2018 Annual Groundwater Monitoring and Corrective Action Report

for Compliance with the Coal Combustion Residuals (CCR) Rule

Pawnee Station

Public Service Company of Colorado Energy

January 30, 2019

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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

2018 Groundwater Monitoring and Corrective Action Annual Report for Pawnee Station

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

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



Matthew Rohr, PE
Colorado PE License 0053467
License renewal date October 31, 2019

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 one existing CCR unit subject to the CCR Rule: the North 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) and one CCR unit that was constructed in 2018: the East CCR Landfill (**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 of the former BASP, but was not placed into service. Ash is scheduled to be placed in the East CCR Landfill beginning in 2019.

In 2018, groundwater monitoring was conducted at Pawnee Station to collect background samples for the (closed) BASP and AWRP. Since the new East CCR Landfill was constructed at the location of the former BASP, the wells and background sampling conducted in 2018 for the BASP will also represent background for the East CCR Landfill. Since the East CCR Landfill was not in operation in 2018, in this report discussion of the background sampling for this unit will be referred to as the BASP. The 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 North CCR Landfill, detection monitoring water quality data collected in 2017 were compared against the background threshold values (BTVs) as specified under CCR Rule Part 257.94, and groundwater monitoring was conducted for assessment monitoring as specified under Part 257.95. This Annual Groundwater Monitoring Report presents the sampling and analysis completed in 2018:

- The status of the groundwater monitoring program for the North CCR Landfill at the end of 2018 is assessment monitoring.
- The status of the groundwater monitoring program for the East CCR Landfill at the end of 2018 is background monitoring.
- The status of the groundwater monitoring program for the (closed) BASP at the end of 2018 is background monitoring.
- The status of the groundwater monitoring program for the (closed) AWRP at the end of 2018 is background 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 2018 Pawnee Station had one operating unlined landfill unit, 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, East CCR Landfill, was constructed in 2018 with a CCR compliant composite liner system, but was not put into operation. Ash is scheduled to be placed in the East CCR Landfill in 2019.

The BASP is 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 as described in the Pawnee Station Groundwater Monitoring System Certification (HDR, 2018). The well locations are shown on **Figure 2**. No landfill monitoring wells were installed or abandoned in 2018.

2.2.2 Bottom Ash Storage Pond

Four wells were sited at the (closed) BASP for CCR compliance. Groundwater flows east under the pond. Therefore, well MW-17 was located upgradient of the BASP and downgradient of the North CCR Landfill. Monitoring wells MW-21, MW-22, and MW-23 were located along the perimeter of the east side of the pond 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 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 BASP monitoring wells were installed or abandoned in 2018.

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 MW-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 MW-18, MW-19, and MW-20 were located along the perimeter of the east side of the pond to serve as downgradient wells (**Figure 2**). The AWRP monitoring wells were installed in 2017, as described in the Groundwater Monitoring System Certification report (HDR, 2018). No AWRP monitoring wells were installed or abandoned in 2018.

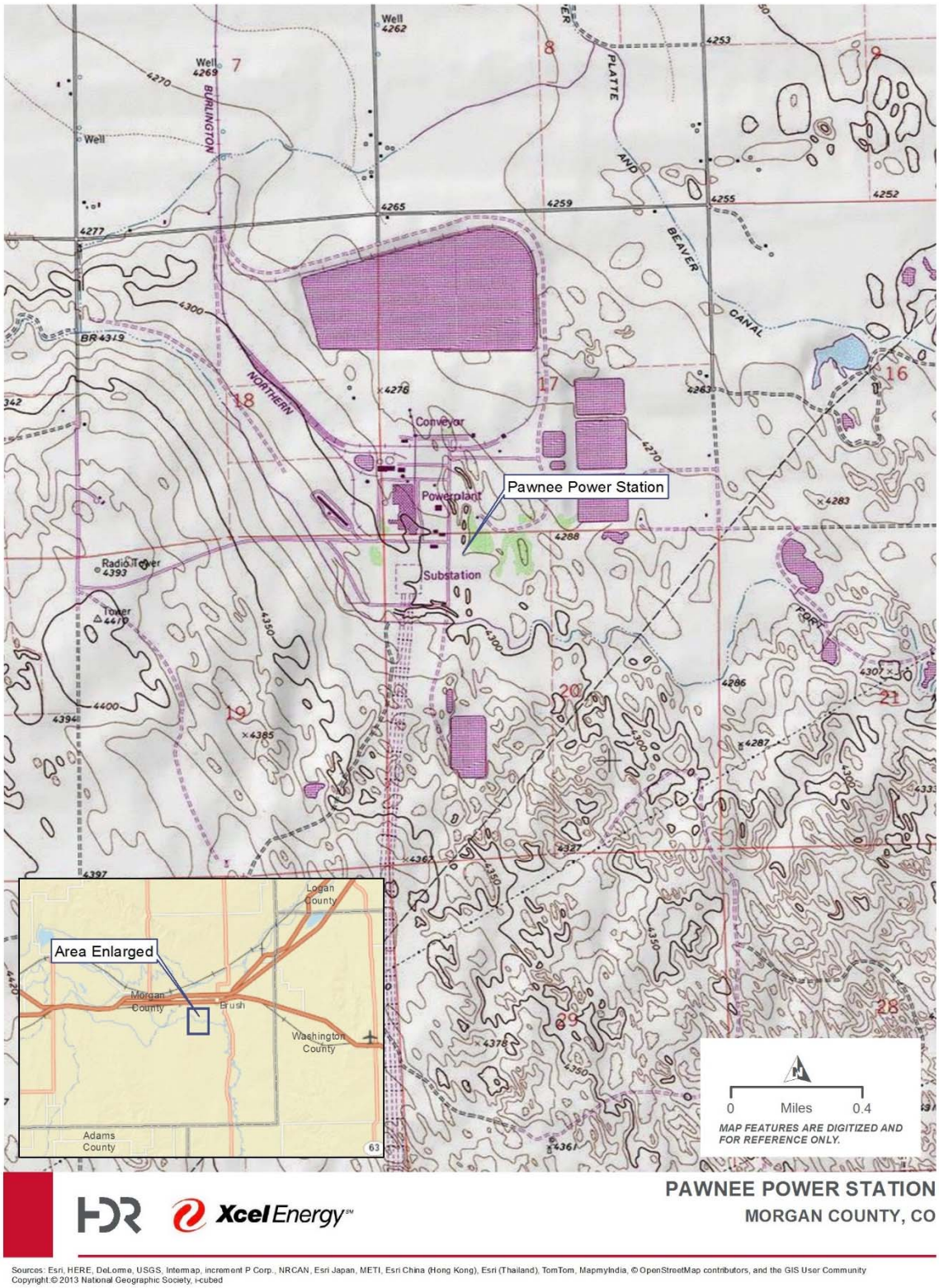


Figure 1. Vicinity map for Pawnee Station.

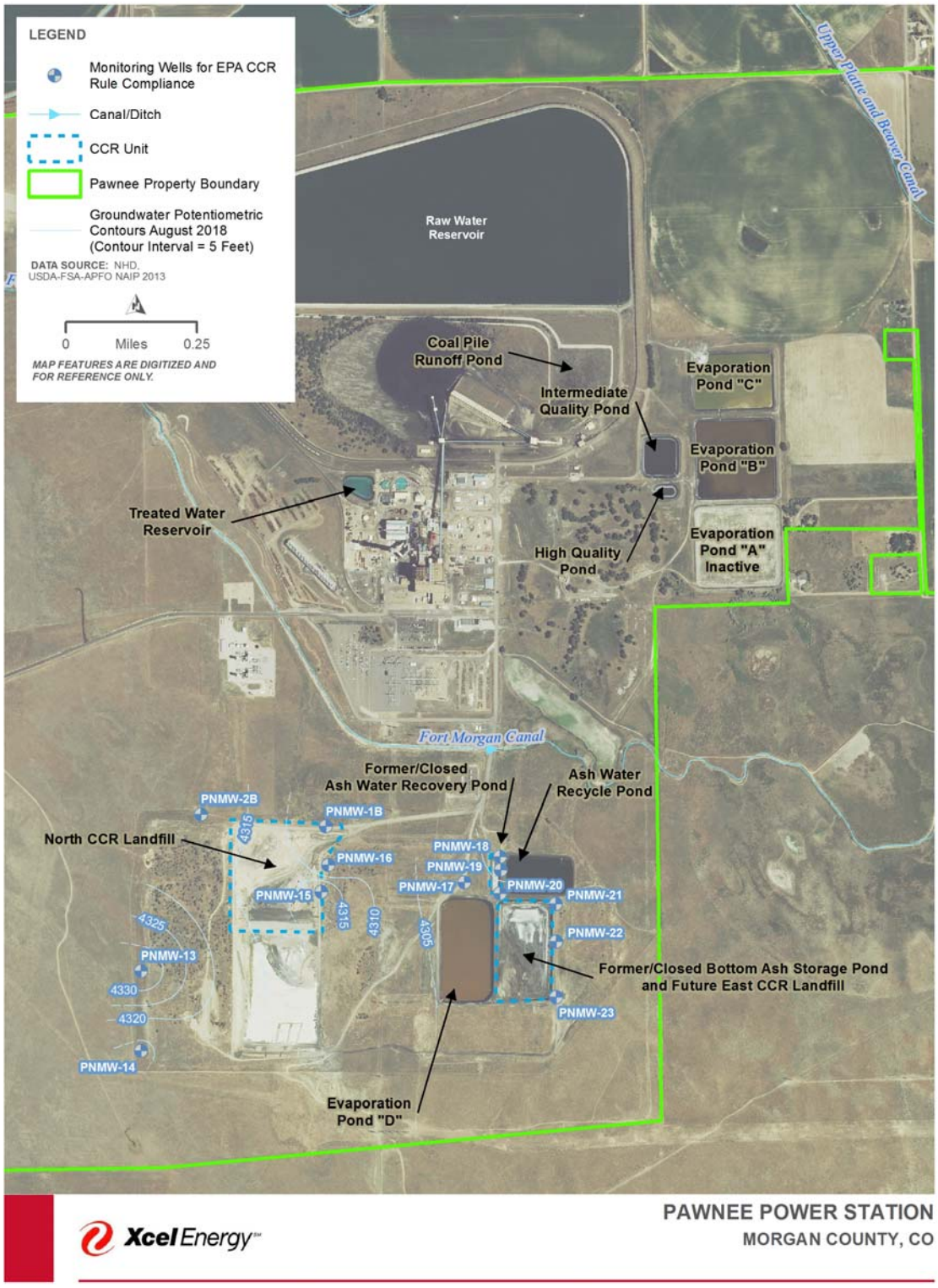


Figure 2. Pawnee Station – CCR units and monitoring well location map.

3.0 Monitoring

3.1 Frequency

3.1.1 North CCR Landfill

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). These SSIs triggered the assessment monitoring program for the landfill. An Alternative Source Determination memorandum, *Pawnee Station North Landfill CCR Unit Alternative Source Determination of Statistically Significant Increases over Background per CCR Rule 257.93(h)(2)*, was completed on April 9, 2018 and an alternative source was not identified at that time. The initial assessment monitoring event was completed May 29-30, 2018 to sample all of the monitoring wells around the landfill for Appendix IV constituents (**Table 1**). Samples were collected from the landfill monitoring network of wells (PNMW-1B, PNMW-2B, PNMW-13, PNMW-14, PNMW-15, and PNMW-16). **Table 2** provides the well identification, number of samples collected, dates samples were collected in 2018, and whether the sample was required by the detection monitoring or assessment monitoring programs (per (257.90(e)(3))). **Appendix A** provides distinctions for the different types of monitoring events and the CCR Rule Part under which the monitoring event was conducted. 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 (**Table 1**).

On August 13-16, 2018, the first semi-annual assessment monitoring samples were collected from the North CCR Landfill well network (**Table 2**). Samples were analyzed for Appendix III and detected Appendix IV COIs (all Appendix IV COIs). Samples were collected from the North CCR Landfill monitoring network of wells (PNMW-1B, PNMW-2B, PNMW-13, PNMW-14, PNMW-15, and PNMW-16).

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	May 29, 2018	Initial Assessment Monitoring
		August 14, 2018	Semi-Annual Assessment Monitoring
PNMW-2B	Upgradient / Background	May 29, 2018	Initial Assessment Monitoring
		August 13, 2018	Semi-Annual Assessment Monitoring
PNMW-13	Upgradient / Background	May 30, 2018	Initial Assessment Monitoring
		August 16, 2018	Semi-Annual Assessment Monitoring
PNMW-14	Upgradient / Background	May 30, 2018	Initial Assessment Monitoring
		August 15, 2018	Semi-Annual Assessment Monitoring
PNMW-15	Downgradient	May 29, 2018	Initial Assessment Monitoring
		August 13, 2018	Semi-Annual Assessment Monitoring
PNMW-16	Downgradient	May 30, 2018	Initial Assessment Monitoring
		August 13, 2018	Semi-Annual Assessment Monitoring

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), eight rounds of background groundwater sampling were completed in 2018 for the (closed) BASP CCR facility. The background monitoring and detection monitoring must be completed before April 17, 2019. Seven of the eight sample rounds for background were completed in 2017 and the eighth background sample event was completed in January 2018. Monitoring was conducted at the BASP monitoring well network (PNMW-17, PNMW-21, PNMW-22, and PNMW-23). Samples were analyzed for Appendix III and IV COIs plus TSS. **Table 3** provides the well identification, number of samples collected, dates samples were collected in 2018, and whether the sample was required by the detection monitoring or assessment monitoring programs (per (257.90(e)(3))).

Groundwater sampling was performed October 8-9, 2018 for closure confirmation monitoring following removal of all CCR pursuant to 257.102(c). Monitoring was conducted at the (closed) BASP monitoring well network (PNMW-17, PNMW-21, PNMW-22, and PNMW-23) (**Table 3**). Samples were analyzed for Appendix IV COIs.

Table 3. Number and dates of groundwater samples collected for each well at the (closed) Bottom Ash Storage Pond and 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	January 23, 2018	Background Monitoring (Post-CCR Removal)
		October 8, 2018	Closure Confirmation Monitoring
PNMW-21	Downgradient	January 23, 2018	Background Monitoring (Post-CCR Removal)
		October 9, 2017	Closure Confirmation Monitoring
PNMW-22	Downgradient	January 22, 2018	Background Monitoring (Post-CCR Removal)
		October 9, 2017	Closure Confirmation Monitoring
PNMW-23	Downgradient	January 22, 2018	Background Monitoring (Post-CCR Removal)
		October 9, 2017	Closure Confirmation 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 April 10, 2017. As stipulated in the Direct Final Rule (Extension Rule), eight rounds of background groundwater monitoring were initiated in 2018 for the (closed) AWRP to be completed before April 17, 2019. Sampling frequency was conducted on an approximate three week frequency, beginning in July 2018. Seven of the eight sample rounds for background were

completed in 2018 and the eighth background sample event will be completed in January 2019. Monitoring was conducted at the AWRP monitoring well network (PNMW-17, PNMW-18, PNMW-19, and PNMW-20). Samples were analyzed for Appendix III and IV COIs plus TSS. **Table 4** provides the well identification, number of samples collected, dates samples were collected in 2018, and whether the sample was required by the detection monitoring or assessment monitoring programs (per (257.90(e)(3))).

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	July 19, 2018 August 14, 2018 September 11, 2018 October 8, 2018 November 6, 2018 November 27, 2018 December 21, 2018	Background Monitoring (Post-CCR Removal)
PNMW-18	Downgradient	July 19, 2018 August 14, 2018 September 12, 2018 October 8, 2018 November 5, 2018 November 27, 2018 December 21, 2018	Background Monitoring (Post-CCR Removal)
PNMW-19	Downgradient	July 20, 2018 August 14, 2018 September 12, 2018 October 9, 2018 November 5, 2018 November 28, 2018 December 21, 2018	Background Monitoring (Post-CCR Removal)
PNMW-20	Downgradient	July 19, 2018 August 15, 2018 September 11, 2018 October 9, 2018 November 6, 2018 November 27, 2018 December 21, 2018	Background Monitoring (Post-CCR Removal)

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. Initial assessment monitoring, and subsequent annual assessment monitoring samples are analyzed for all Appendix IV COIs to determine what COIs are detected. The semi-annual assessment monitoring samples are analyzed for all Appendix III and detected Appendix IV COIs. Which COIs were detected at each facility is described in Section 4.2. 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 slightly greater than the 20% limit criteria. Laboratory Control Sample (LCS)/LCS duplicates and MS/MSD duplicates %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 background water quality for that CCR facility. The contour map (**Appendix B**) also confirms that monitoring well PNMW-17 is located upgradient of the BASP and the AWRP 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 2018). 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). These SSIs triggered the assessment monitoring program for the landfill. Per CCR Rule 257.95(b), within 90 days of completing the SSI determination *Pawnee Station North Landfill CCR Unit Alternative Source Determination (ASD) of Statistically Significant Increases over Background per CCR Rule 257.93(h)(2).* The ASD was completed on April 9, 2018 and no alternative source was identified at that time.

As stipulated in CCR Rule 257.95(b), within 90 days of completing the ASD, an initial assessment monitoring event must be completed. This was completed in May 2018 and consisted of sampling the network of North CCR Landfill monitoring wells (selected pursuant to 257.91) for Appendix IV constituents (**Table 1**). Laboratory reports are provided in **Appendix C**. 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.

On August 14, 2018, the second assessment monitoring samples (first semi-annual monitoring event) were collected from the network of landfill monitoring wells. Samples were analyzed for Appendix III and detected Appendix IV COIs. Laboratory reports are provided in **Appendix C**. Third party data validation was completed in October, 2018, after which GPS must be established within 90 days.

In 2019, PSCo will establish GPS and compare downgradient well concentrations from the second assessment monitoring event to background and GPS concentrations to determine if statistically significant levels were detected. PSCo will continue to monitor groundwater in accordance with the assessment monitoring program and consistent with 257.93(e).

4.2.2 Bottom Ash Storage Pond

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. Laboratory reports are provided in **Appendix C**. Statistical evaluation will be conducted on the eight samples from the upgradient monitoring well (PNMW-17) to calculate a background

threshold value (BTV) for each Appendix III COI before April 17, 2019. The first detection monitoring sampling will occur prior to April 17, 2019, and results will be evaluated to determine if there was an SSI of any Appendix III COI.

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.

On October 8-9, 2018, groundwater sampling was performed for closure confirmation monitoring following removal of all CCR pursuant to 257.102(c). This post-CCR removal monitoring event was completed and samples were collected from all of the BASP wells (PNMW-17, PNMW-21, PNMW-22, and PNMW-23). Samples were analyzed for Appendix IV COIs. Laboratory reports are provided in **Appendix C**.

4.2.3 Ash Water Recovery Pond

Seven groundwater sampling events of both upgradient and downgradient wells at the AWRP occurred between June 19 and December 21, 2018 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 are provided in **Appendix C**. Laboratory reports for the December event had not been received as of the end of 2018 and are not included. The eighth background sample event will be completed in 2019. The statistical evaluation to develop the background concentrations will be completed in 2019 for the water quality from the upgradient monitoring well (MW-17) to calculate a background threshold value (BTV) for each Appendix III COI before April 17, 2019. Groundwater sampling for detection monitoring will also occur prior to April 17, 2019.

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.

5.0 Summary

The following observations are based on CCR Rule compliance monitoring data collected during the 2018 and prior sample events:

North CCR Landfill

- Detection monitoring data from the landfill was statistically evaluated and SSIs over background were detected at wells PNMW-1B, PNMW-15, and PNMW-16.
- All six of the monitoring wells in the certified network for the North CCR Landfill were sampled in May 2018 for the first assessment monitoring event to determine the detected Appendix IV COIs.
- All six of the monitoring wells in the certified network for the landfill were sampled in August 2018 for the first semi-annual assessment monitoring event.
- Groundwater flow direction under the landfill is to the east.

- Pawnee Station North CCR Landfill status at the end of 2018 is in assessment monitoring.

(Closed) Bottom Ash Storage Pond

- All of the CCR monitoring wells that make up the certified well network for the BASP were sampled 8 times between August 2017 and January 2018 for background water quality.
- Groundwater flow direction under the BASP is generally to the east.
- All CCR waste was removed from the pond by March 2017.
- All BASP monitoring wells were sampled in October 2018 for closure confirmation monitoring.
- Pawnee Station BASP current status is in background monitoring; however because the pond has been physically closed by removal of all CCR, all monitoring reflects post-CCR removal conditions. The background monitoring has been completed, therefore the BASP network will transition to detection monitoring in 2019 while continuing to evaluate whether clean closure criteria in groundwater have been met.

(Closed) Ash Recovery Pond

- All of the CCR monitoring wells that make up the certified well network for the AWRP were sampled 7 times between July and December 2018 for background water quality. Background water quality monitoring will continue into 2019.
- Groundwater flow direction under the AWRP is generally to the east.
- All CCR waste was removed from the pond by April 2017.
- Pawnee Station AWRP current status is in background monitoring; however because the pond has been physically closed by removal of all CCR, all monitoring reflects post-CCR removal conditions. Following completion of background monitoring in 2019, the AWRP network will transition to detection monitoring while continuing to evaluate whether clean closure criteria in groundwater have been met.

6.0 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. September, 2017.

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

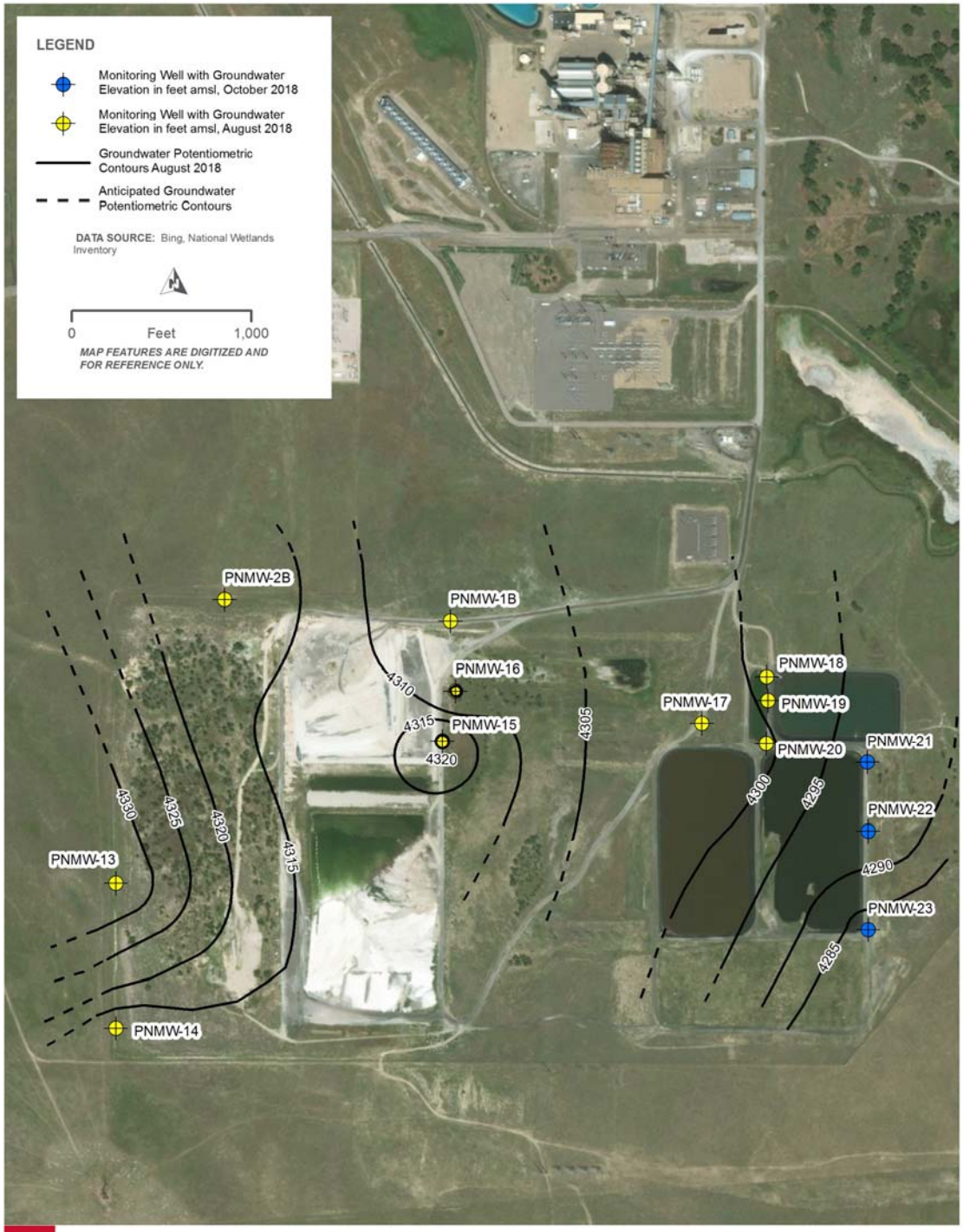
Appendix A

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_POWER_STATION_PORTAIT_GW_WELL_CERT_GWELEV201808.MXD - USER: GMILLERF - DATE: 1/21/2019

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: 280-110332-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

For:
HDR Inc
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Authorized for release by:
7/2/2018 1:26:55 PM

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Definitions/Glossary

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

TestAmerica Job ID: 280-110332-1

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
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: 280-110332-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Pawnee

Report Number: 280-110332-1

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 5/31/2018 at 3:10 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 0.2º C, 0.2º C and 0.8º C.

TOTAL RECOVERABLE METALS (ICPMS)

Samples PNMW-1B (280-110332-1), PNMW-2B (280-110332-2), PNMW-13 (280-110332-3), PNMW-14 (280-110332-4), PNMW-15 (280-110332-5), PNMW-16 (280-110332-6), PNMW-2B DUP (280-110332-7) and PNMW-13 EB (280-110332-8) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 06/05/2018 and analyzed on 06/13/2018 and 06/14/2018.

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

TOTAL MERCURY

Samples PNMW-1B (280-110332-1), PNMW-2B (280-110332-2), PNMW-13 (280-110332-3), PNMW-14 (280-110332-4), PNMW-15 (280-110332-5), PNMW-16 (280-110332-6), PNMW-2B DUP (280-110332-7) and PNMW-13 EB (280-110332-8) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared and analyzed on 06/13/2018.

Mercury failed the recovery criteria low for the MS and MSD of sample 280-110316-3 in batch 280-418527. Mercury exceeded the RPD limit. 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 SUSPENDED SOLIDS

Samples PNMW-1B (280-110332-1), PNMW-2B (280-110332-2), PNMW-13 (280-110332-3), PNMW-14 (280-110332-4), PNMW-15 (280-110332-5), PNMW-16 (280-110332-6), PNMW-2B DUP (280-110332-7) and PNMW-13 EB (280-110332-8) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 06/04/2018.

The following sample was diluted due to slow filtration and high suspended solids: PNMW-14 (280-110332-4). Elevated reporting limits (RLs) are provided.

