Mountain		Water			X	X	1	
PNMW-23 (280-130648-4)	11/6/19	11:15 Mountain		Water			X	X	1	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. 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/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Lawrence Chaney	11/11/19 1420			11-13-19 1030	E-TAC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # :** _____

Canton Facility

Client EA Denver Site Name _____ Cooler unpacked by: MMD

Cooler Received on 11-13-19 Opened on 11-13-19

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # 14 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 Form

IR GUN# IR-10 (CF +0.7 °C) Observed Cooler Temp. 2.6 °C Corrected Cooler Temp. 3.3 °C

IR GUN #IR-11 (CF +0.9°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels be reconciled with the COC?	Yes	No
9. Were correct bottle(s) used for the test(s) indicated?	Yes	No
10. Sufficient quantity received to perform indicated analyses?	Yes	No
11. Are these work share samples?	Yes	No
If yes, Questions 12-16 have been checked at the originating laboratory.		
12. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC991818
13. Were VOAs on the COC?	Yes	No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	Yes	No
16. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by:

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-130648-1

Login Number: 130648
List Number: 1
Creator: Petunin, Peter

List Source: Eurofins TestAmerica, Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	False	Not present - client drop off.
Sample custody seals, if present, are intact.	N/A	
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").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	