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

ANIONS (28 DAYS)

Samples PNMW-1B (280-110332-1), PNMW-2B (280-110332-2), PNMW-13 (280-110332-3), PNMW-14 (280-110332-4), PNMW-15

Job ID: 280-110332-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

(280-110332-5), PNMW-16 (280-110332-6), PNMW-2B DUP (280-110332-7) and PNMW-13 EB (280-110332-8) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 06/06/2018.

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

RADIUM-226 (GFPC)

Samples PNMW-1B (280-110332-1), PNMW-2B (280-110332-2), PNMW-13 (280-110332-3), PNMW-14 (280-110332-4), PNMW-15 (280-110332-5), PNMW-16 (280-110332-6), PNMW-2B DUP (280-110332-7) and PNMW-13 EB (280-110332-8) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 06/06/2018 and analyzed on 06/30/2018.

Samples PNMW-13 (280-110332-3) and PNMW-14 (280-110332-4) were reduced due to potential matrix interference.

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

RADIUM-228

Samples PNMW-1B (280-110332-1), PNMW-2B (280-110332-2), PNMW-13 (280-110332-3), PNMW-14 (280-110332-4), PNMW-15 (280-110332-5), PNMW-16 (280-110332-6), PNMW-2B DUP (280-110332-7) and PNMW-13 EB (280-110332-8) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 06/06/2018 and analyzed on 06/22/2018.

Radium-228 exceeded the RPD limit for the duplicate of sample 500-146176-1. Refer to the QC report for details.

Samples PNMW-13 (280-110332-3) and PNMW-14 (280-110332-4) were reduced due to potential matrix interference.

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-1B (280-110332-1), PNMW-2B (280-110332-2), PNMW-13 (280-110332-3), PNMW-14 (280-110332-4), PNMW-15 (280-110332-5), PNMW-16 (280-110332-6), PNMW-2B DUP (280-110332-7) and PNMW-13 EB (280-110332-8) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 07/02/2018.

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: 280-110332-1

Client Sample ID: PNMW-1B — Lab Sample ID: 280-110332-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.035		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Chromium	0.0021		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0046	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	0.076		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Fluoride	0.78		0.50	0.060	mg/L	1		9056A	Total/NA

Client Sample ID: PNMW-2B — Lab Sample ID: 280-110332-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.14		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Chromium	0.0032		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0038	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0019	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.033		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Fluoride	0.47	J	0.50	0.060	mg/L	1		9056A	Total/NA
Total Suspended Solids	1.2	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-13 — Lab Sample ID: 280-110332-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.0011	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.072		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cobalt	0.0013		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0093		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	0.0018		0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.0017	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.056		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Mercury	0.000032	J	0.00020	0.000027	mg/L	1		7470A	Total/NA
Fluoride	1.1		0.50	0.060	mg/L	1		9056A	Total/NA
Total Suspended Solids	73		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-14 — Lab Sample ID: 280-110332-4

This Detection Summary does not include radiochemical test results.

Client Sample ID: PNMW-14 (Continued) — Lab Sample ID: 280-110332-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.0013	J	0.0020	0.00057	mg/L	1		6020A	Total Recoverable
Arsenic	0.034		0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.77		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.0056		0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Cadmium	0.00076	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.054		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.61		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.064		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.070		0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.0038	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Thallium	0.0011		0.0010	0.00020	mg/L	1		6020A	Total Recoverable
Lithium	0.15		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Mercury	0.000070	J	0.00020	0.000027	mg/L	1		7470A	Total/NA
Fluoride	0.97		0.50	0.060	mg/L	1		9056A	Total/NA
Total Suspended Solids	5200		100	28	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-15 — Lab Sample ID: 280-110332-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.026		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cobalt	0.0012		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0021	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	0.12		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Fluoride	0.20	J	0.50	0.060	mg/L	1		9056A	Total/NA
Total Suspended Solids	20		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-16 — Lab Sample ID: 280-110332-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.016		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cobalt	0.0023		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	0.0014	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: PNMW-16 (Continued) — Lab Sample ID: 280-110332-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lithium	0.16		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Fluoride	0.13	J	0.50	0.060	mg/L	1		9056A	Total/NA
Total Suspended Solids	9.2		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-2B DUP — Lab Sample ID: 280-110332-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.14		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Chromium	0.0030		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	0.0022	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.034		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Fluoride	0.47	J	0.50	0.060	mg/L	1		9056A	Total/NA

Client Sample ID: PNMW-13 EB — Lab Sample ID: 280-110332-8

No Detections.

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: 280-110332-1

Method	Method Description	Protocol	Laboratory
6020A	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	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 DEN
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: 280-110332-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-110332-1	PNMW-1B	Water	05/29/18 19:30	05/31/18 15:10
280-110332-2	PNMW-2B	Water	05/29/18 14:15	05/31/18 15:10
280-110332-3	PNMW-13	Water	05/30/18 13:10	05/31/18 15:10
280-110332-4	PNMW-14	Water	05/30/18 14:00	05/31/18 15:10
280-110332-5	PNMW-15	Water	05/29/18 18:22	05/31/18 15:10
280-110332-6	PNMW-16	Water	05/30/18 11:53	05/31/18 15:10
280-110332-7	PNMW-2B DUP	Water	05/29/18 14:15	05/31/18 15:10
280-110332-8	PNMW-13 EB	Water	05/30/18 12:30	05/31/18 15:10

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

Client Sample ID: PNMW-1B
Date Collected: 05/29/18 19:30
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		06/05/18 14:00	06/13/18 23:29	1
Arsenic	ND		0.0050	0.00075	mg/L		06/05/18 14:00	06/13/18 23:29	1
Barium	**0.035**		0.0050	0.0022	mg/L		06/05/18 14:00	06/13/18 23:29	1
Beryllium	ND		0.0010	0.00031	mg/L		06/05/18 14:00	06/14/18 19:25	1
Cadmium	ND		0.0010	0.00021	mg/L		06/05/18 14:00	06/13/18 23:29	1
Cobalt	ND		0.0010	0.00019	mg/L		06/05/18 14:00	06/13/18 23:29	1
Chromium	**0.0021**		0.0020	0.00098	mg/L		06/05/18 14:00	06/13/18 23:29	1
Molybdenum	**0.0046**	**J**	0.010	0.0011	mg/L		06/05/18 14:00	06/13/18 23:29	1
Lead	ND		0.0010	0.00045	mg/L		06/05/18 14:00	06/13/18 23:29	1
Selenium	**0.014**		0.0050	0.00089	mg/L		06/05/18 14:00	06/13/18 23:29	1
Thallium	ND		0.0010	0.00020	mg/L		06/05/18 14:00	06/13/18 23:29	1
Lithium	**0.076**		0.0080	0.0017	mg/L		06/05/18 14:00	06/14/18 19:25	1

Client Sample ID: PNMW-2B
Date Collected: 05/29/18 14:15
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		06/05/18 14:00	06/13/18 23:42	1
Arsenic	ND		0.0050	0.00075	mg/L		06/05/18 14:00	06/13/18 23:42	1
Barium	**0.14**		0.0050	0.0022	mg/L		06/05/18 14:00	06/13/18 23:42	1
Beryllium	ND		0.0010	0.00031	mg/L		06/05/18 14:00	06/14/18 19:29	1
Cadmium	ND		0.0010	0.00021	mg/L		06/05/18 14:00	06/13/18 23:42	1
Cobalt	ND		0.0010	0.00019	mg/L		06/05/18 14:00	06/13/18 23:42	1
Chromium	**0.0032**		0.0020	0.00098	mg/L		06/05/18 14:00	06/13/18 23:42	1
Molybdenum	**0.0038**	**J**	0.010	0.0011	mg/L		06/05/18 14:00	06/13/18 23:42	1
Lead	ND		0.0010	0.00045	mg/L		06/05/18 14:00	06/13/18 23:42	1
Selenium	**0.0019**	**J**	0.0050	0.00089	mg/L		06/05/18 14:00	06/13/18 23:42	1
Thallium	ND		0.0010	0.00020	mg/L		06/05/18 14:00	06/13/18 23:42	1
Lithium	**0.033**		0.0080	0.0017	mg/L		06/05/18 14:00	06/14/18 19:29	1

Client Sample ID: PNMW-13
Date Collected: 05/30/18 13:10
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		06/05/18 14:00	06/13/18 23:46	1
Arsenic	**0.0011**	**J**	0.0050	0.00075	mg/L		06/05/18 14:00	06/13/18 23:46	1
Barium	**0.072**		0.0050	0.0022	mg/L		06/05/18 14:00	06/13/18 23:46	1
Beryllium	ND		0.0010	0.00031	mg/L		06/05/18 14:00	06/14/18 19:34	1
Cadmium	ND		0.0010	0.00021	mg/L		06/05/18 14:00	06/13/18 23:46	1
Cobalt	**0.0013**		0.0010	0.00019	mg/L		06/05/18 14:00	06/13/18 23:46	1
Chromium	**0.0093**		0.0020	0.00098	mg/L		06/05/18 14:00	06/13/18 23:46	1
Molybdenum	**0.0064**	**J**	0.010	0.0011	mg/L		06/05/18 14:00	06/13/18 23:46	1
Lead	**0.0018**		0.0010	0.00045	mg/L		06/05/18 14:00	06/13/18 23:46	1
Selenium	**0.0017**	**J**	0.0050	0.00089	mg/L		06/05/18 14:00	06/13/18 23:46	1
Thallium	ND		0.0010	0.00020	mg/L		06/05/18 14:00	06/13/18 23:46	1
Lithium	**0.056**		0.0080	0.0017	mg/L		06/05/18 14:00	06/14/18 19:34	1

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

Client Sample ID: PNMW-14
Date Collected: 05/30/18 14:00
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.0013**	**J**	0.0020	0.00057	mg/L		06/05/18 14:00	06/13/18 23:51	1
Arsenic	**0.034**		0.0050	0.00075	mg/L		06/05/18 14:00	06/13/18 23:51	1
Barium	**0.77**		0.0050	0.0022	mg/L		06/05/18 14:00	06/13/18 23:51	1
Beryllium	**0.0056**		0.0010	0.00031	mg/L		06/05/18 14:00	06/14/18 19:38	1
Cadmium	**0.00076**	**J**	0.0010	0.00021	mg/L		06/05/18 14:00	06/13/18 23:51	1
Cobalt	**0.054**		0.0010	0.00019	mg/L		06/05/18 14:00	06/13/18 23:51	1
Chromium	**0.61**		0.0020	0.00098	mg/L		06/05/18 14:00	06/13/18 23:51	1
Molybdenum	**0.064**		0.010	0.0011	mg/L		06/05/18 14:00	06/13/18 23:51	1
Lead	**0.070**		0.0010	0.00045	mg/L		06/05/18 14:00	06/13/18 23:51	1
Selenium	**0.0038**	**J**	0.0050	0.00089	mg/L		06/05/18 14:00	06/13/18 23:51	1
Thallium	**0.0011**		0.0010	0.00020	mg/L		06/05/18 14:00	06/13/18 23:51	1
Lithium	**0.15**		0.0080	0.0017	mg/L		06/05/18 14:00	06/14/18 19:38	1

Client Sample ID: PNMW-15
Date Collected: 05/29/18 18:22
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		06/05/18 14:00	06/13/18 23:55	1
Arsenic	ND		0.0050	0.00075	mg/L		06/05/18 14:00	06/13/18 23:55	1
Barium	**0.026**		0.0050	0.0022	mg/L		06/05/18 14:00	06/13/18 23:55	1
Beryllium	ND		0.0010	0.00031	mg/L		06/05/18 14:00	06/14/18 19:42	1
Cadmium	ND		0.0010	0.00021	mg/L		06/05/18 14:00	06/13/18 23:55	1
Cobalt	**0.0012**		0.0010	0.00019	mg/L		06/05/18 14:00	06/13/18 23:55	1
Chromium	ND		0.0020	0.00098	mg/L		06/05/18 14:00	06/13/18 23:55	1
Molybdenum	**0.0021**	**J**	0.010	0.0011	mg/L		06/05/18 14:00	06/13/18 23:55	1
Lead	ND		0.0010	0.00045	mg/L		06/05/18 14:00	06/13/18 23:55	1
Selenium	**0.0020**	**J**	0.0050	0.00089	mg/L		06/05/18 14:00	06/13/18 23:55	1
Thallium	ND		0.0010	0.00020	mg/L		06/05/18 14:00	06/13/18 23:55	1
Lithium	**0.12**		0.0080	0.0017	mg/L		06/05/18 14:00	06/14/18 19:42	1

Client Sample ID: PNMW-16
Date Collected: 05/30/18 11:53
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		06/05/18 14:00	06/14/18 00:00	1
Arsenic	ND		0.0050	0.00075	mg/L		06/05/18 14:00	06/14/18 00:00	1
Barium	**0.016**		0.0050	0.0022	mg/L		06/05/18 14:00	06/14/18 00:00	1
Beryllium	ND		0.0010	0.00031	mg/L		06/05/18 14:00	06/14/18 19:47	1
Cadmium	ND		0.0010	0.00021	mg/L		06/05/18 14:00	06/14/18 00:00	1
Cobalt	**0.0023**		0.0010	0.00019	mg/L		06/05/18 14:00	06/14/18 00:00	1
Chromium	**0.0012**	**J**	0.0020	0.00098	mg/L		06/05/18 14:00	06/14/18 00:00	1
Molybdenum	**0.0014**	**J**	0.010	0.0011	mg/L		06/05/18 14:00	06/14/18 00:00	1
Lead	ND		0.0010	0.00045	mg/L		06/05/18 14:00	06/14/18 00:00	1
Selenium	ND		0.0050	0.00089	mg/L		06/05/18 14:00	06/14/18 00:00	1
Thallium	ND		0.0010	0.00020	mg/L		06/05/18 14:00	06/14/18 00:00	1
Lithium	**0.16**		0.0080	0.0017	mg/L		06/05/18 14:00	06/14/18 19:47	1

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

Client Sample ID: PNMW-2B DUP
Date Collected: 05/29/18 14:15
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		06/05/18 14:00	06/14/18 00:04	1
Arsenic	ND		0.0050	0.00075	mg/L		06/05/18 14:00	06/14/18 00:04	1
Barium	**0.14**		0.0050	0.0022	mg/L		06/05/18 14:00	06/14/18 00:04	1
Beryllium	ND		0.0010	0.00031	mg/L		06/05/18 14:00	06/14/18 20:00	1
Cadmium	ND		0.0010	0.00021	mg/L		06/05/18 14:00	06/14/18 00:04	1
Cobalt	ND		0.0010	0.00019	mg/L		06/05/18 14:00	06/14/18 00:04	1
Chromium	**0.0030**		0.0020	0.00098	mg/L		06/05/18 14:00	06/14/18 00:04	1
Molybdenum	**0.0037**	**J**	0.010	0.0011	mg/L		06/05/18 14:00	06/14/18 00:04	1
Lead	ND		0.0010	0.00045	mg/L		06/05/18 14:00	06/14/18 00:04	1
Selenium	**0.0022**	**J**	0.0050	0.00089	mg/L		06/05/18 14:00	06/14/18 00:04	1
Thallium	ND		0.0010	0.00020	mg/L		06/05/18 14:00	06/14/18 00:04	1
Lithium	**0.034**		0.0080	0.0017	mg/L		06/05/18 14:00	06/14/18 20:00	1

Client Sample ID: PNMW-13 EB
Date Collected: 05/30/18 12:30
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		06/05/18 14:00	06/14/18 00:09	1
Arsenic	ND		0.0050	0.00075	mg/L		06/05/18 14:00	06/14/18 00:09	1
Barium	ND		0.0050	0.0022	mg/L		06/05/18 14:00	06/14/18 00:09	1
Beryllium	ND		0.0010	0.00031	mg/L		06/05/18 14:00	06/14/18 20:05	1
Cadmium	ND		0.0010	0.00021	mg/L		06/05/18 14:00	06/14/18 00:09	1
Cobalt	ND		0.0010	0.00019	mg/L		06/05/18 14:00	06/14/18 00:09	1
Chromium	ND		0.0020	0.00098	mg/L		06/05/18 14:00	06/14/18 00:09	1
Molybdenum	ND		0.010	0.0011	mg/L		06/05/18 14:00	06/14/18 00:09	1
Lead	ND		0.0010	0.00045	mg/L		06/05/18 14:00	06/14/18 00:09	1
Selenium	ND		0.0050	0.00089	mg/L		06/05/18 14:00	06/14/18 00:09	1
Thallium	ND		0.0010	0.00020	mg/L		06/05/18 14:00	06/14/18 00:09	1
Lithium	ND		0.0080	0.0017	mg/L		06/05/18 14:00	06/14/18 20:05	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: PNMW-1B
Date Collected: 05/29/18 19:30
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		06/13/18 11:27	06/13/18 16:26	1

Client Sample ID: PNMW-2B
Date Collected: 05/29/18 14:15
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		06/13/18 11:27	06/13/18 16:28	1

Client Sample ID: PNMW-13
Date Collected: 05/30/18 13:10
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.000032**	**J**	0.00020	0.000027	mg/L		06/13/18 11:27	06/13/18 16:30	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: PNMW-14
Date Collected: 05/30/18 14:00
Date Received: 05/31/18 15:10
Lab Sample ID: 280-110332-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.000070**	**J**	0.00020	0.000027	mg/L		06/13/18 11:27	06/13/18 16:32	1

Client Sample ID: PNMW-15
Date Collected: 05/29/18 18:22
Date Received: 05/31/18 15:10
Lab Sample ID: 280-110332-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		06/13/18 11:27	06/13/18 16:34	1

Client Sample ID: PNMW-16
Date Collected: 05/30/18 11:53
Date Received: 05/31/18 15:10
Lab Sample ID: 280-110332-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		06/13/18 11:27	06/13/18 16:37	1

Client Sample ID: PNMW-2B DUP
Date Collected: 05/29/18 14:15
Date Received: 05/31/18 15:10
Lab Sample ID: 280-110332-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		06/13/18 11:27	06/13/18 16:43	1

Client Sample ID: PNMW-13 EB
Date Collected: 05/30/18 12:30
Date Received: 05/31/18 15:10
Lab Sample ID: 280-110332-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		06/13/18 11:27	06/13/18 16:46	1

General Chemistry

Client Sample ID: PNMW-1B
Date Collected: 05/29/18 19:30
Date Received: 05/31/18 15:10
Lab Sample ID: 280-110332-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	**0.78**		0.50	0.060	mg/L			06/06/18 05:48	1
Total Suspended Solids	ND		4.0	1.1	mg/L			06/04/18 08:42	1

Client Sample ID: PNMW-2B
Date Collected: 05/29/18 14:15
Date Received: 05/31/18 15:10
Lab Sample ID: 280-110332-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	**0.47**	**J**	0.50	0.060	mg/L			06/06/18 06:10	1
Total Suspended Solids	**1.2**	**J**	4.0	1.1	mg/L			06/04/18 08:42	1

Client Sample ID: PNMW-13
Date Collected: 05/30/18 13:10
Date Received: 05/31/18 15:10
Lab Sample ID: 280-110332-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	**1.1**		0.50	0.060	mg/L			06/06/18 06:32	1
Total Suspended Solids	**73**		4.0	1.1	mg/L			06/04/18 08:42	1

General Chemistry

Client Sample ID: PNMW-14
Date Collected: 05/30/18 14:00
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	**0.97**		0.50	0.060	mg/L			06/06/18 06:54	1
Total Suspended Solids	**5200**		100	28	mg/L			06/04/18 08:42	1

Client Sample ID: PNMW-15
Date Collected: 05/29/18 18:22
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	**0.20**	**J**	0.50	0.060	mg/L			06/06/18 07:16	1
Total Suspended Solids	**20**		4.0	1.1	mg/L			06/04/18 08:42	1

Client Sample ID: PNMW-16
Date Collected: 05/30/18 11:53
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	**0.13**	**J**	0.50	0.060	mg/L			06/06/18 07:39	1
Total Suspended Solids	**9.2**		4.0	1.1	mg/L			06/04/18 08:42	1

Client Sample ID: PNMW-2B DUP
Date Collected: 05/29/18 14:15
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	**0.47**	**J**	0.50	0.060	mg/L			06/06/18 08:01	1
Total Suspended Solids	ND		4.0	1.1	mg/L			06/04/18 08:42	1

Client Sample ID: PNMW-13 EB
Date Collected: 05/30/18 12:30
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.50	0.060	mg/L			06/06/18 09:08	1
Total Suspended Solids	ND		4.0	1.1	mg/L			06/04/18 08:42	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: PNMW-1B
Date Collected: 05/29/18 19:30
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.114	U	0.0910	0.0916	1.00	0.132	pCi/L	06/06/18 09:20	06/30/18 18:02	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*88.8*		*40 - 110*	*06/06/18 09:20*	*06/30/18 18:02*	*1*

Client Sample ID: PNMW-2B
Date Collected: 05/29/18 14:15
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.281**		0.116	0.118	1.00	0.123	pCi/L	06/06/18 09:20	06/30/18 18:03	1

Method: 9315 - Radium-226 (GFPC) (Continued)

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	95.3		40 - 110	06/06/18 09:20	06/30/18 18:03	1

Client Sample ID: PNMW-13
Date Collected: 05/30/18 13:10
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.234		0.125	0.127	1.00	0.151	pCi/L	06/06/18 09:20	06/30/18 18:03	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	95.9		40 - 110	06/06/18 09:20	06/30/18 18:03	1

Client Sample ID: PNMW-14
Date Collected: 05/30/18 14:00
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	3.06		0.531	0.598	1.00	0.288	pCi/L	06/06/18 09:20	06/30/18 18:03	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	70.8		40 - 110	06/06/18 09:20	06/30/18 18:03	1

Client Sample ID: PNMW-15
Date Collected: 05/29/18 18:22
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.334		0.114	0.118	1.00	0.0909	pCi/L	06/06/18 09:20	06/30/18 18:03	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	95.9		40 - 110	06/06/18 09:20	06/30/18 18:03	1

Client Sample ID: PNMW-16
Date Collected: 05/30/18 11:53
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.361		0.132	0.136	1.00	0.130	pCi/L	06/06/18 09:20	06/30/18 18:03	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	84.7		40 - 110	06/06/18 09:20	06/30/18 18:03	1

Client Sample ID: PNMW-2B DUP
Date Collected: 05/29/18 14:15
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.186		0.0944	0.0959	1.00	0.106	pCi/L	06/06/18 09:20	06/30/18 18:03	1

Method: 9315 - Radium-226 (GFPC) (Continued)

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	91.4		40 - 110	06/06/18 09:20	06/30/18 18:03	1

Client Sample ID: PNMW-13 EB
Date Collected: 05/30/18 12:30
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0152	U	0.0439	0.0439	1.00	0.106	pCi/L	06/06/18 09:20	06/30/18 18:03	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	98.8		40 - 110	06/06/18 09:20	06/30/18 18:03	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: PNMW-1B
Date Collected: 05/29/18 19:30
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.658**		0.294	0.300	1.00	0.424	pCi/L	06/06/18 10:28	06/22/18 13:50	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	88.8		40 - 110	06/06/18 10:28	06/22/18 13:50	1
Y Carrier	88.6		40 - 110	06/06/18 10:28	06/22/18 13:50	1

Client Sample ID: PNMW-2B
Date Collected: 05/29/18 14:15
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.943**		0.283	0.296	1.00	0.365	pCi/L	06/06/18 10:28	06/22/18 13:50	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	95.3		40 - 110	06/06/18 10:28	06/22/18 13:50	1
Y Carrier	93.1		40 - 110	06/06/18 10:28	06/22/18 13:50	1

Client Sample ID: PNMW-13
Date Collected: 05/30/18 13:10
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.670**		0.302	0.308	1.00	0.427	pCi/L	06/06/18 10:28	06/22/18 13:50	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	95.9		40 - 110	06/06/18 10:28	06/22/18 13:50	1
Y Carrier	95.0		40 - 110	06/06/18 10:28	06/22/18 13:50	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: PNMW-14
Date Collected: 05/30/18 14:00
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	4.56		0.857	0.954	1.00	0.889	pCi/L	06/06/18 10:28	06/22/18 13:50	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*70.8*		*40 - 110*	*06/06/18 10:28*	*06/22/18 13:50*	*1*
Y Carrier	*95.3*		*40 - 110*	*06/06/18 10:28*	*06/22/18 13:50*	*1*

Client Sample ID: PNMW-15
Date Collected: 05/29/18 18:22
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.377		0.233	0.236	1.00	0.357	pCi/L	06/06/18 10:28	06/22/18 13:50	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.9*		*40 - 110*	*06/06/18 10:28*	*06/22/18 13:50*	*1*
Y Carrier	*98.3*		*40 - 110*	*06/06/18 10:28*	*06/22/18 13:50*	*1*

Client Sample ID: PNMW-16
Date Collected: 05/30/18 11:53
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.613		0.295	0.300	1.00	0.432	pCi/L	06/06/18 10:28	06/22/18 13:50	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.7*		*40 - 110*	*06/06/18 10:28*	*06/22/18 13:50*	*1*
Y Carrier	*92.3*		*40 - 110*	*06/06/18 10:28*	*06/22/18 13:50*	*1*

Client Sample ID: PNMW-2B DUP
Date Collected: 05/29/18 14:15
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.492		0.229	0.234	1.00	0.326	pCi/L	06/06/18 10:28	06/22/18 13:50	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*91.4*		*40 - 110*	*06/06/18 10:28*	*06/22/18 13:50*	*1*
Y Carrier	*100*		*40 - 110*	*06/06/18 10:28*	*06/22/18 13:50*	*1*

Client Sample ID: PNMW-13 EB
Date Collected: 05/30/18 12:30
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.281	U	0.209	0.210	1.00	0.326	pCi/L	06/06/18 10:28	06/22/18 13:50	1

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

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	98.8		40 - 110	06/06/18 10:28	06/22/18 13:50	1
Y Carrier	97.2		40 - 110	06/06/18 10:28	06/22/18 13:50	1

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

Client Sample ID: PNMW-1B
Date Collected: 05/29/18 19:30
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.772		0.308	0.314	5.00	0.424	pCi/L		07/02/18 11:38	1

Client Sample ID: PNMW-2B
Date Collected: 05/29/18 14:15
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.22		0.306	0.319	5.00	0.365	pCi/L		07/02/18 11:38	1

Client Sample ID: PNMW-13
Date Collected: 05/30/18 13:10
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.904		0.327	0.333	5.00	0.427	pCi/L		07/02/18 11:38	1

Client Sample ID: PNMW-14
Date Collected: 05/30/18 14:00
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	7.62		1.01	1.13	5.00	0.889	pCi/L		07/02/18 11:38	1

Client Sample ID: PNMW-15
Date Collected: 05/29/18 18:22
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.711		0.259	0.264	5.00	0.357	pCi/L		07/02/18 11:38	1

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

Client Sample ID: PNMW-16
Date Collected: 05/30/18 11:53
Date Received: 05/31/18 15:10
Lab Sample ID: 280-110332-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.974**		0.323	0.329	5.00	0.432	pCi/L		07/02/18 11:38	1

Client Sample ID: PNMW-2B DUP
Date Collected: 05/29/18 14:15
Date Received: 05/31/18 15:10
Lab Sample ID: 280-110332-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.678**		0.248	0.253	5.00	0.326	pCi/L		07/02/18 11:38	1

Client Sample ID: PNMW-13 EB
Date Collected: 05/30/18 12:30
Date Received: 05/31/18 15:10
Lab Sample ID: 280-110332-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.265	U	0.214	0.215	5.00	0.326	pCi/L		07/02/18 11:38	1

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-330064/1-A
Matrix: Water
Analysis Batch: 331618

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 330064

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		06/05/18 14:00	06/13/18 22:53	1
Arsenic	ND		0.0050	0.00075	mg/L		06/05/18 14:00	06/13/18 22:53	1
Barium	ND		0.0050	0.0022	mg/L		06/05/18 14:00	06/13/18 22:53	1
Cadmium	ND		0.0010	0.00021	mg/L		06/05/18 14:00	06/13/18 22:53	1
Cobalt	ND		0.0010	0.00019	mg/L		06/05/18 14:00	06/13/18 22:53	1
Chromium	ND		0.0020	0.00098	mg/L		06/05/18 14:00	06/13/18 22:53	1
Molybdenum	ND		0.010	0.0011	mg/L		06/05/18 14:00	06/13/18 22:53	1
Lead	ND		0.0010	0.00045	mg/L		06/05/18 14:00	06/13/18 22:53	1
Selenium	ND		0.0050	0.00089	mg/L		06/05/18 14:00	06/13/18 22:53	1
Thallium	ND		0.0010	0.00020	mg/L		06/05/18 14:00	06/13/18 22:53	1

Lab Sample ID: MB 240-330064/1-A
Matrix: Water
Analysis Batch: 331803

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 330064

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Beryllium	ND		0.0010	0.00031	mg/L		06/05/18 14:00	06/14/18 18:40	1
Lithium	ND		0.0080	0.0017	mg/L		06/05/18 14:00	06/14/18 18:40	1

Lab Sample ID: LCS 240-330064/2-A
Matrix: Water
Analysis Batch: 331618

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 330064

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0936		mg/L		94	80 - 120
Arsenic	1.00	1.03		mg/L		103	80 - 120
Barium	1.00	0.939		mg/L		94	80 - 120
Cadmium	1.00	0.981		mg/L		98	80 - 120
Cobalt	1.00	1.07		mg/L		107	80 - 120
Chromium	1.00	1.02		mg/L		102	80 - 120
Molybdenum	0.100	0.0938		mg/L		94	80 - 120
Lead	1.00	1.02		mg/L		102	80 - 120
Selenium	1.00	1.03		mg/L		103	80 - 120
Thallium	0.250	0.258		mg/L		103	80 - 120

Lab Sample ID: LCS 240-330064/2-A
Matrix: Water
Analysis Batch: 331803

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 330064

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Beryllium	1.00	0.999		mg/L		100	80 - 120
Lithium	0.100	0.0972		mg/L		97	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-418298/1-A
Matrix: Water
Analysis Batch: 418527

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 418298

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		06/13/18 11:27	06/13/18 15:50	1

Lab Sample ID: LCS 280-418298/2-A
Matrix: Water
Analysis Batch: 418527

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 418298

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00500	0.00557		mg/L		111	84 - 120

Lab Sample ID: LCSD 280-418298/3-A
Matrix: Water
Analysis Batch: 418527

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 418298

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.00500	0.00494		mg/L		99	84 - 120	12	15

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-417486/6
Matrix: Water
Analysis Batch: 417486

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			06/05/18 22:41	1

Lab Sample ID: LCS 280-417486/4
Matrix: Water
Analysis Batch: 417486

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 280-417486/5
Matrix: Water
Analysis Batch: 417486

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	4.97		mg/L		99	90 - 110	0	10

Lab Sample ID: MRL 280-417486/3
Matrix: Water
Analysis Batch: 417486

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	0.100	J	mg/L		50	50 - 150

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

Lab Sample ID: MB 280-417239/1
Matrix: Water
Analysis Batch: 417239

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			06/04/18 08:42	1

Lab Sample ID: LCS 280-417239/2
Matrix: Water
Analysis Batch: 417239

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	89.2		mg/L		89	86 - 114

Lab Sample ID: LCSD 280-417239/3
Matrix: Water
Analysis Batch: 417239

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	90.0		mg/L		90	86 - 114	1	20

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-369057/23-A
Matrix: Water
Analysis Batch: 373288

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 369057

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.01192	U	0.0280	0.0280	1.00	0.0850	pCi/L	06/06/18 09:20	06/30/18 18:05	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*86.7*		*40 - 110*	*06/06/18 09:20*	*06/30/18 18:05*	*1*

Lab Sample ID: LCS 160-369057/1-A
Matrix: Water
Analysis Batch: 373286

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 369057

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.8	12.38		1.30	1.00	0.112	pCi/L	105	68 - 137

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*91.4*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-369066/23-A
Matrix: Water
Analysis Batch: 371795

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 369066

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1710	U	0.239	0.240	1.00	0.400	pCi/L	06/06/18 10:28	06/22/18 13:52	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*86.7*		*40 - 110*	*06/06/18 10:28*	*06/22/18 13:52*	*1*
Y Carrier	*96.8*		*40 - 110*	*06/06/18 10:28*	*06/22/18 13:52*	*1*

Lab Sample ID: LCS 160-369066/1-A
Matrix: Water
Analysis Batch: 371793

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 369066

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			8.21	8.132		0.967	1.00	0.384	pCi/L	99	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*91.4*		*40 - 110*
Y Carrier	*97.6*		*40 - 110*

Metals

Prep Batch: 330064

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110332-1	PNMW-1B	Total Recoverable	Water	3005A	
280-110332-2	PNMW-2B	Total Recoverable	Water	3005A	
280-110332-3	PNMW-13	Total Recoverable	Water	3005A	
280-110332-4	PNMW-14	Total Recoverable	Water	3005A	
280-110332-5	PNMW-15	Total Recoverable	Water	3005A	
280-110332-6	PNMW-16	Total Recoverable	Water	3005A	
280-110332-7	PNMW-2B DUP	Total Recoverable	Water	3005A	
280-110332-8	PNMW-13 EB	Total Recoverable	Water	3005A	
MB 240-330064/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-330064/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 331618

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110332-1	PNMW-1B	Total Recoverable	Water	6020A	330064
280-110332-2	PNMW-2B	Total Recoverable	Water	6020A	330064
280-110332-3	PNMW-13	Total Recoverable	Water	6020A	330064
280-110332-4	PNMW-14	Total Recoverable	Water	6020A	330064
280-110332-5	PNMW-15	Total Recoverable	Water	6020A	330064
280-110332-6	PNMW-16	Total Recoverable	Water	6020A	330064
280-110332-7	PNMW-2B DUP	Total Recoverable	Water	6020A	330064
280-110332-8	PNMW-13 EB	Total Recoverable	Water	6020A	330064
MB 240-330064/1-A	Method Blank	Total Recoverable	Water	6020A	330064
LCS 240-330064/2-A	Lab Control Sample	Total Recoverable	Water	6020A	330064

Analysis Batch: 331803

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110332-1	PNMW-1B	Total Recoverable	Water	6020A	330064
280-110332-2	PNMW-2B	Total Recoverable	Water	6020A	330064
280-110332-3	PNMW-13	Total Recoverable	Water	6020A	330064
280-110332-4	PNMW-14	Total Recoverable	Water	6020A	330064
280-110332-5	PNMW-15	Total Recoverable	Water	6020A	330064
280-110332-6	PNMW-16	Total Recoverable	Water	6020A	330064
280-110332-7	PNMW-2B DUP	Total Recoverable	Water	6020A	330064
280-110332-8	PNMW-13 EB	Total Recoverable	Water	6020A	330064
MB 240-330064/1-A	Method Blank	Total Recoverable	Water	6020A	330064
LCS 240-330064/2-A	Lab Control Sample	Total Recoverable	Water	6020A	330064

Prep Batch: 418298

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110332-1	PNMW-1B	Total/NA	Water	7470A	
280-110332-2	PNMW-2B	Total/NA	Water	7470A	
280-110332-3	PNMW-13	Total/NA	Water	7470A	
280-110332-4	PNMW-14	Total/NA	Water	7470A	
280-110332-5	PNMW-15	Total/NA	Water	7470A	
280-110332-6	PNMW-16	Total/NA	Water	7470A	
280-110332-7	PNMW-2B DUP	Total/NA	Water	7470A	
280-110332-8	PNMW-13 EB	Total/NA	Water	7470A	
MB 280-418298/1-A	Method Blank	Total/NA	Water	7470A	
LCS 280-418298/2-A	Lab Control Sample	Total/NA	Water	7470A	
LCSD 280-418298/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	

Metals (Continued)

Analysis Batch: 418527

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110332-1	PNMW-1B	Total/NA	Water	7470A	418298
280-110332-2	PNMW-2B	Total/NA	Water	7470A	418298
280-110332-3	PNMW-13	Total/NA	Water	7470A	418298
280-110332-4	PNMW-14	Total/NA	Water	7470A	418298
280-110332-5	PNMW-15	Total/NA	Water	7470A	418298
280-110332-6	PNMW-16	Total/NA	Water	7470A	418298
280-110332-7	PNMW-2B DUP	Total/NA	Water	7470A	418298
280-110332-8	PNMW-13 EB	Total/NA	Water	7470A	418298
MB 280-418298/1-A	Method Blank	Total/NA	Water	7470A	418298
LCS 280-418298/2-A	Lab Control Sample	Total/NA	Water	7470A	418298
LCSD 280-418298/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	418298

General Chemistry

Analysis Batch: 417239

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110332-1	PNMW-1B	Total/NA	Water	SM 2540D	
280-110332-2	PNMW-2B	Total/NA	Water	SM 2540D	
280-110332-3	PNMW-13	Total/NA	Water	SM 2540D	
280-110332-4	PNMW-14	Total/NA	Water	SM 2540D	
280-110332-5	PNMW-15	Total/NA	Water	SM 2540D	
280-110332-6	PNMW-16	Total/NA	Water	SM 2540D	
280-110332-7	PNMW-2B DUP	Total/NA	Water	SM 2540D	
280-110332-8	PNMW-13 EB	Total/NA	Water	SM 2540D	
MB 280-417239/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-417239/2	Lab Control Sample	Total/NA	Water	SM 2540D	
LCSD 280-417239/3	Lab Control Sample Dup	Total/NA	Water	SM 2540D	

Analysis Batch: 417486

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110332-1	PNMW-1B	Total/NA	Water	9056A	
280-110332-2	PNMW-2B	Total/NA	Water	9056A	
280-110332-3	PNMW-13	Total/NA	Water	9056A	
280-110332-4	PNMW-14	Total/NA	Water	9056A	
280-110332-5	PNMW-15	Total/NA	Water	9056A	
280-110332-6	PNMW-16	Total/NA	Water	9056A	
280-110332-7	PNMW-2B DUP	Total/NA	Water	9056A	
280-110332-8	PNMW-13 EB	Total/NA	Water	9056A	
MB 280-417486/6	Method Blank	Total/NA	Water	9056A	
LCS 280-417486/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-417486/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-417486/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 369057

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110332-1	PNMW-1B	Total/NA	Water	PrecSep-21	
280-110332-2	PNMW-2B	Total/NA	Water	PrecSep-21	
280-110332-3	PNMW-13	Total/NA	Water	PrecSep-21	

Rad (Continued)

Prep Batch: 369057 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110332-4	PNMW-14	Total/NA	Water	PrecSep-21	
280-110332-5	PNMW-15	Total/NA	Water	PrecSep-21	
280-110332-6	PNMW-16	Total/NA	Water	PrecSep-21	
280-110332-7	PNMW-2B DUP	Total/NA	Water	PrecSep-21	
280-110332-8	PNMW-13 EB	Total/NA	Water	PrecSep-21	
MB 160-369057/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-369057/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 369066

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110332-1	PNMW-1B	Total/NA	Water	PrecSep_0	
280-110332-2	PNMW-2B	Total/NA	Water	PrecSep_0	
280-110332-3	PNMW-13	Total/NA	Water	PrecSep_0	
280-110332-4	PNMW-14	Total/NA	Water	PrecSep_0	
280-110332-5	PNMW-15	Total/NA	Water	PrecSep_0	
280-110332-6	PNMW-16	Total/NA	Water	PrecSep_0	
280-110332-7	PNMW-2B DUP	Total/NA	Water	PrecSep_0	
280-110332-8	PNMW-13 EB	Total/NA	Water	PrecSep_0	
MB 160-369066/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-369066/1-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: 280-110332-1

Client Sample ID: PNMW-1B
Date Collected: 05/29/18 19:30
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-1
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	330064	06/05/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			331618	06/13/18 23:29	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	330064	06/05/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			331803	06/14/18 19:25	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	418298	06/13/18 11:27	THP	TAL DEN
Total/NA	Analysis	7470A		1			418527	06/13/18 16:26	THP	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	417486	06/06/18 05:48	TLP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	417239	06/04/18 08:42	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			999.88 mL	1.0 g	369057	06/06/18 09:20	JLC	TAL SL
Total/NA	Analysis	9315		1			373286	06/30/18 18:02	ALS	TAL SL
Total/NA	Prep	PrecSep_0			999.88 mL	1.0 g	369066	06/06/18 10:28	JLC	TAL SL
Total/NA	Analysis	9320		1			371793	06/22/18 13:50	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			373524	07/02/18 11:38	ALS	TAL SL

Client Sample ID: PNMW-2B
Date Collected: 05/29/18 14:15
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-2
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	330064	06/05/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			331618	06/13/18 23:42	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	330064	06/05/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			331803	06/14/18 19:29	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	418298	06/13/18 11:27	THP	TAL DEN
Total/NA	Analysis	7470A		1			418527	06/13/18 16:28	THP	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	417486	06/06/18 06:10	TLP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	417239	06/04/18 08:42	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.43 mL	1.0 g	369057	06/06/18 09:20	JLC	TAL SL
Total/NA	Analysis	9315		1			373286	06/30/18 18:03	ALS	TAL SL
Total/NA	Prep	PrecSep_0			1000.43 mL	1.0 g	369066	06/06/18 10:28	JLC	TAL SL
Total/NA	Analysis	9320		1			371793	06/22/18 13:50	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			373524	07/02/18 11:38	ALS	TAL SL

Client Sample ID: PNMW-13
Date Collected: 05/30/18 13:10
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-3
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	330064	06/05/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			331618	06/13/18 23:46	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	330064	06/05/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			331803	06/14/18 19:34	RKT	TAL CAN

Lab Chronicle

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

TestAmerica Job ID: 280-110332-1

Client Sample ID: PNMW-13

Date Collected: 05/30/18 13:10
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-3

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	7470A			30 mL	50 mL	418298	06/13/18 11:27	THP	TAL DEN
Total/NA	Analysis	7470A		1			418527	06/13/18 16:30	THP	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	417486	06/06/18 06:32	TLP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	417239	06/04/18 08:42	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			750.59 mL	1.0 g	369057	06/06/18 09:20	JLC	TAL SL
Total/NA	Analysis	9315		1			373286	06/30/18 18:03	ALS	TAL SL
Total/NA	Prep	PrecSep_0			750.59 mL	1.0 g	369066	06/06/18 10:28	JLC	TAL SL
Total/NA	Analysis	9320		1			371793	06/22/18 13:50	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			373524	07/02/18 11:38	ALS	TAL SL

Client Sample ID: PNMW-14

Date Collected: 05/30/18 14:00
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-4

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	330064	06/05/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			331618	06/13/18 23:51	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	330064	06/05/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			331803	06/14/18 19:38	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	418298	06/13/18 11:27	THP	TAL DEN
Total/NA	Analysis	7470A		1			418527	06/13/18 16:32	THP	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	417486	06/06/18 06:54	TLP	TAL DEN
Total/NA	Analysis	SM 2540D		1	10 mL	250 mL	417239	06/04/18 08:42	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			500.57 mL	1.0 g	369057	06/06/18 09:20	JLC	TAL SL
Total/NA	Analysis	9315		1			373286	06/30/18 18:03	ALS	TAL SL
Total/NA	Prep	PrecSep_0			500.57 mL	1.0 g	369066	06/06/18 10:28	JLC	TAL SL
Total/NA	Analysis	9320		1			371793	06/22/18 13:50	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			373524	07/02/18 11:38	ALS	TAL SL

Client Sample ID: PNMW-15

Date Collected: 05/29/18 18:22
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-5

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	330064	06/05/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			331618	06/13/18 23:55	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	330064	06/05/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			331803	06/14/18 19:42	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	418298	06/13/18 11:27	THP	TAL DEN
Total/NA	Analysis	7470A		1			418527	06/13/18 16:34	THP	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	417486	06/06/18 07:16	TLP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	417239	06/04/18 08:42	JAP	TAL DEN

Lab Chronicle

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

TestAmerica Job ID: 280-110332-1

Client Sample ID: PNMW-15

Date Collected: 05/29/18 18:22
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-5

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			1000.27 mL	1.0 g	369057	06/06/18 09:20	JLC	TAL SL
Total/NA	Analysis	9315		1			373286	06/30/18 18:03	ALS	TAL SL
Total/NA	Prep	PrecSep_0			1000.27 mL	1.0 g	369066	06/06/18 10:28	JLC	TAL SL
Total/NA	Analysis	9320		1			371793	06/22/18 13:50	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			373524	07/02/18 11:38	ALS	TAL SL

Client Sample ID: PNMW-16

Date Collected: 05/30/18 11:53
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-6

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	330064	06/05/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			331618	06/14/18 00:00	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	330064	06/05/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			331803	06/14/18 19:47	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	418298	06/13/18 11:27	THP	TAL DEN
Total/NA	Analysis	7470A		1			418527	06/13/18 16:37	THP	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	417486	06/06/18 07:39	TLP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	417239	06/04/18 08:42	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.33 mL	1.0 g	369057	06/06/18 09:20	JLC	TAL SL
Total/NA	Analysis	9315		1			373286	06/30/18 18:03	ALS	TAL SL
Total/NA	Prep	PrecSep_0			1000.33 mL	1.0 g	369066	06/06/18 10:28	JLC	TAL SL
Total/NA	Analysis	9320		1			371793	06/22/18 13:50	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			373524	07/02/18 11:38	ALS	TAL SL

Client Sample ID: PNMW-2B DUP

Date Collected: 05/29/18 14:15
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-7

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	330064	06/05/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			331618	06/14/18 00:04	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	330064	06/05/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			331803	06/14/18 20:00	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	418298	06/13/18 11:27	THP	TAL DEN
Total/NA	Analysis	7470A		1			418527	06/13/18 16:43	THP	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	417486	06/06/18 08:01	TLP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	417239	06/04/18 08:42	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.28 mL	1.0 g	369057	06/06/18 09:20	JLC	TAL SL
Total/NA	Analysis	9315		1			373286	06/30/18 18:03	ALS	TAL SL
Total/NA	Prep	PrecSep_0			1000.28 mL	1.0 g	369066	06/06/18 10:28	JLC	TAL SL
Total/NA	Analysis	9320		1			371793	06/22/18 13:50	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			373524	07/02/18 11:38	ALS	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-110332-1

Client Sample ID: PNMW-13 EB

Date Collected: 05/30/18 12:30
Date Received: 05/31/18 15:10

Lab Sample ID: 280-110332-8

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	330064	06/05/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			331618	06/14/18 00:09	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	330064	06/05/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			331803	06/14/18 20:05	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	418298	06/13/18 11:27	THP	TAL DEN
Total/NA	Analysis	7470A		1			418527	06/13/18 16:46	THP	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	417486	06/06/18 09:08	TLP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	417239	06/04/18 08:42	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.07 mL	1.0 g	369057	06/06/18 09:20	JLC	TAL SL
Total/NA	Analysis	9315		1	1.0 mL	1.0 mL	373286	06/30/18 18:03	ALS	TAL SL
Total/NA	Prep	PrecSep_0			1000.07 mL	1.0 g	369066	06/06/18 10:28	JLC	TAL SL
Total/NA	Analysis	9320		1			371793	06/22/18 13:50	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			373524	07/02/18 11:38	ALS	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: 280-110332-1

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 ELAP		2907.01	10-31-19

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
7470A	7470A	Water	Mercury
9056A		Water	Fluoride

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	07-31-18 *
Kansas	NELAP	7	E-10336	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18
Minnesota	NELAP	5	039-999-348	12-31-18
Minnesota (Petrofund)	State Program	1	3506	07-31-18 *
Nevada	State Program	9	OH-000482008A	07-31-18 *
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	08-31-18 *
Texas	NELAP	6	T104704517-17-9	08-31-18 *
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-18 *
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18

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	06-30-18 *
ANAB	DoD ELAP		L2305	04-06-19
Arizona	State Program	9	AZ0813	12-08-18
California	State Program	9	2886	06-30-18 *
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-19
Illinois	NELAP	5	200023	11-30-18
Iowa	State Program	7	373	12-01-18
Kansas	NELAP	7	E-10236	10-31-18
Kentucky (DW)	State Program	4	90125	12-31-18
Louisiana	NELAP	6	04080	06-30-18 *
Louisiana (DW)	NELAP	6	LA180017	12-31-18
Maryland	State Program	3	310	09-30-18
Michigan	State Program	5	9005	06-30-18 *
Missouri	State Program	7	780	06-30-18 *

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

Accreditation/Certification Summary

Client: HDR Inc
TestAmerica Job ID: 280-110332-1
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
Nevada	State Program	9	MO000542018-1	07-31-18 *
New Jersey	NELAP	2	MO002	06-30-18 *
New York	NELAP	2	11616	03-31-19
North Dakota	State Program	8	R207	06-30-18 *
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-18 *
Pennsylvania	NELAP	3	68-00540	02-28-19
South Carolina	State Program	4	85002001	06-30-18 *
Texas	NELAP	6	T104704193-17-11	07-31-18
US Fish & Wildlife	Federal		058448	07-31-18
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-18
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-18
West Virginia DEP	State Program	3	381	08-31-18 *

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

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

(3)

Chain of Custody Record

TestAmerica

7/2/2018

Client Information	Sampler: FISHBURN	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-75432-24917.1
Client Contact: Anna Lundin	Phone: 208 841 9707	E-Mail: stephanie.rothmeyer@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-001			
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:

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)	J total metals (see list)	N TSS	D Ra 226/228	Z Fluoride only	Total Number of containers	Special Instructions/Note:
			Preservation Code:									
PNMW-1B	5 29 18	1930	G	Water			X	X	X	X		
PNMW-2B	5-29-18	1415		Water			X	X	X	X		
PNMW-13	5-30-18	1310		Water			X	X	X	X		
PNMW-14	5-30-18	1400		Water			X	X	X	X		
PNMW-15	5-29-18	1822		Water			X	X	X	X		
PNMW-16	5-30-18	1153		Water			X	X	X	X		
PNMW-2B DUP	5-29-18	1415		Water			X	X	X	X		
PNMW-13 EB	5-30-18	1230		Water			X	X	X	X		
				Water								

Diss. Metals: Ag, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Tl

280-110332 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
K. Fishburn	5-31-18 10900	HDR TO Courier	Rick Tomlez	5-31-18 12:55	BDC
Rick Tomlez	5-31-18 15:00	BDC	[illegible]	5-31-18 1500	TA Denver
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: 0.2, 0.2, 0.9 +0.6 OFFERED BY KO 05-31-18

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: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-440623.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-110332-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 6/26/2018			
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/ (MOD) Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
PNMW-1B (280-110332-1)	5/29/18	19:30 Mountain		Water			X	X	X	2	
PNMW-2B (280-110332-2)	5/29/18	14:15 Mountain		Water			X	X	X	2	
PNMW-13 (280-110332-3)	5/30/18	13:10 Mountain		Water			X	X	X	2	
PNMW-14 (280-110332-4)	5/30/18	14:00 Mountain		Water			X	X	X	2	
PNMW-15 (280-110332-5)	5/29/18	18:22 Mountain		Water			X	X	X	2	
PNMW-16 (280-110332-6)	5/30/18	11:53 Mountain		Water			X	X	X	2	
PNMW-2B DUP (280-110332-7)	5/29/18	14:15 Mountain		Water			X	X	X	2	
PNMW-13 EB (280-110332-8)	5/30/18	12:30 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	*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
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

7/2/2018

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

3.6/C3.7

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-440622.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-110332-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 6/22/2018			
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	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:

S3

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)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
PNMW-1B (280-110332-1)	5/29/18	19:30 Mountain		Water			X	1	Use Collision Cell
PNMW-2B (280-110332-2)	5/29/18	14:15 Mountain		Water			X	1	Use Collision Cell
PNMW-13 (280-110332-3)	5/30/18	13:10 Mountain		Water			X	1	Use Collision Cell
PNMW-14 (280-110332-4)	5/30/18	14:00 Mountain		Water			X	1	Use Collision Cell
PNMW-15 (280-110332-5)	5/29/18	18:22 Mountain		Water			X	1	Use Collision Cell
PNMW-16 (280-110332-6)	5/30/18	11:53 Mountain		Water			X	1	Use Collision Cell
PNMW-2B DUP (280-110332-7)	5/29/18	14:15 Mountain		Water			X	1	Use Collision Cell
PNMW-13 EB (280-110332-8)	5/30/18	12:30 Mountain		Water			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
Neal Mo	6-1-18 1500	TA-Den		6-2-18 935	
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 Denver Site Name _____ Cooler unpacked by:

Cooler Received on 6-2-18 Opened on 6-2-18

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

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

TestAmerica Cooler # _____ Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF **+0.1** °C) Observed Cooler Temp. 3.6 °C Corrected Cooler Temp. 3.7 °C
   IR GUN #36 (CF **+0.3**°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   ~~IR GUN # 627 (CF **-1.3**°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
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	

pH Strip Lot# **HC740840**

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): _____

WI-NC-099

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-110332-1

Login Number: 110332
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.	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: 280-110332-1

Login Number: 110332
List Number: 2
Creator: Press, Nicholas B

List Source: TestAmerica St. Louis
List Creation: 06/02/18 02:46 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.	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	0.8, 0.8
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?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

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

TestAmerica Job ID: 280-110332-1

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)
280-110332-1	PNMW-1B	88.8
280-110332-2	PNMW-2B	95.3
280-110332-3	PNMW-13	95.9
280-110332-4	PNMW-14	70.8
280-110332-5	PNMW-15	95.9
280-110332-6	PNMW-16	84.7
280-110332-7	PNMW-2B DUP	91.4
280-110332-8	PNMW-13 EB	98.8
LCS 160-369057/1-A	Lab Control Sample	91.4
MB 160-369057/23-A	Method Blank	86.7

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)
280-110332-1	PNMW-1B	88.8	88.6
280-110332-2	PNMW-2B	95.3	93.1
280-110332-3	PNMW-13	95.9	95.0
280-110332-4	PNMW-14	70.8	95.3
280-110332-5	PNMW-15	95.9	98.3
280-110332-6	PNMW-16	84.7	92.3
280-110332-7	PNMW-2B DUP	91.4	100
280-110332-8	PNMW-13 EB	98.8	97.2
LCS 160-369066/1-A	Lab Control Sample	91.4	97.6
MB 160-369066/23-A	Method Blank	86.7	96.8

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: 280-113270-1
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:
9/28/2018 2:02:09 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: 280-113270-1

Qualifiers

Metals

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.
^	ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits.
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
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.
E	Result exceeded calibration range.
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: 280-113270-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Pawnee

Report Number: 280-113270-1

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 8/16/2018 3:25 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 7 coolers at receipt time were 0.7º C, 0.9º C, 1.3º C, 1.3º C, 2.2º C, 3.2º C and 3.5º C.

Receipt Exceptions

The following information was noted at receipt:

1) 3 plastic 500mL Nitric bottles for sample ID PNMW-1B, 2 plastic 500mL Nitric bottles for sample ID PNMW-2B, and 4 Plastic 1L, 4 plastic 500mL, 1 plastic 250mL for both sample IDs PNMW-14 and PNMW-13EB were received with no time given on container labels. Sampling times logged per Chain of Custody.

2) 2 plastic 500mL Nitric bottles for sample ID PNMW-13 received with a time given as 1310 on container labels and 1555 on Chain of Custody. As the collection date was 8/16, and samples were received at 1525, samples have been logged with 1310 as their sampling time.

3) 1 of 7 coolers was received with no custody seal: cooler contained PNMW-13 bottles, which have been marked for reference.

TOTAL RECOVERABLE METALS

Samples PNMW-1B (280-113270-1), PNMW-2B (280-113270-2), PNMW-13 (280-113270-3), PNMW-14 (280-113270-4), PNMW-15 (280-113270-5), PNMW-16 (280-113270-6), PNMW16DUP (280-113270-7) and PNMW13EB (280-113270-8) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 08/22/2018 and analyzed on 08/24/2018.

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 (280-113270-1), PNMW-2B (280-113270-2), PNMW-13 (280-113270-3), PNMW-14 (280-113270-4), PNMW-15 (280-113270-5), PNMW-16 (280-113270-6), PNMW16DUP (280-113270-7) and PNMW13EB (280-113270-8) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 08/22/2018 and analyzed on 08/23/2018 and 08/24/2018.

Job ID: 280-113270-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

Chromium was detected in method blank MB 240-341993/1-A at a level exceeding the reporting limit, but less than 2x the reporting limit. This compound is considered a common laboratory contaminant. The associated samples were not re-extracted and/or re-analyzed because the concentration of the common lab contaminant in the method blank was less than 2 times the RL, and the SOP allows Chromium up to 2x the RL in the method blank. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

Beryllium, Cadmium and Cobalt were detected in method blank MB 240-341993/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have 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.

Calcium failed the recovery criteria low for the MSD of sample PNMW-1BMSD (280-113270-1) in batch 240-342286. 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 spiking amount. Refer to the QC report for details.

The CCVL read below the acceptance criteria for Lithium; Per our SOP and the 6020A method, the final CCVL is only required when the sample result is at or near the level of the RL. The accepted results were well above the level of the RL and the CCV verifies the results at the reported level. The following samples are associated: PNMW-1B (280-113270-1), PNMW-13 (280-113270-3), PNMW-15 (280-113270-5), PNMW-16 (280-113270-6) and PNMW16DUP (280-113270-7).

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

TOTAL DISSOLVED SOLIDS

Samples PNMW-1B (280-113270-1), PNMW-2B (280-113270-2), PNMW-13 (280-113270-3), PNMW-14 (280-113270-4), PNMW-15 (280-113270-5), PNMW-16 (280-113270-6), PNMW16DUP (280-113270-7) and PNMW13EB (280-113270-8) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 08/20/2018.

Total Dissolved Solids (TDS) exceeded the RPD limit for the duplicate of sample 280-113270-14. It is noted that the sample and/or sample duplicate were less than 5x the reporting limit. 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 SUSPENDED SOLIDS

Samples PNMW-1B (280-113270-1), PNMW-2B (280-113270-2), PNMW-13 (280-113270-3), PNMW-14 (280-113270-4), PNMW-15 (280-113270-5), PNMW-16 (280-113270-6), PNMW16DUP (280-113270-7) and PNMW13EB (280-113270-8) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 08/19/2018.

Total Suspended Solids exceeded the RPD limit for the duplicate of sample 280-113269-1. It is noted that the sample and/or sample duplicate were less than 5x the reporting limit. 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.

CORROSIVITY (PH)

Samples PNMW-1B (280-113270-1), PNMW-2B (280-113270-2), PNMW-13 (280-113270-3), PNMW-14 (280-113270-4), PNMW-15 (280-113270-5), PNMW-16 (280-113270-6), PNMW16DUP (280-113270-7) and PNMW13EB (280-113270-8) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 08/22/2018, 08/28/2018 and 08/31/2018.

The following sample failed to reach constant pH after three replicates: PNMW13EB (280-113270-8). Results were confirmed in batches 427419, 426805, 427029, and 427068.

The following samples failed to reach constant pH after three replicates: PNMW-16 (280-113270-6) and PNMW16DUP (280-113270-7). Results were confirmed in batches 426805, 427029, and 427068.

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

ANIONS (28 DAYS)

Job ID: 280-113270-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

Samples PNMW-1B (280-113270-1), PNMW-2B (280-113270-2), PNMW-13 (280-113270-3), PNMW-14 (280-113270-4), PNMW-15 (280-113270-5), PNMW-16 (280-113270-6), PNMW16DUP (280-113270-7) and PNMW13EB (280-113270-8) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 09/02/2018.

Sulfate failed the recovery criteria high for the MS of sample PNMW-13MS (280-113270-3) in batch 280-428365. Chloride, Fluoride and Sulfate failed the recovery criteria high for the MSD of sample PNMW-13MSD (280-113270-3) in batch 280-428365. Refer to the QC report for details.

Samples PNMW-1B (280-113270-1)[10X], PNMW-15 (280-113270-5)[10X], PNMW-16 (280-113270-6)[10X] and PNMW16DUP (280-113270-7)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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 (280-113270-1), PNMW-2B (280-113270-2), PNMW-13 (280-113270-3), PNMW-14 (280-113270-4), PNMW-15 (280-113270-5), PNMW-16 (280-113270-6), PNMW16DUP (280-113270-7) and PNMW13EB (280-113270-8) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 08/22/2018 and analyzed on 09/13/2018.

Sample aliquots for PNMW-13 (280-113270-3), PNMW-14 (280-113270-4), and PNMW-15 (280-113270-5) were reduced due to potential matrix interference.

Radium-226 was detected in method blank MB 160-384527/17-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. 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.

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: PNMW-1B (280-113270-1), PNMW-2B (280-113270-2), PNMW-13 (280-113270-3), PNMW-14 (280-113270-4), PNMW-15 (280-113270-5), PNMW-16 (280-113270-6), PNMW16DUP (280-113270-7) and PNMW13EB (280-113270-8). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

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

RADIUM-228

Samples PNMW-1B (280-113270-1), PNMW-2B (280-113270-2), PNMW-13 (280-113270-3), PNMW-14 (280-113270-4), PNMW-15 (280-113270-5), PNMW-16 (280-113270-6), PNMW16DUP (280-113270-7) and PNMW13EB (280-113270-8) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 08/22/2018 and analyzed on 08/28/2018.

Sample aliquots for PNMW-13 (280-113270-3), PNMW-14 (280-113270-4), and PNMW-15 (280-113270-5) were reduced due to potential matrix interference.

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: PNMW-1B (280-113270-1), PNMW-2B (280-113270-2), PNMW-13 (280-113270-3), PNMW-14 (280-113270-4), PNMW-15 (280-113270-5), PNMW-16 (280-113270-6), PNMW16DUP (280-113270-7) and PNMW13EB (280-113270-8). 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)

Samples PNMW-1B (280-113270-1), PNMW-2B (280-113270-2), PNMW-13 (280-113270-3), PNMW-14 (280-113270-4), PNMW-15 (280-113270-5), PNMW-16 (280-113270-6), PNMW16DUP (280-113270-7) and PNMW13EB (280-113270-8) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 09/14/2018.

Combined Radium 226 + 228 exceeded the RPD limit for the duplicate of sample 180-81032-5. 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: 280-113270-1

Client Sample ID: PNMW-1B — Lab Sample ID: 280-113270-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.29		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.030		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.00071	J B	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Cobalt	0.00046	J B	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0063	B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0059	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.00048	J	0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.017		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.086	^	0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Calcium	120		1.0	0.58	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	20.4	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	33		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.71		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	390		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	980		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	4.4		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-2B — Lab Sample ID: 280-113270-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.056	J	0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.17		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.00085	J B	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Cobalt	0.00034	J B	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0043	B	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	0.0027	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.034		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Calcium	85		1.0	0.58	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	20.4	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	13		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.57		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	24		5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	470		10	4.7	mg/L	1		SM 2540C	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: 280-113270-1

Client Sample ID: PNMW-13 — Lab Sample ID: 280-113270-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.25		0.10	0.023	mg/L	1		6010C	Total Recoverable
Arsenic	0.0010	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.12		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.00065	J B	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Cadmium	0.00023	J B	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.0030	B	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0062	B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0022	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.0051		0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.0017	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.061	^	0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Calcium	58		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.1	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	4.6	F1	3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	1.2	F1	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	43	F1	5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	510		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	2100		67	18	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-14 — Lab Sample ID: 280-113270-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.078	J	0.10	0.023	mg/L	1		6010C	Total Recoverable
Antimony	0.00074	J	0.0020	0.00057	mg/L	1		6020A	Total Recoverable
Arsenic	0.0049	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.28		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.0012	B	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Cadmium	0.00023	J B	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.0098	B	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.042	B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0069	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.010		0.0010	0.00045	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: PNMW-14 (Continued) — Lab Sample ID: 280-113270-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Selenium	0.0036	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.044		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Calcium	120		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.1	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	2.2	J	3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	1.1		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	24		5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	250		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	590		20	5.5	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-15 — Lab Sample ID: 280-113270-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.38		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.046		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.00034	J B	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Cobalt	0.0020	B	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0065	B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0016	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.0015		0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.0023	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.11	^	0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Calcium	160		1.0	0.58	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	18.4	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	3.7		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.33	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	730		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	1400		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	25		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-16 — Lab Sample ID: 280-113270-6

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	0.019		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cobalt	0.0021	B	0.0010	0.00019	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: PNMW-16 (Continued) — Lab Sample ID: 280-113270-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.0023	B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0013	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lithium	0.14	^	0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Calcium	210		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	6.9	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.9	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	2.1	J	3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.26	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1200		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	1900		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	3.6	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW16DUP — Lab Sample ID: 280-113270-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.43		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.020		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cobalt	0.0022	B	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0027	B	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	0.15	^	0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Calcium	220		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.4	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	2.2	J	3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.28	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1300		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	1900		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	3.6	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW13EB — Lab Sample ID: 280-113270-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.0022	B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.3	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.4	HF	1.0	1.0	Degrees C	1		9040B	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: 280-113270-1

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
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 = 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: 280-113270-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-113270-1	PNMW-1B	Water	08/14/18 10:25	08/16/18 15:25
280-113270-2	PNMW-2B	Water	08/13/18 18:45	08/16/18 15:25
280-113270-3	PNMW-13	Water	08/16/18 13:10	08/16/18 15:25
280-113270-4	PNMW-14	Water	08/15/18 17:30	08/16/18 15:25
280-113270-5	PNMW-15	Water	08/13/18 17:15	08/16/18 15:25
280-113270-6	PNMW-16	Water	08/13/18 12:10	08/16/18 15:25
280-113270-7	PNMW16DUP	Water	08/13/18 12:10	08/16/18 15:25
280-113270-8	PNMW13EB	Water	08/14/18 17:45	08/16/18 15:25

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

Client Sample ID: PNMW-1B
Date Collected: 08/14/18 10:25
Date Received: 08/16/18 15:25
Lab Sample ID: 280-113270-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.29		0.10	0.023	mg/L		08/22/18 14:00	08/24/18 14:04	1

Client Sample ID: PNMW-2B
Date Collected: 08/13/18 18:45
Date Received: 08/16/18 15:25
Lab Sample ID: 280-113270-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.056	J	0.10	0.023	mg/L		08/22/18 14:00	08/24/18 14:26	1

Client Sample ID: PNMW-13
Date Collected: 08/16/18 13:10
Date Received: 08/16/18 15:25
Lab Sample ID: 280-113270-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.25		0.10	0.023	mg/L		08/22/18 14:00	08/24/18 14:31	1

Client Sample ID: PNMW-14
Date Collected: 08/15/18 17:30
Date Received: 08/16/18 15:25
Lab Sample ID: 280-113270-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.078	J	0.10	0.023	mg/L		08/22/18 14:00	08/24/18 14:36	1

Client Sample ID: PNMW-15
Date Collected: 08/13/18 17:15
Date Received: 08/16/18 15:25
Lab Sample ID: 280-113270-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.38		0.10	0.023	mg/L		08/22/18 14:00	08/24/18 14:40	1

Client Sample ID: PNMW-16
Date Collected: 08/13/18 12:10
Date Received: 08/16/18 15:25
Lab Sample ID: 280-113270-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.42		0.10	0.023	mg/L		08/22/18 14:00	08/24/18 14:54	1

Client Sample ID: PNMW16DUP
Date Collected: 08/13/18 12:10
Date Received: 08/16/18 15:25
Lab Sample ID: 280-113270-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.43		0.10	0.023	mg/L		08/22/18 14:00	08/24/18 14:59	1

Client Sample ID: PNMW13EB
Date Collected: 08/14/18 17:45
Date Received: 08/16/18 15:25
Lab Sample ID: 280-113270-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		08/22/18 14:00	08/24/18 15:03	1

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

Client Sample ID: PNMW-1B
Date Collected: 08/14/18 10:25
Date Received: 08/16/18 15:25
Lab Sample ID: 280-113270-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/22/18 14:00	08/23/18 12:19	1

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

Client Sample ID: PNMW-1B
Date Collected: 08/14/18 10:25
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050	0.00075	mg/L		08/22/18 14:00	08/23/18 12:19	1
Barium	**0.030**		0.0050	0.0022	mg/L		08/22/18 14:00	08/23/18 12:19	1
Beryllium	**0.00071**	**J B**	0.0010	0.00031	mg/L		08/22/18 14:00	08/23/18 12:19	1
Cadmium	ND		0.0010	0.00021	mg/L		08/22/18 14:00	08/23/18 12:19	1
Cobalt	**0.00046**	**J B**	0.0010	0.00019	mg/L		08/22/18 14:00	08/23/18 12:19	1
Chromium	**0.0063**	**B**	0.0020	0.00098	mg/L		08/22/18 14:00	08/23/18 12:19	1
Molybdenum	**0.0059**	**J**	0.010	0.0011	mg/L		08/22/18 14:00	08/23/18 12:19	1
Lead	**0.00048**	**J**	0.0010	0.00045	mg/L		08/22/18 14:00	08/23/18 12:19	1
Selenium	**0.017**		0.0050	0.00089	mg/L		08/22/18 14:00	08/23/18 12:19	1
Thallium	ND		0.0010	0.00020	mg/L		08/22/18 14:00	08/23/18 12:19	1
Lithium	**0.086**	**^**	0.0080	0.0017	mg/L		08/22/18 14:00	08/23/18 12:19	1
Calcium	**120**		1.0	0.58	mg/L		08/22/18 14:00	08/23/18 12:19	1

Client Sample ID: PNMW-2B
Date Collected: 08/13/18 18:45
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/22/18 14:00	08/23/18 12:42	1
Arsenic	ND		0.0050	0.00075	mg/L		08/22/18 14:00	08/23/18 12:42	1
Barium	**0.17**		0.0050	0.0022	mg/L		08/22/18 14:00	08/23/18 12:42	1
Beryllium	**0.00085**	**J B**	0.0010	0.00031	mg/L		08/22/18 14:00	08/23/18 12:42	1
Cadmium	ND		0.0010	0.00021	mg/L		08/22/18 14:00	08/23/18 12:42	1
Cobalt	**0.00034**	**J B**	0.0010	0.00019	mg/L		08/22/18 14:00	08/23/18 12:42	1
Chromium	**0.0043**	**B**	0.0020	0.00098	mg/L		08/22/18 14:00	08/23/18 12:42	1
Molybdenum	**0.0033**	**J**	0.010	0.0011	mg/L		08/22/18 14:00	08/23/18 12:42	1
Lead	ND		0.0010	0.00045	mg/L		08/22/18 14:00	08/23/18 12:42	1
Selenium	**0.0027**	**J**	0.0050	0.00089	mg/L		08/22/18 14:00	08/23/18 12:42	1
Thallium	ND		0.0010	0.00020	mg/L		08/22/18 14:00	08/23/18 12:42	1
Lithium	**0.034**		0.0080	0.0017	mg/L		08/22/18 14:00	08/24/18 13:46	1
Calcium	**85**		1.0	0.58	mg/L		08/22/18 14:00	08/23/18 12:42	1

Client Sample ID: PNMW-13
Date Collected: 08/16/18 13:10
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/22/18 14:00	08/23/18 12:56	1
Arsenic	**0.0010**	**J**	0.0050	0.00075	mg/L		08/22/18 14:00	08/23/18 12:56	1
Barium	**0.12**		0.0050	0.0022	mg/L		08/22/18 14:00	08/23/18 12:56	1
Beryllium	**0.00065**	**J B**	0.0010	0.00031	mg/L		08/22/18 14:00	08/23/18 12:56	1
Cadmium	**0.00023**	**J B**	0.0010	0.00021	mg/L		08/22/18 14:00	08/23/18 12:56	1
Cobalt	**0.0030**	**B**	0.0010	0.00019	mg/L		08/22/18 14:00	08/23/18 12:56	1
Chromium	**0.0062**	**B**	0.0020	0.00098	mg/L		08/22/18 14:00	08/23/18 12:56	1
Molybdenum	**0.0022**	**J**	0.010	0.0011	mg/L		08/22/18 14:00	08/23/18 12:56	1
Lead	**0.0051**		0.0010	0.00045	mg/L		08/22/18 14:00	08/23/18 12:56	1
Selenium	**0.0017**	**J**	0.0050	0.00089	mg/L		08/22/18 14:00	08/23/18 12:56	1
Thallium	ND		0.0010	0.00020	mg/L		08/22/18 14:00	08/23/18 12:56	1
Lithium	**0.061**	**^**	0.0080	0.0017	mg/L		08/22/18 14:00	08/23/18 12:56	1
Calcium	**58**		1.0	0.58	mg/L		08/22/18 14:00	08/23/18 12:56	1

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

Client Sample ID: PNMW-14
Date Collected: 08/15/18 17:30
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.00074	J	0.0020	0.00057	mg/L		08/22/18 14:00	08/23/18 13:00	1
Arsenic	0.0049	J	0.0050	0.00075	mg/L		08/22/18 14:00	08/23/18 13:00	1
Barium	0.28		0.0050	0.0022	mg/L		08/22/18 14:00	08/23/18 13:00	1
Beryllium	0.0012	B	0.0010	0.00031	mg/L		08/22/18 14:00	08/23/18 13:00	1
Cadmium	0.00023	J B	0.0010	0.00021	mg/L		08/22/18 14:00	08/23/18 13:00	1
Cobalt	0.0098	B	0.0010	0.00019	mg/L		08/22/18 14:00	08/23/18 13:00	1
Chromium	0.042	B	0.0020	0.00098	mg/L		08/22/18 14:00	08/23/18 13:00	1
Molybdenum	0.0069	J	0.010	0.0011	mg/L		08/22/18 14:00	08/23/18 13:00	1
Lead	0.010		0.0010	0.00045	mg/L		08/22/18 14:00	08/23/18 13:00	1
Selenium	0.0036	J	0.0050	0.00089	mg/L		08/22/18 14:00	08/23/18 13:00	1
Thallium	ND		0.0010	0.00020	mg/L		08/22/18 14:00	08/23/18 13:00	1
Lithium	0.044		0.0080	0.0017	mg/L		08/22/18 14:00	08/24/18 13:51	1
Calcium	120		1.0	0.58	mg/L		08/22/18 14:00	08/23/18 13:00	1

Client Sample ID: PNMW-15
Date Collected: 08/13/18 17:15
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/22/18 14:00	08/23/18 13:05	1
Arsenic	ND		0.0050	0.00075	mg/L		08/22/18 14:00	08/23/18 13:05	1
Barium	0.046		0.0050	0.0022	mg/L		08/22/18 14:00	08/23/18 13:05	1
Beryllium	0.00034	J B	0.0010	0.00031	mg/L		08/22/18 14:00	08/23/18 13:05	1
Cadmium	ND		0.0010	0.00021	mg/L		08/22/18 14:00	08/23/18 13:05	1
Cobalt	0.0020	B	0.0010	0.00019	mg/L		08/22/18 14:00	08/23/18 13:05	1
Chromium	0.0065	B	0.0020	0.00098	mg/L		08/22/18 14:00	08/23/18 13:05	1
Molybdenum	0.0016	J	0.010	0.0011	mg/L		08/22/18 14:00	08/23/18 13:05	1
Lead	0.0015		0.0010	0.00045	mg/L		08/22/18 14:00	08/23/18 13:05	1
Selenium	0.0023	J	0.0050	0.00089	mg/L		08/22/18 14:00	08/23/18 13:05	1
Thallium	ND		0.0010	0.00020	mg/L		08/22/18 14:00	08/23/18 13:05	1
Lithium	0.11	^	0.0080	0.0017	mg/L		08/22/18 14:00	08/23/18 13:05	1
Calcium	160		1.0	0.58	mg/L		08/22/18 14:00	08/23/18 13:05	1

Client Sample ID: PNMW-16
Date Collected: 08/13/18 12:10
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/22/18 14:00	08/23/18 13:09	1
Arsenic	ND		0.0050	0.00075	mg/L		08/22/18 14:00	08/23/18 13:09	1
Barium	0.019		0.0050	0.0022	mg/L		08/22/18 14:00	08/23/18 13:09	1
Beryllium	ND		0.0010	0.00031	mg/L		08/22/18 14:00	08/23/18 13:09	1
Cadmium	ND		0.0010	0.00021	mg/L		08/22/18 14:00	08/23/18 13:09	1
Cobalt	0.0021	B	0.0010	0.00019	mg/L		08/22/18 14:00	08/23/18 13:09	1
Chromium	0.0023	B	0.0020	0.00098	mg/L		08/22/18 14:00	08/23/18 13:09	1
Molybdenum	0.0013	J	0.010	0.0011	mg/L		08/22/18 14:00	08/23/18 13:09	1
Lead	ND		0.0010	0.00045	mg/L		08/22/18 14:00	08/23/18 13:09	1
Selenium	ND		0.0050	0.00089	mg/L		08/22/18 14:00	08/23/18 13:09	1
Thallium	ND		0.0010	0.00020	mg/L		08/22/18 14:00	08/23/18 13:09	1
Lithium	0.14	^	0.0080	0.0017	mg/L		08/22/18 14:00	08/23/18 13:09	1
Calcium	210		1.0	0.58	mg/L		08/22/18 14:00	08/23/18 13:09	1

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

Client Sample ID: PNMW16DUP
Date Collected: 08/13/18 12:10
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/22/18 14:00	08/23/18 13:14	1
Arsenic	ND		0.0050	0.00075	mg/L		08/22/18 14:00	08/23/18 13:14	1
Barium	**0.020**		0.0050	0.0022	mg/L		08/22/18 14:00	08/23/18 13:14	1
Beryllium	ND		0.0010	0.00031	mg/L		08/22/18 14:00	08/23/18 13:14	1
Cadmium	ND		0.0010	0.00021	mg/L		08/22/18 14:00	08/23/18 13:14	1
Cobalt	**0.0022**	**B**	0.0010	0.00019	mg/L		08/22/18 14:00	08/23/18 13:14	1
Chromium	**0.0027**	**B**	0.0020	0.00098	mg/L		08/22/18 14:00	08/23/18 13:14	1
Molybdenum	**0.0014**	**J**	0.010	0.0011	mg/L		08/22/18 14:00	08/23/18 13:14	1
Lead	ND		0.0010	0.00045	mg/L		08/22/18 14:00	08/23/18 13:14	1
Selenium	ND		0.0050	0.00089	mg/L		08/22/18 14:00	08/23/18 13:14	1
Thallium	ND		0.0010	0.00020	mg/L		08/22/18 14:00	08/23/18 13:14	1
Lithium	**0.15**	**^**	0.0080	0.0017	mg/L		08/22/18 14:00	08/23/18 13:14	1
Calcium	**220**		1.0	0.58	mg/L		08/22/18 14:00	08/23/18 13:14	1

Client Sample ID: PNMW13EB
Date Collected: 08/14/18 17:45
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/22/18 14:00	08/23/18 13:18	1
Arsenic	ND		0.0050	0.00075	mg/L		08/22/18 14:00	08/23/18 13:18	1
Barium	ND		0.0050	0.0022	mg/L		08/22/18 14:00	08/23/18 13:18	1
Beryllium	ND		0.0010	0.00031	mg/L		08/22/18 14:00	08/23/18 13:18	1
Cadmium	ND		0.0010	0.00021	mg/L		08/22/18 14:00	08/23/18 13:18	1
Cobalt	ND		0.0010	0.00019	mg/L		08/22/18 14:00	08/23/18 13:18	1
Chromium	**0.0022**	**B**	0.0020	0.00098	mg/L		08/22/18 14:00	08/23/18 13:18	1
Molybdenum	ND		0.010	0.0011	mg/L		08/22/18 14:00	08/23/18 13:18	1
Lead	ND		0.0010	0.00045	mg/L		08/22/18 14:00	08/23/18 13:18	1
Selenium	ND		0.0050	0.00089	mg/L		08/22/18 14:00	08/23/18 13:18	1
Thallium	ND		0.0010	0.00020	mg/L		08/22/18 14:00	08/23/18 13:18	1
Lithium	ND		0.0080	0.0017	mg/L		08/22/18 14:00	08/24/18 13:55	1
Calcium	ND		1.0	0.58	mg/L		08/22/18 14:00	08/23/18 13:18	1

General Chemistry

Client Sample ID: PNMW-1B
Date Collected: 08/14/18 10:25
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-1
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			08/22/18 20:26	1
Temperature	**20.4**	**HF**	1.0	1.0	Degrees C			08/22/18 20:26	1
Chloride	**33**		3.0	0.25	mg/L			09/02/18 08:43	1
Fluoride	**0.71**		0.50	0.060	mg/L			09/02/18 08:43	1
Sulfate	**390**		50	2.3	mg/L			09/02/18 09:05	10
Total Dissolved Solids (TDS)	**980**		10	4.7	mg/L			08/20/18 09:26	1
Total Suspended Solids	**4.4**		4.0	1.1	mg/L			08/19/18 13:59	1

General Chemistry

Client Sample ID: PNMW-2B
Date Collected: 08/13/18 18:45
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-2
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			08/22/18 20:06	1
Temperature	20.4	HF	1.0	1.0	Degrees C			08/22/18 20:06	1
Chloride	13		3.0	0.25	mg/L			09/02/18 09:28	1
Fluoride	0.57		0.50	0.060	mg/L			09/02/18 09:28	1
Sulfate	24		5.0	0.23	mg/L			09/02/18 09:28	1
Total Dissolved Solids (TDS)	470		10	4.7	mg/L			08/20/18 09:26	1
Total Suspended Solids	ND		4.0	1.1	mg/L			08/19/18 13:59	1

Client Sample ID: PNMW-13
Date Collected: 08/16/18 13:10
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.1	HF	0.1	0.1	SU			08/22/18 20:36	1
Temperature	20.6	HF	1.0	1.0	Degrees C			08/22/18 20:36	1
Chloride	4.6	F1	3.0	0.25	mg/L			09/02/18 09:50	1
Fluoride	1.2	F1	0.50	0.060	mg/L			09/02/18 09:50	1
Sulfate	43	F1	5.0	0.23	mg/L			09/02/18 09:50	1
Total Dissolved Solids (TDS)	510		20	9.4	mg/L			08/20/18 09:26	1
Total Suspended Solids	2100		67	18	mg/L			08/19/18 13:59	1

Client Sample ID: PNMW-14
Date Collected: 08/15/18 17:30
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.1	HF	0.1	0.1	SU			08/22/18 20:41	1
Temperature	20.6	HF	1.0	1.0	Degrees C			08/22/18 20:41	1
Chloride	2.2	J	3.0	0.25	mg/L			09/02/18 11:19	1
Fluoride	1.1		0.50	0.060	mg/L			09/02/18 11:19	1
Sulfate	24		5.0	0.23	mg/L			09/02/18 11:19	1
Total Dissolved Solids (TDS)	250		20	9.4	mg/L			08/20/18 09:26	1
Total Suspended Solids	590		20	5.5	mg/L			08/19/18 13:59	1

Client Sample ID: PNMW-15
Date Collected: 08/13/18 17:15
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-5
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			08/28/18 15:40	1
Temperature	18.4	HF	1.0	1.0	Degrees C			08/28/18 15:40	1
Chloride	3.7		3.0	0.25	mg/L			09/02/18 11:41	1
Fluoride	0.33	J	0.50	0.060	mg/L			09/02/18 11:41	1
Sulfate	730		50	2.3	mg/L			09/02/18 12:48	10
Total Dissolved Solids (TDS)	1400		20	9.4	mg/L			08/20/18 09:26	1
Total Suspended Solids	25		4.0	1.1	mg/L			08/19/18 13:59	1

Client Sample ID: PNMW-16
Date Collected: 08/13/18 12:10
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	6.9	HF	0.1	0.1	SU			08/31/18 14:35	1
Temperature	19.9	HF	1.0	1.0	Degrees C			08/31/18 14:35	1

General Chemistry (Continued)

Client Sample ID: PNMW-16
Date Collected: 08/13/18 12:10
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	2.1	J	3.0	0.25	mg/L			09/02/18 13:10	1
Fluoride	0.26	J	0.50	0.060	mg/L			09/02/18 13:10	1
Sulfate	1200		50	2.3	mg/L			09/02/18 13:32	10
Total Dissolved Solids (TDS)	1900		20	9.4	mg/L			08/20/18 09:26	1
Total Suspended Solids	3.6	J	4.0	1.1	mg/L			08/19/18 13:59	1

Client Sample ID: PNMW16DUP
Date Collected: 08/13/18 12:10
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.4	HF	0.1	0.1	SU			08/31/18 14:46	1
Temperature	20.4	HF	1.0	1.0	Degrees C			08/31/18 14:46	1
Chloride	2.2	J	3.0	0.25	mg/L			09/02/18 13:54	1
Fluoride	0.28	J	0.50	0.060	mg/L			09/02/18 13:54	1
Sulfate	1300		50	2.3	mg/L			09/02/18 14:16	10
Total Dissolved Solids (TDS)	1900		20	9.4	mg/L			08/20/18 09:26	1
Total Suspended Solids	3.6	J	4.0	1.1	mg/L			08/19/18 13:59	1

Client Sample ID: PNMW13EB
Date Collected: 08/14/18 17:45
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.3	HF	0.1	0.1	SU			08/31/18 14:39	1
Temperature	19.4	HF	1.0	1.0	Degrees C			08/31/18 14:39	1
Chloride	ND		3.0	0.25	mg/L			09/02/18 14:39	1
Fluoride	ND		0.50	0.060	mg/L			09/02/18 14:39	1
Sulfate	ND		5.0	0.23	mg/L			09/02/18 14:39	1
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			08/20/18 09:26	1
Total Suspended Solids	ND		4.0	1.1	mg/L			08/19/18 13:59	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: PNMW-1B
Date Collected: 08/14/18 10:25
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.401		0.106	0.112	1.00	0.0705	pCi/L	08/22/18 10:19	09/13/18 09:35	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.8*		*40 - 110*	*08/22/18 10:19*	*09/13/18 09:35*	*1*

Client Sample ID: PNMW-2B
Date Collected: 08/13/18 18:45
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.470		0.115	0.122	1.00	0.0821	pCi/L	08/22/18 10:19	09/13/18 09:35	1

Method: 9315 - Radium-226 (GFPC) (Continued)

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	97.3		40 - 110	08/22/18 10:19	09/13/18 09:35	1

Client Sample ID: PNMW-13
Date Collected: 08/16/18 13:10
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	1.04		0.246	0.263	1.00	0.149	pCi/L	08/22/18 10:19	09/13/18 09:35	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	88.8		40 - 110	08/22/18 10:19	09/13/18 09:35	1

Client Sample ID: PNMW-14
Date Collected: 08/15/18 17:30
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.839		0.223	0.235	1.00	0.165	pCi/L	08/22/18 10:19	09/13/18 09:36	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	92.0		40 - 110	08/22/18 10:19	09/13/18 09:36	1

Client Sample ID: PNMW-15
Date Collected: 08/13/18 17:15
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.584		0.146	0.155	1.00	0.101	pCi/L	08/22/18 10:19	09/13/18 09:36	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	97.9		40 - 110	08/22/18 10:19	09/13/18 09:36	1

Client Sample ID: PNMW-16
Date Collected: 08/13/18 12:10
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.505		0.118	0.126	1.00	0.0761	pCi/L	08/22/18 10:19	09/13/18 09:36	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	98.8		40 - 110	08/22/18 10:19	09/13/18 09:36	1

Client Sample ID: PNMW16DUP
Date Collected: 08/13/18 12:10
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.475		0.113	0.121	1.00	0.0718	pCi/L	08/22/18 10:19	09/13/18 09:36	1

Method: 9315 - Radium-226 (GFPC) (Continued)

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	99.4		40 - 110	08/22/18 10:19	09/13/18 09:36	1

Client Sample ID: PNMW13EB — **Lab Sample ID: 280-113270-8**
Date Collected: 08/14/18 17:45 — **Matrix: Water**
Date Received: 08/16/18 15:25

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.165		0.0759	0.0774	1.00	0.0871	pCi/L	08/22/18 10:19	09/13/18 09:36	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	99.7		40 - 110	08/22/18 10:19	09/13/18 09:36	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: PNMW-1B — **Lab Sample ID: 280-113270-1**
Date Collected: 08/14/18 10:25 — **Matrix: Water**
Date Received: 08/16/18 15:25

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.745		0.277	0.285	1.00	0.386	pCi/L	08/22/18 10:50	08/28/18 09:11	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	93.8		40 - 110	08/22/18 10:50	08/28/18 09:11	1
Y Carrier	92.3		40 - 110	08/22/18 10:50	08/28/18 09:11	1

Client Sample ID: PNMW-2B — **Lab Sample ID: 280-113270-2**
Date Collected: 08/13/18 18:45 — **Matrix: Water**
Date Received: 08/16/18 15:25

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.544		0.247	0.252	1.00	0.357	pCi/L	08/22/18 10:50	08/28/18 09:11	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	97.3		40 - 110	08/22/18 10:50	08/28/18 09:11	1
Y Carrier	90.5		40 - 110	08/22/18 10:50	08/28/18 09:11	1

Client Sample ID: PNMW-13 — **Lab Sample ID: 280-113270-3**
Date Collected: 08/16/18 13:10 — **Matrix: Water**
Date Received: 08/16/18 15:25

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.996		0.503	0.511	1.00	0.738	pCi/L	08/22/18 10:50	08/28/18 09:11	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	88.8		40 - 110	08/22/18 10:50	08/28/18 09:11	1
Y Carrier	92.3		40 - 110	08/22/18 10:50	08/28/18 09:11	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: PNMW-14
Date Collected: 08/15/18 17:30
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**1.02**		0.474	0.484	1.00	0.680	pCi/L	08/22/18 10:50	08/28/18 09:11	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.0*		*40 - 110*	*08/22/18 10:50*	*08/28/18 09:11*	*1*
Y Carrier	*93.1*		*40 - 110*	*08/22/18 10:50*	*08/28/18 09:11*	*1*

Client Sample ID: PNMW-15
Date Collected: 08/13/18 17:15
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.602**		0.326	0.331	1.00	0.489	pCi/L	08/22/18 10:50	08/28/18 09:11	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.9*		*40 - 110*	*08/22/18 10:50*	*08/28/18 09:11*	*1*
Y Carrier	*91.2*		*40 - 110*	*08/22/18 10:50*	*08/28/18 09:11*	*1*

Client Sample ID: PNMW-16
Date Collected: 08/13/18 12:10
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.353	U	0.238	0.240	1.00	0.369	pCi/L	08/22/18 10:50	08/28/18 09:11	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*98.8*		*40 - 110*	*08/22/18 10:50*	*08/28/18 09:11*	*1*
Y Carrier	*87.5*		*40 - 110*	*08/22/18 10:50*	*08/28/18 09:11*	*1*

Client Sample ID: PNMW16DUP
Date Collected: 08/13/18 12:10
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.332**		0.205	0.207	1.00	0.312	pCi/L	08/22/18 10:50	08/28/18 09:11	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*99.4*		*40 - 110*	*08/22/18 10:50*	*08/28/18 09:11*	*1*
Y Carrier	*94.2*		*40 - 110*	*08/22/18 10:50*	*08/28/18 09:11*	*1*

Client Sample ID: PNMW13EB
Date Collected: 08/14/18 17:45
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0565	U	0.186	0.186	1.00	0.324	pCi/L	08/22/18 10:50	08/28/18 09:11	1

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

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	99.7		40 - 110	08/22/18 10:50	08/28/18 09:11	1
Y Carrier	92.7		40 - 110	08/22/18 10:50	08/28/18 09:11	1

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

Client Sample ID: PNMW-1B
Date Collected: 08/14/18 10:25
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.15		0.297	0.306	5.00	0.386	pCi/L		09/14/18 02:58	1

Client Sample ID: PNMW-2B
Date Collected: 08/13/18 18:45
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.01		0.272	0.280	5.00	0.357	pCi/L		09/14/18 02:58	1

Client Sample ID: PNMW-13
Date Collected: 08/16/18 13:10
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	2.04		0.560	0.575	5.00	0.738	pCi/L		09/14/18 02:58	1

Client Sample ID: PNMW-14
Date Collected: 08/15/18 17:30
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.86		0.524	0.538	5.00	0.680	pCi/L		09/14/18 02:58	1

Client Sample ID: PNMW-15
Date Collected: 08/13/18 17:15
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.19		0.357	0.365	5.00	0.489	pCi/L		09/14/18 02:58	1

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

Client Sample ID: PNMW-16
Date Collected: 08/13/18 12:10
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.858**		0.266	0.271	5.00	0.369	pCi/L		09/14/18 02:58	1

Client Sample ID: PNMW16DUP
Date Collected: 08/13/18 12:10
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.807**		0.234	0.240	5.00	0.312	pCi/L		09/14/18 02:58	1

Client Sample ID: PNMW13EB
Date Collected: 08/14/18 17:45
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.222	U	0.201	0.201	5.00	0.324	pCi/L		09/14/18 02:58	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-341993/1-A
Matrix: Water
Analysis Batch: 342407

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 341993

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		08/22/18 14:00	08/24/18 13:41	1

Lab Sample ID: LCS 240-341993/2-A
Matrix: Water
Analysis Batch: 342407

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 341993

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.12		mg/L		112	80 - 120

Lab Sample ID: 280-113270-1 MS
Matrix: Water
Analysis Batch: 342407

Client Sample ID: PNMW-1B
Prep Type: Total Recoverable
Prep Batch: 341993

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	0.29		1.00	1.38		mg/L		109	75 - 125

Lab Sample ID: 280-113270-1 MSD
Matrix: Water
Analysis Batch: 342407

Client Sample ID: PNMW-1B
Prep Type: Total Recoverable
Prep Batch: 341993

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	0.29		1.00	1.39		mg/L		110	75 - 125	0	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-341993/1-A
Matrix: Water
Analysis Batch: 342286

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 341993

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/22/18 14:00	08/23/18 12:10	1
Arsenic	ND		0.0050	0.00075	mg/L		08/22/18 14:00	08/23/18 12:10	1
Barium	ND		0.0050	0.0022	mg/L		08/22/18 14:00	08/23/18 12:10	1
Beryllium	0.000845	J	0.0010	0.00031	mg/L		08/22/18 14:00	08/23/18 12:10	1
Cadmium	0.000229	J	0.0010	0.00021	mg/L		08/22/18 14:00	08/23/18 12:10	1
Cobalt	0.000384	J	0.0010	0.00019	mg/L		08/22/18 14:00	08/23/18 12:10	1
Chromium	0.00303		0.0020	0.00098	mg/L		08/22/18 14:00	08/23/18 12:10	1
Molybdenum	ND		0.010	0.0011	mg/L		08/22/18 14:00	08/23/18 12:10	1
Lead	ND		0.0010	0.00045	mg/L		08/22/18 14:00	08/23/18 12:10	1
Selenium	ND		0.0050	0.00089	mg/L		08/22/18 14:00	08/23/18 12:10	1
Thallium	ND		0.0010	0.00020	mg/L		08/22/18 14:00	08/23/18 12:10	1
Lithium	ND		0.0080	0.0017	mg/L		08/22/18 14:00	08/23/18 12:10	1
Calcium	ND		1.0	0.58	mg/L		08/22/18 14:00	08/23/18 12:10	1

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

Lab Sample ID: LCS 240-341993/3-A
Matrix: Water
Analysis Batch: 342286

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 341993

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0998		mg/L		100	80 - 120
Arsenic	1.00	0.990		mg/L		99	80 - 120
Barium	1.00	0.999		mg/L		100	80 - 120
Beryllium	1.00	0.943		mg/L		94	80 - 120
Cadmium	1.00	0.996		mg/L		100	80 - 120
Cobalt	1.00	1.05		mg/L		105	80 - 120
Chromium	1.00	1.02		mg/L		102	80 - 120
Molybdenum	0.100	0.100		mg/L		100	80 - 120
Lead	1.00	1.01		mg/L		101	80 - 120
Selenium	1.00	1.01		mg/L		101	80 - 120
Thallium	0.250	0.250		mg/L		100	80 - 120
Lithium	0.100	0.0956		mg/L		96	80 - 120
Calcium	10.0	10.6		mg/L		106	80 - 120

Lab Sample ID: 280-113270-1 MS
Matrix: Water
Analysis Batch: 342286

Client Sample ID: PNMW-1B
Prep Type: Total Recoverable
Prep Batch: 341993

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	ND		0.100	0.102		mg/L		102	75 - 125
Arsenic	ND		1.00	0.983		mg/L		98	75 - 125
Barium	0.030		1.00	1.05		mg/L		102	75 - 125
Beryllium	0.00071	J B	1.00	0.914		mg/L		91	75 - 125
Cadmium	ND		1.00	0.978		mg/L		98	75 - 125
Cobalt	0.00046	J B	1.00	1.01		mg/L		101	75 - 125
Chromium	0.0063	B	1.00	0.991		mg/L		98	75 - 125
Molybdenum	0.0059	J	0.100	0.110		mg/L		104	75 - 125
Lead	0.00048	J	1.00	0.974		mg/L		97	75 - 125
Selenium	0.017		1.00	1.01		mg/L		99	75 - 125
Thallium	ND		0.250	0.242		mg/L		97	75 - 125
Lithium	0.086	^	0.100	0.171		mg/L		85	75 - 125
Calcium	120		10.0	129	4	mg/L		93	75 - 125

Lab Sample ID: 280-113270-1 MSD
Matrix: Water
Analysis Batch: 342286

Client Sample ID: PNMW-1B
Prep Type: Total Recoverable
Prep Batch: 341993

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	ND		0.100	0.101		mg/L		101	75 - 125	1	20
Arsenic	ND		1.00	0.970		mg/L		97	75 - 125	1	20
Barium	0.030		1.00	1.03		mg/L		100	75 - 125	2	20
Beryllium	0.00071	J B	1.00	0.907		mg/L		91	75 - 125	1	20
Cadmium	ND		1.00	0.967		mg/L		97	75 - 125	1	20
Cobalt	0.00046	J B	1.00	0.987		mg/L		99	75 - 125	2	20
Chromium	0.0063	B	1.00	0.978		mg/L		97	75 - 125	1	20
Molybdenum	0.0059	J	0.100	0.110		mg/L		105	75 - 125	0	20
Lead	0.00048	J	1.00	0.964		mg/L		96	75 - 125	1	20
Selenium	0.017		1.00	0.996		mg/L		98	75 - 125	1	20

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

Lab Sample ID: 280-113270-1 MSD
Matrix: Water
Analysis Batch: 342286

Client Sample ID: PNMW-1B
Prep Type: Total Recoverable
Prep Batch: 341993

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Thallium	ND		0.250	0.241		mg/L		97	75 - 125	0	20
Lithium	0.086	^	0.100	0.171		mg/L		85	75 - 125	0	20
Calcium	120		10.0	127	4	mg/L		71	75 - 125	2	20

Method: 9040B - pH

Lab Sample ID: LCS 280-427288/30
Matrix: Water
Analysis Batch: 427288

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

Lab Sample ID: LCS 280-427288/55
Matrix: Water
Analysis Batch: 427288

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

Lab Sample ID: 280-113270-1 DU
Matrix: Water
Analysis Batch: 427288

Client Sample ID: PNMW-1B
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH adj. to 25 deg C	7.9	HF	7.9		SU		0.1	5
Temperature	20.4	HF	20.5		Degrees C		0.2	10

Lab Sample ID: LCS 280-428133/4
Matrix: Water
Analysis Batch: 428133

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: 280-113270-5 DU
Matrix: Water
Analysis Batch: 428133

Client Sample ID: PNMW-15
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH adj. to 25 deg C	7.5	HF	7.4		SU		2	5
Temperature	18.4	HF	17.4		Degrees C		6	10

Lab Sample ID: LCS 280-428299/4
Matrix: Water
Analysis Batch: 428299

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 280-428365/6
Matrix: Water
Analysis Batch: 428365

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			09/02/18 04:26	1
Fluoride	ND		0.50	0.060	mg/L			09/02/18 04:26	1
Sulfate	ND		5.0	0.23	mg/L			09/02/18 04:26	1

Lab Sample ID: LCS 280-428365/4
Matrix: Water
Analysis Batch: 428365

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	98.5		mg/L		99	90 - 110
Fluoride	5.00	5.05		mg/L		101	90 - 110
Sulfate	100	97.6		mg/L		98	90 - 110

Lab Sample ID: LCSD 280-428365/5
Matrix: Water
Analysis Batch: 428365

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	98.6		mg/L		99	90 - 110	0	10
Fluoride	5.00	5.08		mg/L		102	90 - 110	1	10
Sulfate	100	97.5		mg/L		98	90 - 110	0	10

Lab Sample ID: MRL 280-428365/3
Matrix: Water
Analysis Batch: 428365

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	2.37	J	mg/L		95	50 - 150
Fluoride	0.200	0.171	J	mg/L		85	50 - 150
Sulfate	2.50	2.18	J	mg/L		87	50 - 150

Lab Sample ID: 280-113270-3 MS
Matrix: Water
Analysis Batch: 428365

Client Sample ID: PNMW-13
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	4.6	F1	50.0	64.8		mg/L		120	80 - 120
Fluoride	1.2	F1	10.0	13.1	E	mg/L		119	80 - 120
Sulfate	43	F1	50.0	107	F1	mg/L		129	80 - 120

Lab Sample ID: 280-113270-3 MSD
Matrix: Water
Analysis Batch: 428365

Client Sample ID: PNMW-13
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	4.6	F1	50.0	66.6	F1	mg/L		124	80 - 120	3	20
Fluoride	1.2	F1	10.0	13.6	E F1	mg/L		124	80 - 120	3	20
Sulfate	43	F1	50.0	111	F1	mg/L		136	80 - 120	3	20

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

Lab Sample ID: 280-113270-3 DU
Matrix: Water
Analysis Batch: 428365

Client Sample ID: PNMW-13
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Chloride	4.6	F1	4.56		mg/L		0.2	15
Fluoride	1.2	F1	1.16		mg/L		0.1	15
Sulfate	43	F1	42.6		mg/L		0.2	15

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

Lab Sample ID: MB 280-426793/1
Matrix: Water
Analysis Batch: 426793

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			08/20/18 09:26	1

Lab Sample ID: LCS 280-426793/2
Matrix: Water
Analysis Batch: 426793

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	500		mg/L		100	86 - 110

Lab Sample ID: LCSD 280-426793/3
Matrix: Water
Analysis Batch: 426793

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)	501	492		mg/L		98	86 - 110	2	20

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

Lab Sample ID: MB 280-426738/1
Matrix: Water
Analysis Batch: 426738

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			08/19/18 13:59	1

Lab Sample ID: LCS 280-426738/2
Matrix: Water
Analysis Batch: 426738

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	106		mg/L		106	86 - 114

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-384527/17-A
Matrix: Water
Analysis Batch: 388837

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384527

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1561		0.0701	0.0715	1.00	0.0646	pCi/L	08/22/18 10:19	09/13/18 09:38	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*102*		*40 - 110*	*08/22/18 10:19*	*09/13/18 09:38*	*1*

Lab Sample ID: LCS 160-384527/1-A
Matrix: Water
Analysis Batch: 388835

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384527

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	12.55		1.28	1.00	0.0711	pCi/L	111	68 - 137		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*90.6*		*40 - 110*

Lab Sample ID: LCSD 160-384527/2-A
Matrix: Water
Analysis Batch: 388835

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 384527

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.4	12.08		1.23	1.00	0.0944	pCi/L	106	68 - 137	0.19	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*92.6*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-384529/17-A
Matrix: Water
Analysis Batch: 385699

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384529

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1108	U	0.212	0.213	1.00	0.362	pCi/L	08/22/18 10:50	08/28/18 09:12	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*102*		*40 - 110*	*08/22/18 10:50*	*08/28/18 09:12*	*1*
Y Carrier	*83.4*		*40 - 110*	*08/22/18 10:50*	*08/28/18 09:12*	*1*

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

Lab Sample ID: LCS 160-384529/1-A
Matrix: Water
Analysis Batch: 385699

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384529

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			11.1	11.82		1.31	1.00	0.393	pCi/L	107	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*90.6*		*40 - 110*
Y Carrier	*91.2*		*40 - 110*

Lab Sample ID: LCSD 160-384529/2-A
Matrix: Water
Analysis Batch: 385699

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 384529

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			11.1	11.27		1.26	1.00	0.359	pCi/L	102	56 - 140	0.21	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*92.6*		*40 - 110*
Y Carrier	*92.0*		*40 - 110*

Metals

Prep Batch: 341993

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113270-1	PNMW-1B	Total Recoverable	Water	3005A	
280-113270-2	PNMW-2B	Total Recoverable	Water	3005A	
280-113270-3	PNMW-13	Total Recoverable	Water	3005A	
280-113270-4	PNMW-14	Total Recoverable	Water	3005A	
280-113270-5	PNMW-15	Total Recoverable	Water	3005A	
280-113270-6	PNMW-16	Total Recoverable	Water	3005A	
280-113270-7	PNMW16DUP	Total Recoverable	Water	3005A	
280-113270-8	PNMW13EB	Total Recoverable	Water	3005A	
MB 240-341993/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-341993/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-341993/3-A	Lab Control Sample	Total Recoverable	Water	3005A	
280-113270-1 MS	PNMW-1B	Total Recoverable	Water	3005A	
280-113270-1 MS	PNMW-1B	Total Recoverable	Water	3005A	
280-113270-1 MSD	PNMW-1B	Total Recoverable	Water	3005A	
280-113270-1 MSD	PNMW-1B	Total Recoverable	Water	3005A	

Analysis Batch: 342286

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113270-1	PNMW-1B	Total Recoverable	Water	6020A	341993
280-113270-2	PNMW-2B	Total Recoverable	Water	6020A	341993
280-113270-3	PNMW-13	Total Recoverable	Water	6020A	341993
280-113270-4	PNMW-14	Total Recoverable	Water	6020A	341993
280-113270-5	PNMW-15	Total Recoverable	Water	6020A	341993
280-113270-6	PNMW-16	Total Recoverable	Water	6020A	341993
280-113270-7	PNMW16DUP	Total Recoverable	Water	6020A	341993
280-113270-8	PNMW13EB	Total Recoverable	Water	6020A	341993
MB 240-341993/1-A	Method Blank	Total Recoverable	Water	6020A	341993
LCS 240-341993/3-A	Lab Control Sample	Total Recoverable	Water	6020A	341993
280-113270-1 MS	PNMW-1B	Total Recoverable	Water	6020A	341993
280-113270-1 MSD	PNMW-1B	Total Recoverable	Water	6020A	341993

Analysis Batch: 342407

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113270-1	PNMW-1B	Total Recoverable	Water	6010C	341993
280-113270-2	PNMW-2B	Total Recoverable	Water	6010C	341993
280-113270-3	PNMW-13	Total Recoverable	Water	6010C	341993
280-113270-4	PNMW-14	Total Recoverable	Water	6010C	341993
280-113270-5	PNMW-15	Total Recoverable	Water	6010C	341993
280-113270-6	PNMW-16	Total Recoverable	Water	6010C	341993
280-113270-7	PNMW16DUP	Total Recoverable	Water	6010C	341993
280-113270-8	PNMW13EB	Total Recoverable	Water	6010C	341993
MB 240-341993/1-A	Method Blank	Total Recoverable	Water	6010C	341993
LCS 240-341993/2-A	Lab Control Sample	Total Recoverable	Water	6010C	341993
280-113270-1 MS	PNMW-1B	Total Recoverable	Water	6010C	341993
280-113270-1 MSD	PNMW-1B	Total Recoverable	Water	6010C	341993

Analysis Batch: 342670

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113270-2	PNMW-2B	Total Recoverable	Water	6020A	341993
280-113270-4	PNMW-14	Total Recoverable	Water	6020A	341993
280-113270-8	PNMW13EB	Total Recoverable	Water	6020A	341993

General Chemistry

Analysis Batch: 426738

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113270-1	PNMW-1B	Total/NA	Water	SM 2540D	
280-113270-2	PNMW-2B	Total/NA	Water	SM 2540D	
280-113270-3	PNMW-13	Total/NA	Water	SM 2540D	
280-113270-4	PNMW-14	Total/NA	Water	SM 2540D	
280-113270-5	PNMW-15	Total/NA	Water	SM 2540D	
280-113270-6	PNMW-16	Total/NA	Water	SM 2540D	
280-113270-7	PNMW16DUP	Total/NA	Water	SM 2540D	
280-113270-8	PNMW13EB	Total/NA	Water	SM 2540D	
MB 280-426738/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-426738/2	Lab Control Sample	Total/NA	Water	SM 2540D	

Analysis Batch: 426793

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113270-1	PNMW-1B	Total/NA	Water	SM 2540C	
280-113270-2	PNMW-2B	Total/NA	Water	SM 2540C	
280-113270-3	PNMW-13	Total/NA	Water	SM 2540C	
280-113270-4	PNMW-14	Total/NA	Water	SM 2540C	
280-113270-5	PNMW-15	Total/NA	Water	SM 2540C	
280-113270-6	PNMW-16	Total/NA	Water	SM 2540C	
280-113270-7	PNMW16DUP	Total/NA	Water	SM 2540C	
280-113270-8	PNMW13EB	Total/NA	Water	SM 2540C	
MB 280-426793/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-426793/2	Lab Control Sample	Total/NA	Water	SM 2540C	
LCSD 280-426793/3	Lab Control Sample Dup	Total/NA	Water	SM 2540C	

Analysis Batch: 427288

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113270-1	PNMW-1B	Total/NA	Water	9040B	
280-113270-2	PNMW-2B	Total/NA	Water	9040B	
280-113270-3	PNMW-13	Total/NA	Water	9040B	
280-113270-4	PNMW-14	Total/NA	Water	9040B	
LCS 280-427288/30	Lab Control Sample	Total/NA	Water	9040B	
LCS 280-427288/55	Lab Control Sample	Total/NA	Water	9040B	
280-113270-1 DU	PNMW-1B	Total/NA	Water	9040B	

Analysis Batch: 428133

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113270-5	PNMW-15	Total/NA	Water	9040B	
LCS 280-428133/4	Lab Control Sample	Total/NA	Water	9040B	
280-113270-5 DU	PNMW-15	Total/NA	Water	9040B	

Analysis Batch: 428299

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113270-6	PNMW-16	Total/NA	Water	9040B	
280-113270-7	PNMW16DUP	Total/NA	Water	9040B	
280-113270-8	PNMW13EB	Total/NA	Water	9040B	
LCS 280-428299/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 428365

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113270-1	PNMW-1B	Total/NA	Water	9056A	

General Chemistry (Continued)

Analysis Batch: 428365 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113270-1	PNMW-1B	Total/NA	Water	9056A	
280-113270-2	PNMW-2B	Total/NA	Water	9056A	
280-113270-3	PNMW-13	Total/NA	Water	9056A	
280-113270-4	PNMW-14	Total/NA	Water	9056A	
280-113270-5	PNMW-15	Total/NA	Water	9056A	
280-113270-5	PNMW-15	Total/NA	Water	9056A	
280-113270-6	PNMW-16	Total/NA	Water	9056A	
280-113270-6	PNMW-16	Total/NA	Water	9056A	
280-113270-7	PNMW16DUP	Total/NA	Water	9056A	
280-113270-7	PNMW16DUP	Total/NA	Water	9056A	
280-113270-8	PNMW13EB	Total/NA	Water	9056A	
MB 280-428365/6	Method Blank	Total/NA	Water	9056A	
LCS 280-428365/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-428365/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-428365/3	Lab Control Sample	Total/NA	Water	9056A	
280-113270-3 MS	PNMW-13	Total/NA	Water	9056A	
280-113270-3 MSD	PNMW-13	Total/NA	Water	9056A	
280-113270-3 DU	PNMW-13	Total/NA	Water	9056A	

Rad

Prep Batch: 384527

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113270-1	PNMW-1B	Total/NA	Water	PrecSep-21	
280-113270-2	PNMW-2B	Total/NA	Water	PrecSep-21	
280-113270-3	PNMW-13	Total/NA	Water	PrecSep-21	
280-113270-4	PNMW-14	Total/NA	Water	PrecSep-21	
280-113270-5	PNMW-15	Total/NA	Water	PrecSep-21	
280-113270-6	PNMW-16	Total/NA	Water	PrecSep-21	
280-113270-7	PNMW16DUP	Total/NA	Water	PrecSep-21	
280-113270-8	PNMW13EB	Total/NA	Water	PrecSep-21	
MB 160-384527/17-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-384527/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-384527/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 384529

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113270-1	PNMW-1B	Total/NA	Water	PrecSep_0	
280-113270-2	PNMW-2B	Total/NA	Water	PrecSep_0	
280-113270-3	PNMW-13	Total/NA	Water	PrecSep_0	
280-113270-4	PNMW-14	Total/NA	Water	PrecSep_0	
280-113270-5	PNMW-15	Total/NA	Water	PrecSep_0	
280-113270-6	PNMW-16	Total/NA	Water	PrecSep_0	
280-113270-7	PNMW16DUP	Total/NA	Water	PrecSep_0	
280-113270-8	PNMW13EB	Total/NA	Water	PrecSep_0	
MB 160-384529/17-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-384529/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-384529/2-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: 280-113270-1

Client Sample ID: PNMW-1B
Date Collected: 08/14/18 10:25
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-1
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	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			342407	08/24/18 14:04	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342286	08/23/18 12:19	DSH	TAL CAN
Total/NA	Analysis	9040B		1			427288	08/22/18 20:26	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	428365	09/02/18 08:43	TLP	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	428365	09/02/18 09:05	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	426793	08/20/18 09:26	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	426738	08/19/18 13:59	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.13 mL	1.0 g	384527	08/22/18 10:19	JLC	TAL SL
Total/NA	Analysis	9315		1			388835	09/13/18 09:35	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.13 mL	1.0 g	384529	08/22/18 10:50	JLC	TAL SL
Total/NA	Analysis	9320		1			385699	08/28/18 09:11	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			388990	09/14/18 02:58	MAR	TAL SL

Client Sample ID: PNMW-2B
Date Collected: 08/13/18 18:45
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-2
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	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			342407	08/24/18 14:26	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342286	08/23/18 12:42	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342670	08/24/18 13:46	DSH	TAL CAN
Total/NA	Analysis	9040B		1			427288	08/22/18 20:06	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	428365	09/02/18 09:28	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	426793	08/20/18 09:26	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	426738	08/19/18 13:59	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.08 mL	1.0 g	384527	08/22/18 10:19	JLC	TAL SL
Total/NA	Analysis	9315		1			388835	09/13/18 09:35	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.08 mL	1.0 g	384529	08/22/18 10:50	JLC	TAL SL
Total/NA	Analysis	9320		1			385699	08/28/18 09:11	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			388990	09/14/18 02:58	MAR	TAL SL

Client Sample ID: PNMW-13
Date Collected: 08/16/18 13:10
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-3
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	341993	08/22/18 14:00	MBB	TAL CAN

Lab Chronicle

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

TestAmerica Job ID: 280-113270-1

Client Sample ID: PNMW-13

Date Collected: 08/16/18 13:10
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Analysis	6010C		1			342407	08/24/18 14:31	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342286	08/23/18 12:56	DSH	TAL CAN
Total/NA	Analysis	9040B		1			427288	08/22/18 20:36	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	428365	09/02/18 09:50	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	426793	08/20/18 09:26	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	15 mL	250 mL	426738	08/19/18 13:59	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			500.31 mL	1.0 g	384527	08/22/18 10:19	JLC	TAL SL
Total/NA	Analysis	9315		1			388835	09/13/18 09:35	CDR	TAL SL
Total/NA	Prep	PrecSep_0			500.31 mL	1.0 g	384529	08/22/18 10:50	JLC	TAL SL
Total/NA	Analysis	9320		1			385699	08/28/18 09:11	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			388990	09/14/18 02:58	MAR	TAL SL

Client Sample ID: PNMW-14

Date Collected: 08/15/18 17:30
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-4

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	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			342407	08/24/18 14:36	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342286	08/23/18 13:00	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342670	08/24/18 13:51	DSH	TAL CAN
Total/NA	Analysis	9040B		1			427288	08/22/18 20:41	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	428365	09/02/18 11:19	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	426793	08/20/18 09:26	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	50 mL	250 mL	426738	08/19/18 13:59	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			500.09 mL	1.0 g	384527	08/22/18 10:19	JLC	TAL SL
Total/NA	Analysis	9315		1			388835	09/13/18 09:36	CDR	TAL SL
Total/NA	Prep	PrecSep_0			500.09 mL	1.0 g	384529	08/22/18 10:50	JLC	TAL SL
Total/NA	Analysis	9320		1			385699	08/28/18 09:11	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			388990	09/14/18 02:58	MAR	TAL SL

Client Sample ID: PNMW-15

Date Collected: 08/13/18 17:15
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-5

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	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			342407	08/24/18 14:40	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341993	08/22/18 14:00	MBB	TAL CAN

Lab Chronicle

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

TestAmerica Job ID: 280-113270-1

Client Sample ID: PNMW-15

Date Collected: 08/13/18 17:15
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Analysis	6020A		1			342286	08/23/18 13:05	DSH	TAL CAN
Total/NA	Analysis	9040B		1			428133	08/28/18 15:40	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	428365	09/02/18 11:41	TLP	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	428365	09/02/18 12:48	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	426793	08/20/18 09:26	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	426738	08/19/18 13:59	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			750.18 mL	1.0 g	384527	08/22/18 10:19	JLC	TAL SL
Total/NA	Analysis	9315		1			388835	09/13/18 09:36	CDR	TAL SL
Total/NA	Prep	PrecSep_0			750.18 mL	1.0 g	384529	08/22/18 10:50	JLC	TAL SL
Total/NA	Analysis	9320		1			385699	08/28/18 09:11	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			388990	09/14/18 02:58	MAR	TAL SL

Client Sample ID: PNMW-16

Date Collected: 08/13/18 12:10
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-6

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	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			342407	08/24/18 14:54	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342286	08/23/18 13:09	DSH	TAL CAN
Total/NA	Analysis	9040B		1			428299	08/31/18 14:35	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	428365	09/02/18 13:10	TLP	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	428365	09/02/18 13:32	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	426793	08/20/18 09:26	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	426738	08/19/18 13:59	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.10 mL	1.0 g	384527	08/22/18 10:19	JLC	TAL SL
Total/NA	Analysis	9315		1			388835	09/13/18 09:36	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.10 mL	1.0 g	384529	08/22/18 10:50	JLC	TAL SL
Total/NA	Analysis	9320		1			385699	08/28/18 09:11	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			388990	09/14/18 02:58	MAR	TAL SL

Client Sample ID: PNMW16DUP

Date Collected: 08/13/18 12:10
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-7

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	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			342407	08/24/18 14:59	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342286	08/23/18 13:14	DSH	TAL CAN
Total/NA	Analysis	9040B		1			428299	08/31/18 14:46	SGB	TAL DEN

Lab Chronicle

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

TestAmerica Job ID: 280-113270-1

Client Sample ID: PNMW16DUP

Date Collected: 08/13/18 12:10
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-7

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	9056A		1	5 mL	5 mL	428365	09/02/18 13:54	TLP	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	428365	09/02/18 14:16	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	426793	08/20/18 09:26	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	426738	08/19/18 13:59	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.21 mL	1.0 g	384527	08/22/18 10:19	JLC	TAL SL
Total/NA	Analysis	9315		1			388835	09/13/18 09:36	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.21 mL	1.0 g	384529	08/22/18 10:50	JLC	TAL SL
Total/NA	Analysis	9320		1			385699	08/28/18 09:11	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			388990	09/14/18 02:58	MAR	TAL SL

Client Sample ID: PNMW13EB

Date Collected: 08/14/18 17:45
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-8

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	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			342407	08/24/18 15:03	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342286	08/23/18 13:18	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342670	08/24/18 13:55	DSH	TAL CAN
Total/NA	Analysis	9040B		1			428299	08/31/18 14:39	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	428365	09/02/18 14:39	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	426793	08/20/18 09:26	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	426738	08/19/18 13:59	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.30 mL	1.0 g	384527	08/22/18 10:19	JLC	TAL SL
Total/NA	Analysis	9315		1			388835	09/13/18 09:36	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.30 mL	1.0 g	384529	08/22/18 10:50	JLC	TAL SL
Total/NA	Analysis	9320		1			385699	08/28/18 09:11	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			388990	09/14/18 02:58	MAR	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: 280-113270-1

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 ELAP		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	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18 *
Minnesota	NELAP	5	039-999-348	12-31-18 *
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	T104704517-17-9	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18 *

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 ELAP		L2305	04-06-19
Arizona	State Program	9	AZ0813	12-08-18
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	11-30-18
Iowa	State Program	7	373	12-01-18
Kansas	NELAP	7	E-10236	10-31-18
Kentucky (DW)	State Program	4	90125	12-31-18
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA180017	12-31-18

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

Client: HDR Inc
TestAmerica Job ID: 280-113270-1
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
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-18 *
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	MO000542016-8	07-31-18 *
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	10-31-18 *

* 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:	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 Suspended Solids	App III - Total Metals: Calcium, Boron	App IV Total Metals (see list)	Ra226/Ra228 combined	Fluoride, Chloride, Sulfate, pH	Total Dissolved Solids	App IV Metals: Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Tl
PNMW-1B	8/14	1025	G	W	7	N	N	X	X	X	X	X	X	
PNMW-2B	8/13	1845	G	W	7	N	N	X	X	X	X	X	X	
PNMW-13	8/15	1555	G	W	7	N	N	X	X	X	X	X	X	
PNMW-14	8/15	1730	G	W	7	N	N	X	X	X	X	X	X	
PNMW-15	8/13	1715	G	W	7	N	N	X	X	X	X	X	X	
PNMW-16	8/13	1210	G	W	7	N	N	X	X	X	X	X	X	
PNMW16 DUP	8/13	1210	G	W	7	N	N	X	X	X	X	X	X	
PNMW13 EB	8/14	1745	G	W	7	N	N	X	X	X	X	X	X	

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: ____ Corr'd: ____	Therm ID No.: ____
Relinquished by:	Company: HDR	Date/Time: 8/16/18 1520	Received by:	Company: CADEN	Date/Time: 8/16/18 1525
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

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: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-451782.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-113270-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 9/12/2018			
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 (280-113270-1)	8/14/18	10:25 Mountain		Water			X	X	X	2	
PNMW-2B (280-113270-2)	8/13/18	18:45 Mountain		Water			X	X	X	2	
PNMW-13 (280-113270-3)	8/16/18	13:10 Mountain		Water			X	X	X	2	
PNMW-14 (280-113270-4)	8/15/18	17:30 Mountain		Water			X	X	X	2	
PNMW-15 (280-113270-5)	8/13/18	17:15 Mountain		Water			X	X	X	2	
PNMW-16 (280-113270-6)	8/13/18	12:10 Mountain		Water			X	X	X	2	
PNMW16DUP (280-113270-7)	8/13/18	12:10 Mountain		Water			X	X	X	2	
PNMW13EB (280-113270-8)	8/14/18	17:45 Mountain		Water			X	X	X	2	
PNMW-17 (280-113270-9)	8/14/18	12:15 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:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Laura Castro	8-20-18 1435	TALDen	[signature]	8.21.18 0920	TA SLC
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 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: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-451782.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-113270-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 9/12/2018			
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-18 (280-113270-10)	8/14/18	15:20 Mountain		Water			X	X	X	2	
PNMW-19 (280-113270-11)	8/15/18	14:45 Mountain		Water			X	X	X	2	
PNMW-20 (280-113270-12)	8/15/18	12:30 Mountain		Water			X	X	X	2	
PNMW17DUP (280-113270-13)	8/14/18	12:15 Mountain		Water			X	X	X	2	
PNMW19EB (280-113270-14)	8/14/18	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	*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
Dana Castro	8-20-18 1435	TALDen	Michael Miller	8.21.18 0920	TASD
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 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: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-451783.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-113270-1
Address: 4101 Shuffel Street NW,	Due Date Requested: 8/29/2018			
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:

S22

Analysis Requested

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)	6020A/FIELD_FLTRD (MOD) 12 Metals	6010C/3005A (MOD) Boron	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
PNMW-1B (280-113270-1)	8/14/18	10:25 Mountain		Water			X	X	X	2	Use Collision Cell
PNMW-2B (280-113270-2)	8/13/18	18:45 Mountain		Water			X	X	X	2	Use Collision Cell
PNMW-13 (280-113270-3)	8/16/18	13:10 Mountain		Water			X	X	X	2	Use Collision Cell
PNMW-14 (280-113270-4)	8/15/18	17:30 Mountain		Water			X	X	X	2	Use Collision Cell
PNMW-15 (280-113270-5)	8/13/18	17:15 Mountain		Water			X	X	X	2	Use Collision Cell
PNMW-16 (280-113270-6)	8/13/18	12:10 Mountain		Water			X	X	X	2	Use Collision Cell
PNMW16DUP (280-113270-7)	8/13/18	12:10 Mountain		Water			X	X	X	2	Use Collision Cell
PNMW13EB (280-113270-8)	8/14/18	17:45 Mountain		Water			X	X	X	2	Use Collision Cell
PNMW-17 (280-113270-9)	8/14/18	12:15 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:

	Date/Time	Company		Date/Time	Company
Relinquished by: [signature]	5.20.18 1430	TA-DEN	Received by: [signature]	8/21/18 945	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: 09/20/2016

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: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-451783.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-113270-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 8/29/2018			
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	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:

S22

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)	6020A/FIELD_FLTRD (MOD) 12 Metals	6010C/3005A (MOD) Boron	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
PNMW-18 (280-113270-10)	8/14/18	15:20 Mountain		Water			X		X	1	Use Collision Cell
PNMW-19 (280-113270-11)	8/15/18	14:45 Mountain		Water			X		X	1	Use Collision Cell
PNMW-20 (280-113270-12)	8/15/18	12:30 Mountain		Water			X		X	1	Use Collision Cell
PNMW17DUP (280-113270-13)	8/14/18	12:15 Mountain		Water			X		X	1	Use Collision Cell
PNMW19EB (280-113270-14)	8/14/18	18:50 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:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	8.20.18 1430	TA-DEN	[signature]	8/21/18 945	TAL
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: 09/20/2016

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

Client TA Denver Site Name _____ Cooler unpacked by:

Cooler Received on 8/21/18 Opened on 8/21/18

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** °C) Observed Cooler Temp. 2.2 °C Corrected Cooler Temp. 2.2 °C
   IR GUN #36 (CF **-0.3**°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# **HC849161**
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): _____

WI-NC-099

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-113270-1

Login Number: 113270
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.	False	Refer to Job Narrative for details.
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: 280-113270-1

Login Number: 113270
List Number: 3
Creator: Hellm, Michael

List Source: TestAmerica St. Louis
List Creation: 08/21/18 01:07 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	18.7, 1.0
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: 280-113270-1

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)
280-113270-1	PNMW-1B	93.8
280-113270-2	PNMW-2B	97.3
280-113270-3	PNMW-13	88.8
280-113270-4	PNMW-14	92.0
280-113270-5	PNMW-15	97.9
280-113270-6	PNMW-16	98.8
280-113270-7	PNMW16DUP	99.4
280-113270-8	PNMW13EB	99.7
LCS 160-384527/1-A	Lab Control Sample	90.6
LCSD 160-384527/2-A	Lab Control Sample Dup	92.6
MB 160-384527/17-A	Method Blank	102

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)
280-113270-1	PNMW-1B	93.8	92.3
280-113270-2	PNMW-2B	97.3	90.5
280-113270-3	PNMW-13	88.8	92.3
280-113270-4	PNMW-14	92.0	93.1
280-113270-5	PNMW-15	97.9	91.2
280-113270-6	PNMW-16	98.8	87.5
280-113270-7	PNMW16DUP	99.4	94.2
280-113270-8	PNMW13EB	99.7	92.7
LCS 160-384529/1-A	Lab Control Sample	90.6	91.2
LCSD 160-384529/2-A	Lab Control Sample Dup	92.6	92.0
MB 160-384529/17-A	Method Blank	102	83.4

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: 280-113270-3
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:
9/28/2018 2:06:38 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: 280-113270-3

Qualifiers

Metals

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.

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.
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.

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: 280-113270-3

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Pawnee

Report Number: 280-113270-3

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 8/16/2018 3:25 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 7 coolers at receipt time were 0.7º C, 0.9º C, 1.3º C, 1.3º C, 2.2º C, 3.2º C and 3.5º C.

TOTAL RECOVERABLE METALS

Samples PNMW-17 (280-113270-9), PNMW-18 (280-113270-10), PNMW-19 (280-113270-11), PNMW-20 (280-113270-12), PNMW17DUP (280-113270-13) and PNMW19EB (280-113270-14) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 08/22/2018 and analyzed on 08/24/2018.

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 (280-113270-9), PNMW-18 (280-113270-10), PNMW-19 (280-113270-11), PNMW-20 (280-113270-12), PNMW17DUP (280-113270-13) and PNMW19EB (280-113270-14) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 08/22/2018 and analyzed on 08/23/2018 and 08/24/2018.

Chromium was detected in method blank MB 240-341993/1-A 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. This compound is considered a common laboratory contaminant. The associated samples were not re-extracted and/or re-analyzed because the concentration of the common lab contaminant in the method blank was less than 2 times the RL, and the SOP allows Chromium up to 2 times the RL in the method blank.

Beryllium, Cadmium and Cobalt were detected in method blank MB 240-341993/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have 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.

Calcium failed the recovery criteria low for the MSD of sample 280-113270-1 in batch 240-342286. 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.

The CCVL read below the acceptance criteria for Lithium; Per our SOP and the 6020A method, the final CCVL is only required when the sample result is at or near the level of the RL. The accepted results were well above the level of the RL and the CCV verifies the results at the reported level. The following sample is associated: PNMW-20 (280-113270-12).

Job ID: 280-113270-3 (Continued)

Laboratory: 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 (280-113270-9), PNMW-18 (280-113270-10), PNMW-19 (280-113270-11), PNMW-20 (280-113270-12), PNMW17DUP (280-113270-13) and PNMW19EB (280-113270-14) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 08/20/2018.

Total Dissolved Solids (TDS) exceeded the RPD limit for the duplicate of sample PNMW19EBDU (280-113270-14). It is noted that the sample and/or sample duplicate were less than 5x the reporting limit. 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 SUSPENDED SOLIDS
Samples PNMW-17 (280-113270-9), PNMW-18 (280-113270-10), PNMW-19 (280-113270-11), PNMW-20 (280-113270-12), PNMW17DUP (280-113270-13) and PNMW19EB (280-113270-14) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 08/19/2018.

Total Suspended Solids exceeded the RPD limit for the duplicate of sample 280-113269-1. It is noted that the sample and/or sample duplicate were less than 5x the reporting limit. 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.

CORROSIVITY (PH)
Samples PNMW-17 (280-113270-9), PNMW-18 (280-113270-10), PNMW-19 (280-113270-11), PNMW-20 (280-113270-12), PNMW17DUP (280-113270-13) and PNMW19EB (280-113270-14) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 08/21/2018, 08/28/2018, 08/31/2018 and 09/06/2018.

The following sample failed to reach constant pH after three replicates: PNMW-18 (280-113270-10). Results are confirmed in batches 426805, 427029, and 427068.

The following sample failed to reach constant pH after three replicates: PNMW19EB (280-113270-14). Results are confirmed in batches 427419, and 427068.

Sample duplicate did not converge to constant pH after three measurements. Parent sample pH reported. (280-113270-C-10 DU)

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 (280-113270-9), PNMW-18 (280-113270-10), PNMW-19 (280-113270-11), PNMW-20 (280-113270-12), PNMW17DUP (280-113270-13) and PNMW19EB (280-113270-14) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 09/02/2018 and 09/06/2018.

Sulfate failed the recovery criteria high for the MS of sample 280-113270-3 in batch 280-428365. Chloride, Fluoride and Sulfate failed the recovery criteria high for the MSD of sample 280-113270-3 in batch 280-428365. Refer to the QC report for details.

Samples PNMW-17 (280-113270-9)[10X], PNMW-18 (280-113270-10)[10X], PNMW-20 (280-113270-12)[100X], PNMW-20 (280-113270-12)[5X] and PNMW17DUP (280-113270-13)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

RADIUM-226 (GFPC)
Samples PNMW-17 (280-113270-9), PNMW-18 (280-113270-10), PNMW-19 (280-113270-11), PNMW-20 (280-113270-12), PNMW17DUP (280-113270-13) and PNMW19EB (280-113270-14) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The

Job ID: 280-113270-3 (Continued)

Laboratory: TestAmerica Denver (Continued)

samples were prepared on 08/22/2018 and analyzed on 09/13/2018.

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: PNMW-17 (280-113270-9), PNMW-18 (280-113270-10), PNMW-19 (280-113270-11), PNMW-20 (280-113270-12), PNMW17DUP (280-113270-13) and PNMW19EB (280-113270-14). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

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

RADIUM-228

Samples PNMW-17 (280-113270-9), PNMW-18 (280-113270-10), PNMW-19 (280-113270-11), PNMW-20 (280-113270-12), PNMW17DUP (280-113270-13) and PNMW19EB (280-113270-14) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 08/22/2018 and analyzed on 08/28/2018.

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: PNMW-17 (280-113270-9), PNMW-18 (280-113270-10), PNMW-19 (280-113270-11), PNMW-20 (280-113270-12), PNMW17DUP (280-113270-13) and PNMW19EB (280-113270-14). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

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 (280-113270-9), PNMW-18 (280-113270-10), PNMW-19 (280-113270-11), PNMW-20 (280-113270-12), PNMW17DUP (280-113270-13) and PNMW19EB (280-113270-14) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 09/14/2018.

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: 280-113270-3

Client Sample ID: PNMW-17 — Lab Sample ID: 280-113270-9

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
Barium	0.078		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cobalt	0.00038	J B	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0078	B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Selenium	0.020		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.037		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Calcium	260		1.0	0.58	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	18.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	360		30	2.5	mg/L	10		9056A	Total/NA
Fluoride	0.18	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	590		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	1600		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-18 — Lab Sample ID: 280-113270-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.14		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.047		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cobalt	0.00036	J B	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0032	B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0015	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	0.031		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Calcium	210		1.0	0.58	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	19.7	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	270		30	2.5	mg/L	10		9056A	Total/NA
Fluoride	0.30	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	680		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	1600		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

Client Sample ID: PNMW-19 — Lab Sample ID: 280-113270-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.030	J	0.10	0.023	mg/L	1		6010C	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: 280-113270-3

Client Sample ID: PNMW-19 (Continued) — Lab Sample ID: 280-113270-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.33		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cobalt	0.00023	J B	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0035	B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0015	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	0.024		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Calcium	95		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.0	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.7	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	34		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.29	J	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)	450		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	2.8	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-20 — Lab Sample ID: 280-113270-12

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
Barium	0.018		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cobalt	0.00072	J B	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0046	B	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	0.0078		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.064		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Calcium	470		1.0	0.58	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	19.8	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	510		15	1.3	mg/L	5		9056A	Total/NA
Sulfate	4600		500	23	mg/L	100		9056A	Total/NA
Total Dissolved Solids (TDS)	8500		100	47	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	24		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW17DUP — Lab Sample ID: 280-113270-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.58		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.076		0.0050	0.0022	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: PNMW17DUP (Continued)

Lab Sample ID: 280-113270-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	0.00040	J B	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0075	B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Selenium	0.019		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.037		0.0080	0.0017	mg/L	1		6020A	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	19.9	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	360		30	2.5	mg/L	10		9056A	Total/NA
Fluoride	0.18	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	590		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	1600		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	32		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW19EB

Lab Sample ID: 280-113270-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.0024	B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	5.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.7	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Total Dissolved Solids (TDS)	13		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	2.0	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: 280-113270-3

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 = 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: 280-113270-3

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-113270-9	PNMW-17	Water	08/14/18 12:15	08/16/18 15:25
280-113270-10	PNMW-18	Water	08/14/18 15:20	08/16/18 15:25
280-113270-11	PNMW-19	Water	08/15/18 14:45	08/16/18 15:25
280-113270-12	PNMW-20	Water	08/15/18 12:30	08/16/18 15:25
280-113270-13	PNMW17DUP	Water	08/14/18 12:15	08/16/18 15:25
280-113270-14	PNMW19EB	Water	08/14/18 18:50	08/16/18 15:25

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

Client Sample ID: PNMW-17
Date Collected: 08/14/18 12:15
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.60**		0.10	0.023	mg/L		08/22/18 14:00	08/24/18 15:08	1

Client Sample ID: PNMW-18
Date Collected: 08/14/18 15:20
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-10
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.14**		0.10	0.023	mg/L		08/22/18 14:00	08/24/18 15:13	1

Client Sample ID: PNMW-19
Date Collected: 08/15/18 14:45
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-11
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.030**	**J**	0.10	0.023	mg/L		08/22/18 14:00	08/24/18 15:18	1

Client Sample ID: PNMW-20
Date Collected: 08/15/18 12:30
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-12
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**1.9**		0.10	0.023	mg/L		08/22/18 14:00	08/24/18 15:22	1

Client Sample ID: PNMW17DUP
Date Collected: 08/14/18 12:15
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-13
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.58**		0.10	0.023	mg/L		08/22/18 14:00	08/24/18 15:27	1

Client Sample ID: PNMW19EB
Date Collected: 08/14/18 18:50
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-14
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		08/22/18 14:00	08/24/18 15:32	1

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

Client Sample ID: PNMW-17
Date Collected: 08/14/18 12:15
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/22/18 14:00	08/23/18 13:23	1
Arsenic	ND		0.0050	0.00075	mg/L		08/22/18 14:00	08/23/18 13:23	1
Barium	**0.078**		0.0050	0.0022	mg/L		08/22/18 14:00	08/23/18 13:23	1
Beryllium	ND		0.0010	0.00031	mg/L		08/22/18 14:00	08/23/18 13:23	1
Cadmium	ND		0.0010	0.00021	mg/L		08/22/18 14:00	08/23/18 13:23	1
Cobalt	**0.00038**	**J B**	0.0010	0.00019	mg/L		08/22/18 14:00	08/23/18 13:23	1
Chromium	**0.0078**	**B**	0.0020	0.00098	mg/L		08/22/18 14:00	08/23/18 13:23	1
Molybdenum	ND		0.010	0.0011	mg/L		08/22/18 14:00	08/23/18 13:23	1
Lead	ND		0.0010	0.00045	mg/L		08/22/18 14:00	08/23/18 13:23	1
Selenium	**0.020**		0.0050	0.00089	mg/L		08/22/18 14:00	08/23/18 13:23	1
Thallium	ND		0.0010	0.00020	mg/L		08/22/18 14:00	08/23/18 13:23	1
Lithium	**0.037**		0.0080	0.0017	mg/L		08/22/18 14:00	08/24/18 14:00	1
Calcium	**260**		1.0	0.58	mg/L		08/22/18 14:00	08/23/18 13:23	1

Client Sample ID: PNMW-18
Date Collected: 08/14/18 15:20
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-10
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/22/18 14:00	08/23/18 13:27	1
Arsenic	ND		0.0050	0.00075	mg/L		08/22/18 14:00	08/23/18 13:27	1
Barium	**0.047**		0.0050	0.0022	mg/L		08/22/18 14:00	08/23/18 13:27	1
Beryllium	ND		0.0010	0.00031	mg/L		08/22/18 14:00	08/23/18 13:27	1
Cadmium	ND		0.0010	0.00021	mg/L		08/22/18 14:00	08/23/18 13:27	1
Cobalt	**0.00036**	**J B**	0.0010	0.00019	mg/L		08/22/18 14:00	08/23/18 13:27	1
Chromium	**0.0032**	**B**	0.0020	0.00098	mg/L		08/22/18 14:00	08/23/18 13:27	1
Molybdenum	**0.0015**	**J**	0.010	0.0011	mg/L		08/22/18 14:00	08/23/18 13:27	1
Lead	ND		0.0010	0.00045	mg/L		08/22/18 14:00	08/23/18 13:27	1
Selenium	**0.0020**	**J**	0.0050	0.00089	mg/L		08/22/18 14:00	08/23/18 13:27	1
Thallium	ND		0.0010	0.00020	mg/L		08/22/18 14:00	08/23/18 13:27	1
Lithium	**0.031**		0.0080	0.0017	mg/L		08/22/18 14:00	08/24/18 14:13	1
Calcium	**210**		1.0	0.58	mg/L		08/22/18 14:00	08/23/18 13:27	1

Client Sample ID: PNMW-19
Date Collected: 08/15/18 14:45
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-11
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/22/18 14:00	08/23/18 13:32	1
Arsenic	ND		0.0050	0.00075	mg/L		08/22/18 14:00	08/23/18 13:32	1
Barium	**0.33**		0.0050	0.0022	mg/L		08/22/18 14:00	08/23/18 13:32	1
Beryllium	ND		0.0010	0.00031	mg/L		08/22/18 14:00	08/23/18 13:32	1
Cadmium	ND		0.0010	0.00021	mg/L		08/22/18 14:00	08/23/18 13:32	1
Cobalt	**0.00023**	**J B**	0.0010	0.00019	mg/L		08/22/18 14:00	08/23/18 13:32	1
Chromium	**0.0035**	**B**	0.0020	0.00098	mg/L		08/22/18 14:00	08/23/18 13:32	1
Molybdenum	**0.0015**	**J**	0.010	0.0011	mg/L		08/22/18 14:00	08/23/18 13:32	1
Lead	ND		0.0010	0.00045	mg/L		08/22/18 14:00	08/23/18 13:32	1
Selenium	**0.0023**	**J**	0.0050	0.00089	mg/L		08/22/18 14:00	08/23/18 13:32	1
Thallium	ND		0.0010	0.00020	mg/L		08/22/18 14:00	08/23/18 13:32	1
Lithium	**0.024**		0.0080	0.0017	mg/L		08/22/18 14:00	08/24/18 14:18	1
Calcium	**95**		1.0	0.58	mg/L		08/22/18 14:00	08/23/18 13:32	1

Client Sample ID: PNMW-20
Date Collected: 08/15/18 12:30
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-12
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/22/18 14:00	08/23/18 13:36	1
Arsenic	ND		0.0050	0.00075	mg/L		08/22/18 14:00	08/23/18 13:36	1
Barium	**0.018**		0.0050	0.0022	mg/L		08/22/18 14:00	08/23/18 13:36	1
Beryllium	ND		0.0010	0.00031	mg/L		08/22/18 14:00	08/23/18 13:36	1
Cadmium	ND		0.0010	0.00021	mg/L		08/22/18 14:00	08/23/18 13:36	1
Cobalt	**0.00072**	**J B**	0.0010	0.00019	mg/L		08/22/18 14:00	08/23/18 13:36	1
Chromium	**0.0046**	**B**	0.0020	0.00098	mg/L		08/22/18 14:00	08/23/18 13:36	1
Molybdenum	**0.0014**	**J**	0.010	0.0011	mg/L		08/22/18 14:00	08/23/18 13:36	1
Lead	ND		0.0010	0.00045	mg/L		08/22/18 14:00	08/23/18 13:36	1
Selenium	**0.0078**		0.0050	0.00089	mg/L		08/22/18 14:00	08/23/18 13:36	1
Thallium	ND		0.0010	0.00020	mg/L		08/22/18 14:00	08/23/18 13:36	1
Lithium	**0.064**		0.0080	0.0017	mg/L		08/22/18 14:00	08/23/18 13:36	1
Calcium	**470**		1.0	0.58	mg/L		08/22/18 14:00	08/23/18 13:36	1

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

Client Sample ID: PNMW17DUP
Date Collected: 08/14/18 12:15
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-13
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/22/18 14:00	08/23/18 13:49	1
Arsenic	ND		0.0050	0.00075	mg/L		08/22/18 14:00	08/23/18 13:49	1
Barium	**0.076**		0.0050	0.0022	mg/L		08/22/18 14:00	08/23/18 13:49	1
Beryllium	ND		0.0010	0.00031	mg/L		08/22/18 14:00	08/23/18 13:49	1
Cadmium	ND		0.0010	0.00021	mg/L		08/22/18 14:00	08/23/18 13:49	1
Cobalt	**0.00040**	**J B**	0.0010	0.00019	mg/L		08/22/18 14:00	08/23/18 13:49	1
Chromium	**0.0075**	**B**	0.0020	0.00098	mg/L		08/22/18 14:00	08/23/18 13:49	1
Molybdenum	ND		0.010	0.0011	mg/L		08/22/18 14:00	08/23/18 13:49	1
Lead	ND		0.0010	0.00045	mg/L		08/22/18 14:00	08/23/18 13:49	1
Selenium	**0.019**		0.0050	0.00089	mg/L		08/22/18 14:00	08/23/18 13:49	1
Thallium	ND		0.0010	0.00020	mg/L		08/22/18 14:00	08/23/18 13:49	1
Lithium	**0.037**		0.0080	0.0017	mg/L		08/22/18 14:00	08/24/18 14:23	1
Calcium	**260**		1.0	0.58	mg/L		08/22/18 14:00	08/23/18 13:49	1

Client Sample ID: PNMW19EB
Date Collected: 08/14/18 18:50
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-14
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/22/18 14:00	08/23/18 13:54	1
Arsenic	ND		0.0050	0.00075	mg/L		08/22/18 14:00	08/23/18 13:54	1
Barium	ND		0.0050	0.0022	mg/L		08/22/18 14:00	08/23/18 13:54	1
Beryllium	ND		0.0010	0.00031	mg/L		08/22/18 14:00	08/23/18 13:54	1
Cadmium	ND		0.0010	0.00021	mg/L		08/22/18 14:00	08/23/18 13:54	1
Cobalt	ND		0.0010	0.00019	mg/L		08/22/18 14:00	08/23/18 13:54	1
Chromium	**0.0024**	**B**	0.0020	0.00098	mg/L		08/22/18 14:00	08/23/18 13:54	1
Molybdenum	ND		0.010	0.0011	mg/L		08/22/18 14:00	08/23/18 13:54	1
Lead	ND		0.0010	0.00045	mg/L		08/22/18 14:00	08/23/18 13:54	1
Selenium	ND		0.0050	0.00089	mg/L		08/22/18 14:00	08/23/18 13:54	1
Thallium	ND		0.0010	0.00020	mg/L		08/22/18 14:00	08/23/18 13:54	1
Lithium	ND		0.0080	0.0017	mg/L		08/22/18 14:00	08/24/18 14:27	1
Calcium	ND		1.0	0.58	mg/L		08/22/18 14:00	08/23/18 13:54	1

General Chemistry

Client Sample ID: PNMW-17
Date Collected: 08/14/18 12:15
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-9
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			08/28/18 16:13	1
Temperature	**18.0**	**HF**	1.0	1.0	Degrees C			08/28/18 16:13	1
Chloride	**360**		30	2.5	mg/L			09/02/18 15:23	10
Fluoride	**0.18**	**J**	0.50	0.060	mg/L			09/02/18 15:01	1
Sulfate	**590**		50	2.3	mg/L			09/02/18 15:23	10
Total Dissolved Solids (TDS)	**1600**		20	9.4	mg/L			08/20/18 09:26	1
Total Suspended Solids	**5.6**		4.0	1.1	mg/L			08/19/18 13:59	1

General Chemistry

Client Sample ID: PNMW-18
Date Collected: 08/14/18 15:20
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-10
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			08/31/18 14:15	1
Temperature	19.7	HF	1.0	1.0	Degrees C			08/31/18 14:15	1
Chloride	270		30	2.5	mg/L			09/02/18 16:07	10
Fluoride	0.30	J	0.50	0.060	mg/L			09/02/18 15:45	1
Sulfate	680		50	2.3	mg/L			09/02/18 16:07	10
Total Dissolved Solids (TDS)	1600		20	9.4	mg/L			08/20/18 09:26	1
Total Suspended Solids	16		4.0	1.1	mg/L			08/19/18 13:59	1

Client Sample ID: PNMW-19
Date Collected: 08/15/18 14:45
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-11
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			08/21/18 20:25	1
Temperature	19.7	HF	1.0	1.0	Degrees C			08/21/18 20:25	1
Chloride	34		3.0	0.25	mg/L			09/02/18 17:14	1
Fluoride	0.29	J	0.50	0.060	mg/L			09/02/18 17:14	1
Sulfate	77		5.0	0.23	mg/L			09/02/18 17:14	1
Total Dissolved Solids (TDS)	450		10	4.7	mg/L			08/20/18 09:26	1
Total Suspended Solids	2.8	J	4.0	1.1	mg/L			08/19/18 13:59	1

Client Sample ID: PNMW-20
Date Collected: 08/15/18 12:30
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-12
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			08/21/18 20:30	1
Temperature	19.8	HF	1.0	1.0	Degrees C			08/21/18 20:30	1
Chloride	510		15	1.3	mg/L			09/06/18 02:42	5
Fluoride	ND		2.5	0.30	mg/L			09/06/18 02:42	5
Sulfate	4600		500	23	mg/L			09/06/18 03:04	100
Total Dissolved Solids (TDS)	8500		100	47	mg/L			08/20/18 09:26	1
Total Suspended Solids	24		4.0	1.1	mg/L			08/19/18 13:59	1

Client Sample ID: PNMW17DUP
Date Collected: 08/14/18 12:15
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-13
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			08/21/18 20:34	1
Temperature	19.9	HF	1.0	1.0	Degrees C			08/21/18 20:34	1
Chloride	360		30	2.5	mg/L			09/02/18 19:50	10
Fluoride	0.18	J	0.50	0.060	mg/L			09/02/18 19:27	1
Sulfate	590		50	2.3	mg/L			09/02/18 19:50	10
Total Dissolved Solids (TDS)	1600		20	9.4	mg/L			08/20/18 09:26	1
Total Suspended Solids	32		4.0	1.1	mg/L			08/19/18 13:59	1

Client Sample ID: PNMW19EB
Date Collected: 08/14/18 18:50
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-14
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	5.8	HF	0.1	0.1	SU			09/06/18 16:44	1
Temperature	19.7	HF	1.0	1.0	Degrees C			09/06/18 16:44	1

General Chemistry (Continued)

Client Sample ID: PNMW19EB
Date Collected: 08/14/18 18:50
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-14
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			09/02/18 20:12	1
Fluoride	ND		0.50	0.060	mg/L			09/02/18 20:12	1
Sulfate	ND		5.0	0.23	mg/L			09/02/18 20:12	1
Total Dissolved Solids (TDS)	**13**		10	4.7	mg/L			08/20/18 09:26	1
Total Suspended Solids	**2.0**	**J**	4.0	1.1	mg/L			08/19/18 13:59	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: PNMW-17
Date Collected: 08/14/18 12:15
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.370**		0.102	0.107	1.00	0.0749	pCi/L	08/22/18 10:19	09/13/18 09:36	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.8*		*40 - 110*	*08/22/18 10:19*	*09/13/18 09:36*	*1*

Client Sample ID: PNMW-18
Date Collected: 08/14/18 15:20
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-10
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.251**		0.0898	0.0926	1.00	0.0878	pCi/L	08/22/18 10:19	09/13/18 09:36	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.2*		*40 - 110*	*08/22/18 10:19*	*09/13/18 09:36*	*1*

Client Sample ID: PNMW-19
Date Collected: 08/15/18 14:45
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-11
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.577**		0.131	0.141	1.00	0.0901	pCi/L	08/22/18 10:19	09/13/18 09:36	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.8*		*40 - 110*	*08/22/18 10:19*	*09/13/18 09:36*	*1*

Client Sample ID: PNMW-20
Date Collected: 08/15/18 12:30
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-12
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.229**		0.0868	0.0892	1.00	0.0743	pCi/L	08/22/18 10:19	09/13/18 09:38	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*99.1*		*40 - 110*	*08/22/18 10:19*	*09/13/18 09:38*	*1*

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: PNMW17DUP
Date Collected: 08/14/18 12:15
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-13
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.373**		0.0984	0.104	1.00	0.0608	pCi/L	08/22/18 10:19	09/13/18 09:38	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.6*		*40 - 110*	*08/22/18 10:19*	*09/13/18 09:38*	*1*

Client Sample ID: PNMW19EB
Date Collected: 08/14/18 18:50
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-14
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.115**		0.0654	0.0662	1.00	0.0703	pCi/L	08/22/18 10:19	09/13/18 09:38	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.8*		*40 - 110*	*08/22/18 10:19*	*09/13/18 09:38*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: PNMW-17
Date Collected: 08/14/18 12:15
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.197	U	0.192	0.193	1.00	0.310	pCi/L	08/22/18 10:50	08/28/18 09:12	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.8*		*40 - 110*	*08/22/18 10:50*	*08/28/18 09:12*	*1*
Y Carrier	*93.1*		*40 - 110*	*08/22/18 10:50*	*08/28/18 09:12*	*1*

Client Sample ID: PNMW-18
Date Collected: 08/14/18 15:20
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-10
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.385**		0.238	0.240	1.00	0.362	pCi/L	08/22/18 10:50	08/28/18 09:12	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.2*		*40 - 110*	*08/22/18 10:50*	*08/28/18 09:12*	*1*
Y Carrier	*88.6*		*40 - 110*	*08/22/18 10:50*	*08/28/18 09:12*	*1*

Client Sample ID: PNMW-19
Date Collected: 08/15/18 14:45
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-11
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.367**		0.232	0.234	1.00	0.355	pCi/L	08/22/18 10:50	08/28/18 09:12	1

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

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	93.8		40 - 110	08/22/18 10:50	08/28/18 09:12	1
Y Carrier	92.0		40 - 110	08/22/18 10:50	08/28/18 09:12	1

Client Sample ID: PNMW-20
Date Collected: 08/15/18 12:30
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-12
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.567**		0.216	0.222	1.00	0.289	pCi/L	08/22/18 10:50	08/28/18 09:12	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	99.1		40 - 110	08/22/18 10:50	08/28/18 09:12	1
Y Carrier	93.8		40 - 110	08/22/18 10:50	08/28/18 09:12	1

Client Sample ID: PNMW17DUP
Date Collected: 08/14/18 12:15
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-13
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.392**		0.208	0.211	1.00	0.305	pCi/L	08/22/18 10:50	08/28/18 09:12	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	97.6		40 - 110	08/22/18 10:50	08/28/18 09:12	1
Y Carrier	94.2		40 - 110	08/22/18 10:50	08/28/18 09:12	1

Client Sample ID: PNMW19EB
Date Collected: 08/14/18 18:50
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-14
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.254	U	0.217	0.218	1.00	0.345	pCi/L	08/22/18 10:50	08/28/18 09:12	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	93.8		40 - 110	08/22/18 10:50	08/28/18 09:12	1
Y Carrier	89.7		40 - 110	08/22/18 10:50	08/28/18 09:12	1

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

Client Sample ID: PNMW-17
Date Collected: 08/14/18 12:15
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.566**		0.217	0.221	5.00	0.310	pCi/L		09/14/18 02:58	1

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

Client Sample ID: PNMW-18
Date Collected: 08/14/18 15:20
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-10
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.636		0.254	0.257	5.00	0.362	pCi/L		09/14/18 02:58	1

Client Sample ID: PNMW-19
Date Collected: 08/15/18 14:45
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-11
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.945		0.266	0.273	5.00	0.355	pCi/L		09/14/18 02:58	1

Client Sample ID: PNMW-20
Date Collected: 08/15/18 12:30
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-12
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.796		0.233	0.239	5.00	0.289	pCi/L		09/14/18 02:58	1

Client Sample ID: PNMW17DUP
Date Collected: 08/14/18 12:15
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-13
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.765		0.230	0.235	5.00	0.305	pCi/L		09/14/18 02:58	1

Client Sample ID: PNMW19EB
Date Collected: 08/14/18 18:50
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-14
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.369		0.227	0.228	5.00	0.345	pCi/L		09/14/18 02:58	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-341993/1-A
Matrix: Water
Analysis Batch: 342407

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 341993

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		08/22/18 14:00	08/24/18 13:41	1

Lab Sample ID: LCS 240-341993/2-A
Matrix: Water
Analysis Batch: 342407

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 341993

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.12		mg/L		112	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-341993/1-A
Matrix: Water
Analysis Batch: 342286

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 341993

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/22/18 14:00	08/23/18 12:10	1
Arsenic	ND		0.0050	0.00075	mg/L		08/22/18 14:00	08/23/18 12:10	1
Barium	ND		0.0050	0.0022	mg/L		08/22/18 14:00	08/23/18 12:10	1
Beryllium	0.000845	J	0.0010	0.00031	mg/L		08/22/18 14:00	08/23/18 12:10	1
Cadmium	0.000229	J	0.0010	0.00021	mg/L		08/22/18 14:00	08/23/18 12:10	1
Cobalt	0.000384	J	0.0010	0.00019	mg/L		08/22/18 14:00	08/23/18 12:10	1
Chromium	0.00303		0.0020	0.00098	mg/L		08/22/18 14:00	08/23/18 12:10	1
Molybdenum	ND		0.010	0.0011	mg/L		08/22/18 14:00	08/23/18 12:10	1
Lead	ND		0.0010	0.00045	mg/L		08/22/18 14:00	08/23/18 12:10	1
Selenium	ND		0.0050	0.00089	mg/L		08/22/18 14:00	08/23/18 12:10	1
Thallium	ND		0.0010	0.00020	mg/L		08/22/18 14:00	08/23/18 12:10	1
Lithium	ND		0.0080	0.0017	mg/L		08/22/18 14:00	08/23/18 12:10	1
Calcium	ND		1.0	0.58	mg/L		08/22/18 14:00	08/23/18 12:10	1

Lab Sample ID: LCS 240-341993/3-A
Matrix: Water
Analysis Batch: 342286

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 341993

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0998		mg/L		100	80 - 120
Arsenic	1.00	0.990		mg/L		99	80 - 120
Barium	1.00	0.999		mg/L		100	80 - 120
Beryllium	1.00	0.943		mg/L		94	80 - 120
Cadmium	1.00	0.996		mg/L		100	80 - 120
Cobalt	1.00	1.05		mg/L		105	80 - 120
Chromium	1.00	1.02		mg/L		102	80 - 120
Molybdenum	0.100	0.100		mg/L		100	80 - 120
Lead	1.00	1.01		mg/L		101	80 - 120
Selenium	1.00	1.01		mg/L		101	80 - 120
Thallium	0.250	0.250		mg/L		100	80 - 120
Lithium	0.100	0.0956		mg/L		96	80 - 120
Calcium	10.0	10.6		mg/L		106	80 - 120

Method: 9040B - pH

Lab Sample ID: LCS 280-428133/4
Matrix: Water
Analysis Batch: 428133

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 280-428299/4
Matrix: Water
Analysis Batch: 428299

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: 280-113270-10 DU
Matrix: Water
Analysis Batch: 428299

Client Sample ID: PNMW-18
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	7.8		SU		2	5
Temperature	19.7	HF	20.4		Degrees C		3	10

Lab Sample ID: LCS 280-428861/4
Matrix: Water
Analysis Batch: 428861

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: 280-113270-14 DU
Matrix: Water
Analysis Batch: 428861

Client Sample ID: PNMW19EB
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH adj. to 25 deg C	5.8	HF	5.8		SU		0	5
Temperature	19.7	HF	19.1		Degrees C		3	10

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-428365/6
Matrix: Water
Analysis Batch: 428365

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			09/02/18 04:26	1
Fluoride	ND		0.50	0.060	mg/L			09/02/18 04:26	1
Sulfate	ND		5.0	0.23	mg/L			09/02/18 04:26	1

Lab Sample ID: LCS 280-428365/4
Matrix: Water
Analysis Batch: 428365

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	98.5		mg/L		99	90 - 110

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

Lab Sample ID: LCS 280-428365/4
Matrix: Water
Analysis Batch: 428365

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	5.05		mg/L		101	90 - 110
Sulfate	100	97.6		mg/L		98	90 - 110

Lab Sample ID: LCSD 280-428365/5
Matrix: Water
Analysis Batch: 428365

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	98.6		mg/L		99	90 - 110	0	10
Fluoride	5.00	5.08		mg/L		102	90 - 110	1	10
Sulfate	100	97.5		mg/L		98	90 - 110	0	10

Lab Sample ID: MRL 280-428365/3
Matrix: Water
Analysis Batch: 428365

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	2.37	J	mg/L		95	50 - 150
Fluoride	0.200	0.171	J	mg/L		85	50 - 150
Sulfate	2.50	2.18	J	mg/L		87	50 - 150

Lab Sample ID: 280-113270-11 MS
Matrix: Water
Analysis Batch: 428365

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
Chloride	34		25.0	60.1		mg/L		103	80 - 120
Fluoride	0.29	J	5.00	5.36		mg/L		101	80 - 120
Sulfate	77		25.0	101		mg/L		96	80 - 120

Lab Sample ID: 280-113270-11 MSD
Matrix: Water
Analysis Batch: 428365

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
Chloride	34		25.0	60.9		mg/L		106	80 - 120	1	20
Fluoride	0.29	J	5.00	5.53		mg/L		105	80 - 120	3	20
Sulfate	77		25.0	102		mg/L		99	80 - 120	1	20

Lab Sample ID: 280-113270-11 DU
Matrix: Water
Analysis Batch: 428365

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

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Chloride	34		34.4		mg/L		0.3	15
Fluoride	0.29	J	0.300	J	mg/L		2	15
Sulfate	77		77.1		mg/L		0.2	15

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

Lab Sample ID: MB 280-428605/6
Matrix: Water
Analysis Batch: 428605

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			09/05/18 17:56	1
Fluoride	ND		0.50	0.060	mg/L			09/05/18 17:56	1
Sulfate	ND		5.0	0.23	mg/L			09/05/18 17:56	1

Lab Sample ID: LCS 280-428605/4
Matrix: Water
Analysis Batch: 428605

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	99.2		mg/L		99	90 - 110
Fluoride	5.00	5.21		mg/L		104	90 - 110
Sulfate	100	98.4		mg/L		98	90 - 110

Lab Sample ID: LCSD 280-428605/5
Matrix: Water
Analysis Batch: 428605

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	99.3		mg/L		99	90 - 110	0	10
Fluoride	5.00	5.21		mg/L		104	90 - 110	0	10
Sulfate	100	98.4		mg/L		98	90 - 110	0	10

Lab Sample ID: MRL 280-428605/3
Matrix: Water
Analysis Batch: 428605

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	2.43	J	mg/L		97	50 - 150
Fluoride	0.200	0.154	J	mg/L		77	50 - 150
Sulfate	2.50	2.34	J	mg/L		93	50 - 150

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

Lab Sample ID: MB 280-426793/1
Matrix: Water
Analysis Batch: 426793

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			08/20/18 09:26	1

Lab Sample ID: LCS 280-426793/2
Matrix: Water
Analysis Batch: 426793

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	500		mg/L		100	86 - 110

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

Lab Sample ID: LCSD 280-426793/3
Matrix: Water
Analysis Batch: 426793

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)			501	492		mg/L		98	86 - 110	2	20

Lab Sample ID: 280-113270-14 DU
Matrix: Water
Analysis Batch: 426793

Client Sample ID: PNMW19EB
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids (TDS)	13			15.0	F5	mg/L				14	10

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

Lab Sample ID: MB 280-426738/1
Matrix: Water
Analysis Batch: 426738

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			08/19/18 13:59	1

Lab Sample ID: LCS 280-426738/2
Matrix: Water
Analysis Batch: 426738

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	106		mg/L		106	86 - 114		

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-384527/17-A
Matrix: Water
Analysis Batch: 388837

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384527

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1561		0.0701	0.0715	1.00	0.0646	pCi/L	08/22/18 10:19	09/13/18 09:38	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*102*		*40 - 110*	*08/22/18 10:19*	*09/13/18 09:38*	*1*

Lab Sample ID: LCS 160-384527/1-A
Matrix: Water
Analysis Batch: 388835

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384527

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	12.55		1.28	1.00	0.0711	pCi/L	111	68 - 137		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*90.6*		*40 - 110*

Lab Sample ID: LCSD 160-384527/2-A
Matrix: Water
Analysis Batch: 388835

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 384527

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.4	12.08		1.23	1.00	0.0944	pCi/L	106	68 - 137	0.19	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*92.6*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-384529/17-A
Matrix: Water
Analysis Batch: 385699

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384529

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1108	U	0.212	0.213	1.00	0.362	pCi/L	08/22/18 10:50	08/28/18 09:12	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*102*		*40 - 110*	*08/22/18 10:50*	*08/28/18 09:12*	*1*
Y Carrier	*83.4*		*40 - 110*	*08/22/18 10:50*	*08/28/18 09:12*	*1*

Lab Sample ID: LCS 160-384529/1-A
Matrix: Water
Analysis Batch: 385699

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384529

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			11.1	11.82		1.31	1.00	0.393	pCi/L	107	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*90.6*		*40 - 110*
Y Carrier	*91.2*		*40 - 110*

Lab Sample ID: LCSD 160-384529/2-A
Matrix: Water
Analysis Batch: 385699

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 384529

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			11.1	11.27		1.26	1.00	0.359	pCi/L	102	56 - 140	0.21	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*92.6*		*40 - 110*
Y Carrier	*92.0*		*40 - 110*

Metals

Prep Batch: 341993

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113270-9	PNMW-17	Total Recoverable	Water	3005A	
280-113270-10	PNMW-18	Total Recoverable	Water	3005A	
280-113270-11	PNMW-19	Total Recoverable	Water	3005A	
280-113270-12	PNMW-20	Total Recoverable	Water	3005A	
280-113270-13	PNMW17DUP	Total Recoverable	Water	3005A	
280-113270-14	PNMW19EB	Total Recoverable	Water	3005A	
MB 240-341993/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-341993/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-341993/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 342286

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113270-9	PNMW-17	Total Recoverable	Water	6020A	341993
280-113270-10	PNMW-18	Total Recoverable	Water	6020A	341993
280-113270-11	PNMW-19	Total Recoverable	Water	6020A	341993
280-113270-12	PNMW-20	Total Recoverable	Water	6020A	341993
280-113270-13	PNMW17DUP	Total Recoverable	Water	6020A	341993
280-113270-14	PNMW19EB	Total Recoverable	Water	6020A	341993
MB 240-341993/1-A	Method Blank	Total Recoverable	Water	6020A	341993
LCS 240-341993/3-A	Lab Control Sample	Total Recoverable	Water	6020A	341993

Analysis Batch: 342407

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113270-9	PNMW-17	Total Recoverable	Water	6010C	341993
280-113270-10	PNMW-18	Total Recoverable	Water	6010C	341993
280-113270-11	PNMW-19	Total Recoverable	Water	6010C	341993
280-113270-12	PNMW-20	Total Recoverable	Water	6010C	341993
280-113270-13	PNMW17DUP	Total Recoverable	Water	6010C	341993
280-113270-14	PNMW19EB	Total Recoverable	Water	6010C	341993
MB 240-341993/1-A	Method Blank	Total Recoverable	Water	6010C	341993
LCS 240-341993/2-A	Lab Control Sample	Total Recoverable	Water	6010C	341993

Analysis Batch: 342670

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113270-9	PNMW-17	Total Recoverable	Water	6020A	341993
280-113270-10	PNMW-18	Total Recoverable	Water	6020A	341993
280-113270-11	PNMW-19	Total Recoverable	Water	6020A	341993
280-113270-13	PNMW17DUP	Total Recoverable	Water	6020A	341993
280-113270-14	PNMW19EB	Total Recoverable	Water	6020A	341993

General Chemistry

Analysis Batch: 426738

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113270-9	PNMW-17	Total/NA	Water	SM 2540D	
280-113270-10	PNMW-18	Total/NA	Water	SM 2540D	
280-113270-11	PNMW-19	Total/NA	Water	SM 2540D	
280-113270-12	PNMW-20	Total/NA	Water	SM 2540D	
280-113270-13	PNMW17DUP	Total/NA	Water	SM 2540D	
280-113270-14	PNMW19EB	Total/NA	Water	SM 2540D	

General Chemistry (Continued)

Analysis Batch: 426738 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 280-426738/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-426738/2	Lab Control Sample	Total/NA	Water	SM 2540D	

Analysis Batch: 426793

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113270-9	PNMW-17	Total/NA	Water	SM 2540C	
280-113270-10	PNMW-18	Total/NA	Water	SM 2540C	
280-113270-11	PNMW-19	Total/NA	Water	SM 2540C	
280-113270-12	PNMW-20	Total/NA	Water	SM 2540C	
280-113270-13	PNMW17DUP	Total/NA	Water	SM 2540C	
280-113270-14	PNMW19EB	Total/NA	Water	SM 2540C	
MB 280-426793/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-426793/2	Lab Control Sample	Total/NA	Water	SM 2540C	
LCSD 280-426793/3	Lab Control Sample Dup	Total/NA	Water	SM 2540C	
280-113270-14 DU	PNMW19EB	Total/NA	Water	SM 2540C	

Analysis Batch: 427068

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113270-11	PNMW-19	Total/NA	Water	9040B	
280-113270-12	PNMW-20	Total/NA	Water	9040B	
280-113270-13	PNMW17DUP	Total/NA	Water	9040B	

Analysis Batch: 428133

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113270-9	PNMW-17	Total/NA	Water	9040B	
LCS 280-428133/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 428299

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113270-10	PNMW-18	Total/NA	Water	9040B	
LCS 280-428299/4	Lab Control Sample	Total/NA	Water	9040B	
280-113270-10 DU	PNMW-18	Total/NA	Water	9040B	

Analysis Batch: 428365

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113270-9	PNMW-17	Total/NA	Water	9056A	
280-113270-9	PNMW-17	Total/NA	Water	9056A	
280-113270-10	PNMW-18	Total/NA	Water	9056A	
280-113270-10	PNMW-18	Total/NA	Water	9056A	
280-113270-11	PNMW-19	Total/NA	Water	9056A	
280-113270-13	PNMW17DUP	Total/NA	Water	9056A	
280-113270-13	PNMW17DUP	Total/NA	Water	9056A	
280-113270-14	PNMW19EB	Total/NA	Water	9056A	
MB 280-428365/6	Method Blank	Total/NA	Water	9056A	
LCS 280-428365/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-428365/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-428365/3	Lab Control Sample	Total/NA	Water	9056A	
280-113270-11 MS	PNMW-19	Total/NA	Water	9056A	
280-113270-11 MSD	PNMW-19	Total/NA	Water	9056A	
280-113270-11 DU	PNMW-19	Total/NA	Water	9056A	

General Chemistry (Continued)

Analysis Batch: 428605

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113270-12	PNMW-20	Total/NA	Water	9056A	
280-113270-12	PNMW-20	Total/NA	Water	9056A	
MB 280-428605/6	Method Blank	Total/NA	Water	9056A	
LCS 280-428605/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-428605/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-428605/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 428861

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113270-14	PNMW19EB	Total/NA	Water	9040B	
LCS 280-428861/4	Lab Control Sample	Total/NA	Water	9040B	
280-113270-14 DU	PNMW19EB	Total/NA	Water	9040B	

Rad

Prep Batch: 384527

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113270-9	PNMW-17	Total/NA	Water	PrecSep-21	
280-113270-10	PNMW-18	Total/NA	Water	PrecSep-21	
280-113270-11	PNMW-19	Total/NA	Water	PrecSep-21	
280-113270-12	PNMW-20	Total/NA	Water	PrecSep-21	
280-113270-13	PNMW17DUP	Total/NA	Water	PrecSep-21	
280-113270-14	PNMW19EB	Total/NA	Water	PrecSep-21	
MB 160-384527/17-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-384527/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-384527/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 384529

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113270-9	PNMW-17	Total/NA	Water	PrecSep_0	
280-113270-10	PNMW-18	Total/NA	Water	PrecSep_0	
280-113270-11	PNMW-19	Total/NA	Water	PrecSep_0	
280-113270-12	PNMW-20	Total/NA	Water	PrecSep_0	
280-113270-13	PNMW17DUP	Total/NA	Water	PrecSep_0	
280-113270-14	PNMW19EB	Total/NA	Water	PrecSep_0	
MB 160-384529/17-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-384529/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-384529/2-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: 280-113270-3

Client Sample ID: PNMW-17

Date Collected: 08/14/18 12:15
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-9

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	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			342407	08/24/18 15:08	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342286	08/23/18 13:23	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342670	08/24/18 14:00	DSH	TAL CAN
Total/NA	Analysis	9040B		1			428133	08/28/18 16:13	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	428365	09/02/18 15:01	TLP	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	428365	09/02/18 15:23	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	426793	08/20/18 09:26	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	426738	08/19/18 13:59	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.28 mL	1.0 g	384527	08/22/18 10:19	JLC	TAL SL
Total/NA	Analysis	9315		1			388835	09/13/18 09:36	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.28 mL	1.0 g	384529	08/22/18 10:50	JLC	TAL SL
Total/NA	Analysis	9320		1			385699	08/28/18 09:12	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			388990	09/14/18 02:58	MAR	TAL SL

Client Sample ID: PNMW-18

Date Collected: 08/14/18 15:20
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-10

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	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			342407	08/24/18 15:13	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342286	08/23/18 13:27	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342670	08/24/18 14:13	DSH	TAL CAN
Total/NA	Analysis	9040B		1			428299	08/31/18 14:15	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	428365	09/02/18 15:45	TLP	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	428365	09/02/18 16:07	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	426793	08/20/18 09:26	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	426738	08/19/18 13:59	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.29 mL	1.0 g	384527	08/22/18 10:19	JLC	TAL SL
Total/NA	Analysis	9315		1			388835	09/13/18 09:36	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.29 mL	1.0 g	384529	08/22/18 10:50	JLC	TAL SL
Total/NA	Analysis	9320		1			385699	08/28/18 09:12	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			388990	09/14/18 02:58	MAR	TAL SL

Client Sample ID: PNMW-19

Date Collected: 08/15/18 14:45
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-11

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	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			342407	08/24/18 15:18	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342286	08/23/18 13:32	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342670	08/24/18 14:18	DSH	TAL CAN
Total/NA	Analysis	9040B		1			427068	08/21/18 20:25	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	428365	09/02/18 17:14	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	426793	08/20/18 09:26	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	426738	08/19/18 13:59	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			999.63 mL	1.0 g	384527	08/22/18 10:19	JLC	TAL SL
Total/NA	Analysis	9315		1			388835	09/13/18 09:36	CDR	TAL SL
Total/NA	Prep	PrecSep_0			999.63 mL	1.0 g	384529	08/22/18 10:50	JLC	TAL SL
Total/NA	Analysis	9320		1			385699	08/28/18 09:12	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			388990	09/14/18 02:58	MAR	TAL SL

Client Sample ID: PNMW-20

Date Collected: 08/15/18 12:30
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-12

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	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			342407	08/24/18 15:22	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342286	08/23/18 13:36	DSH	TAL CAN
Total/NA	Analysis	9040B		1			427068	08/21/18 20:30	SGB	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	428605	09/06/18 02:42	TLP	TAL DEN
Total/NA	Analysis	9056A		100	5 mL	5 mL	428605	09/06/18 03:04	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	426793	08/20/18 09:26	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	426738	08/19/18 13:59	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.09 mL	1.0 g	384527	08/22/18 10:19	JLC	TAL SL
Total/NA	Analysis	9315		1			388837	09/13/18 09:38	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.09 mL	1.0 g	384529	08/22/18 10:50	JLC	TAL SL
Total/NA	Analysis	9320		1			385699	08/28/18 09:12	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			388990	09/14/18 02:58	MAR	TAL SL

Client Sample ID: PNMW17DUP

Date Collected: 08/14/18 12:15
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-13

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	341993	08/22/18 14:00	MBB	TAL CAN

Lab Chronicle

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

TestAmerica Job ID: 280-113270-3

Client Sample ID: PNMW17DUP

Date Collected: 08/14/18 12:15
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-13

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Analysis	6010C		1			342407	08/24/18 15:27	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342286	08/23/18 13:49	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342670	08/24/18 14:23	DSH	TAL CAN
Total/NA	Analysis	9040B		1			427068	08/21/18 20:34	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	428365	09/02/18 19:27	TLP	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	428365	09/02/18 19:50	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	426793	08/20/18 09:26	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	426738	08/19/18 13:59	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.04 mL	1.0 g	384527	08/22/18 10:19	JLC	TAL SL
Total/NA	Analysis	9315		1			388837	09/13/18 09:38	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.04 mL	1.0 g	384529	08/22/18 10:50	JLC	TAL SL
Total/NA	Analysis	9320		1			385699	08/28/18 09:12	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			388990	09/14/18 02:58	MAR	TAL SL

Client Sample ID: PNMW19EB

Date Collected: 08/14/18 18:50
Date Received: 08/16/18 15:25

Lab Sample ID: 280-113270-14

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	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			342407	08/24/18 15:32	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342286	08/23/18 13:54	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341993	08/22/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342670	08/24/18 14:27	DSH	TAL CAN
Total/NA	Analysis	9040B		1			428861	09/06/18 16:44	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	428365	09/02/18 20:12	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	426793	08/20/18 09:26	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	426738	08/19/18 13:59	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.14 mL	1.0 g	384527	08/22/18 10:19	JLC	TAL SL
Total/NA	Analysis	9315		1			388837	09/13/18 09:38	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.14 mL	1.0 g	384529	08/22/18 10:50	JLC	TAL SL
Total/NA	Analysis	9320		1			385699	08/28/18 09:12	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			388990	09/14/18 02:58	MAR	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: 280-113270-3

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 ELAP		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	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18 *
Minnesota	NELAP	5	039-999-348	12-31-18 *
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	T104704517-17-9	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18 *

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 ELAP		L2305	04-06-19
Arizona	State Program	9	AZ0813	12-08-18
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	11-30-18
Iowa	State Program	7	373	12-01-18
Kansas	NELAP	7	E-10236	10-31-18
Kentucky (DW)	State Program	4	90125	12-31-18
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA180017	12-31-18

* 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: 280-113270-3

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
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-18 *
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	MO000542016-8	07-31-18 *
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	10-31-18 *

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

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

Chain of Custody Record

TestAmerica
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TestAmerica Laboratories, Inc.

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

Client Contact	Project Manager: Molly Reeves	Site Contact: Kaitlin Fishburn	Date:	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	8/14	1215	G	W	7	N	N	X	X	X	X	X	X	
PNMW-18	8/14	1520	G	W	7	N	N	X	X	X	X	X	X	
PNMW-19	8/15	1445	G	W	7	N	N	X	X	X	X	X	X	
PNMW-20	8/15	1230	G	W	7	N	N	X	X	X	X	X	X	
PNMW17DUP	8/14	1215	G	W	7	N	N	X	X	X	X	X	X	
PNMW19EB	8/14	1050	G	W	7	N	N	X	X	X	X	X	X	

280-113270 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: ____ Corr'd: ____		Therm ID No.: ____
Relinquished by:	Company: HDR	Date/Time: 8/16/18 1520	Received by:	Company: TAEN	Date/Time: 8/16/18 1525
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

1.8, 0.3, 2.8, 3.1, 0.5, 0.9, 0.9 +0.4 IRS
XFERED BY KD
08-16-18

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

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-113270-3

Login Number: 113270
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.	False	Refer to Job Narrative for details.
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: 280-113270-3

Login Number: 113270
List Number: 3
Creator: Hellm, Michael

List Source: TestAmerica St. Louis
List Creation: 08/21/18 01:07 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	18.7, 1.0
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: 280-113270-3

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)
280-113270-9	PNMW-17	96.8
280-113270-10	PNMW-18	96.2
280-113270-11	PNMW-19	93.8
280-113270-12	PNMW-20	99.1
280-113270-13	PNMW17DUP	97.6
280-113270-14	PNMW19EB	93.8
LCS 160-384527/1-A	Lab Control Sample	90.6
LCSD 160-384527/2-A	Lab Control Sample Dup	92.6
MB 160-384527/17-A	Method Blank	102

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)
280-113270-9	PNMW-17	96.8	93.1
280-113270-10	PNMW-18	96.2	88.6
280-113270-11	PNMW-19	93.8	92.0
280-113270-12	PNMW-20	99.1	93.8
280-113270-13	PNMW17DUP	97.6	94.2
280-113270-14	PNMW19EB	93.8	89.7
LCS 160-384529/1-A	Lab Control Sample	90.6	91.2
LCSD 160-384529/2-A	Lab Control Sample Dup	92.6	92.0
MB 160-384529/17-A	Method Blank	102	83.4

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

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: 280-105716-1
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:
2/20/2018 12:46:30 PM

Stephanie Rothmeyer, Project Manager I
(303)736-0182
stephanie.rothmeyer@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: 280-105716-1

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
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: 280-105716-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Pawnee

Report Number: 280-105716-1

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 1/23/2018 at 4:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.2º C and 1.8º C.

TOTAL RECOVERABLE METALS

Samples PNMW-17 (280-105716-1), PNMW-21 (280-105716-2), PNMW-22 (280-105716-3), PNMW-23 (280-105716-4), PNMW-21EB (280-105716-5) and PNMW-23DUP (280-105716-6) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 01/26/2018 and analyzed on 01/29/2018.

Calcium failed the recovery criteria low for the MSD of sample 240-90811-1 in batch 312771. 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 RECOVERABLE METALS (ICPMS)

Samples PNMW-17 (280-105716-1), PNMW-21 (280-105716-2), PNMW-22 (280-105716-3), PNMW-23 (280-105716-4), PNMW-21EB (280-105716-5) and PNMW-23DUP (280-105716-6) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 01/26/2018 and analyzed on 01/29/2018 and 01/30/2018.

Sample PNMW-21 (280-105716-2)[2X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

Calcium failed the recovery criteria low for the MS and MSD of sample 240-90811-1 in batch 312786. 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 PNMW-17 (280-105716-1), PNMW-21 (280-105716-2), PNMW-22 (280-105716-3), PNMW-23 (280-105716-4), PNMW-21EB (280-105716-5) and PNMW-23DUP (280-105716-6) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared and analyzed on 01/26/2018.

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

TOTAL DISSOLVED SOLIDS

Job ID: 280-105716-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

Samples PNMW-17 (280-105716-1), PNMW-21 (280-105716-2), PNMW-22 (280-105716-3), PNMW-23 (280-105716-4), PNMW-21EB (280-105716-5) and PNMW-23DUP (280-105716-6) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 01/24/2018.

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

TOTAL SUSPENDED SOLIDS

Samples PNMW-17 (280-105716-1), PNMW-21 (280-105716-2), PNMW-22 (280-105716-3), PNMW-23 (280-105716-4), PNMW-21EB (280-105716-5) and PNMW-23DUP (280-105716-6) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 01/25/2018.

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

CORROSIVITY (PH)

Samples PNMW-17 (280-105716-1), PNMW-21 (280-105716-2), PNMW-22 (280-105716-3), PNMW-23 (280-105716-4), PNMW-21EB (280-105716-5) and PNMW-23DUP (280-105716-6) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 02/07/2018.

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

ANIONS (28 DAYS)

Samples PNMW-17 (280-105716-1), PNMW-21 (280-105716-2), PNMW-22 (280-105716-3), PNMW-23 (280-105716-4), PNMW-21EB (280-105716-5) and PNMW-23DUP (280-105716-6) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 02/10/2018.

Fluoride exceeded the RPD limit for the duplicate of sample 280-106233-1. Sample matrix interferences and/ or non-homogeneity are suspected.

Samples PNMW-17 (280-105716-1)[5X], PNMW-21 (280-105716-2)[2X], PNMW-21 (280-105716-2)[50X], PNMW-22 (280-105716-3)[5X], PNMW-23 (280-105716-4)[10X] and PNMW-23DUP (280-105716-6)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

RADIUM-226 (GFPC)

Samples PNMW-17 (280-105716-1), PNMW-21 (280-105716-2), PNMW-22 (280-105716-3), PNMW-23 (280-105716-4), PNMW-21EB (280-105716-5) and PNMW-23DUP (280-105716-6) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 01/26/2018 and analyzed on 02/19/2018.

Insufficient sample volume was available to perform a sample duplicate (DU) associated with batch 160-348328.

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

RADIUM-228

Samples PNMW-17 (280-105716-1), PNMW-21 (280-105716-2), PNMW-22 (280-105716-3), PNMW-23 (280-105716-4), PNMW-21EB (280-105716-5) and PNMW-23DUP (280-105716-6) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 01/26/2018 and analyzed on 02/01/2018.

Insufficient sample volume was available to perform a sample duplicate (DU) associated with batch 160-348329.

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 (280-105716-1), PNMW-21 (280-105716-2), PNMW-22 (280-105716-3), PNMW-23 (280-105716-4), PNMW-21EB (280-105716-5) and PNMW-23DUP (280-105716-6) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320.

Job ID: 280-105716-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

The samples were analyzed on 02/20/2018.

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: 280-105716-1

Client Sample ID: PNMW-17 — Lab Sample ID: 280-105716-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.25		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	230000		5000	310	ug/L	1		6010C	Total Recoverable
Barium	0.089		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	230		1.0	0.58	mg/L	1		6020A	Total Recoverable
Chromium	0.0035		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Selenium	0.017		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.037		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	19.5	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	220		15	1.3	mg/L	5		9056A	Total/NA
Fluoride	0.16	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	510		25	1.2	mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	1300		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	11		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-21 — Lab Sample ID: 280-105716-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.67		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	610000		5000	310	ug/L	1		6010C	Total Recoverable
Arsenic	0.0017	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.029		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	590		2.0	1.2	mg/L	2		6020A	Total Recoverable
Cobalt	0.00044	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0092		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0029	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.00052	J	0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.0050		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.11		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	18.9	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	610		150	13	mg/L	50		9056A	Total/NA
Fluoride	0.26	J	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	2600		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	5700		40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	50		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
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-105716-1

Client Sample ID: PNMW-22 — Lab Sample ID: 280-105716-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.091	J	0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	240000		5000	310	ug/L	1		6010C	Total Recoverable
Barium	0.079		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	230		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.00055	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.013		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0058	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0061		0.0050	0.00089	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	7.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	17.7	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	200		15	1.3	mg/L	5		9056A	Total/NA
Fluoride	0.44	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	570		25	1.2	mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	1500		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	18		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-23 — Lab Sample ID: 280-105716-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.14		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	330000		5000	310	ug/L	1		6010C	Total Recoverable
Barium	0.032		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	320		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.00041	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0094		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0025	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0036	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.046		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	18.8	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	110		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.15	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1400		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	2400		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

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: 280-105716-1

Client Sample ID: PNMW-21EB — Lab Sample ID: 280-105716-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
pH adj. to 25 deg C	5.9	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	18.2	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	0.67	J	3.0	0.25	mg/L	1		9056A	Total/NA
Sulfate	0.42	J	5.0	0.23	mg/L	1		9056A	Total/NA

Client Sample ID: PNMW-23DUP — Lab Sample ID: 280-105716-6

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	330000		5000	310	ug/L	1		6010C	Total Recoverable
Barium	0.030		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	310		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.00042	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.011		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	0.0035	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.048		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	18.3	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	110		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.15	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1400		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	2400		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	40		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: 280-105716-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL DEN
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

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.
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: 280-105716-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-105716-1	PNMW-17	Water	01/23/18 11:40	01/23/18 16:30
280-105716-2	PNMW-21	Water	01/23/18 13:40	01/23/18 16:30
280-105716-3	PNMW-22	Water	01/22/18 13:25	01/23/18 16:30
280-105716-4	PNMW-23	Water	01/22/18 10:50	01/23/18 16:30
280-105716-5	PNMW-21EB	Water	01/23/18 16:15	01/23/18 16:30
280-105716-6	PNMW-23DUP	Water	01/22/18 10:50	01/23/18 16:30

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

Client Sample ID: PNMW-17
Date Collected: 01/23/18 11:40
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.25**		0.10	0.023	mg/L		01/26/18 14:00	01/29/18 18:11	1
Calcium	**230000**		5000	310	ug/L		01/26/18 14:00	01/29/18 18:11	1

Client Sample ID: PNMW-21
Date Collected: 01/23/18 13:40
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.67**		0.10	0.023	mg/L		01/26/18 14:00	01/29/18 18:16	1
Calcium	**610000**		5000	310	ug/L		01/26/18 14:00	01/29/18 18:16	1

Client Sample ID: PNMW-22
Date Collected: 01/22/18 13:25
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.091**	**J**	0.10	0.023	mg/L		01/26/18 14:00	01/29/18 18:21	1
Calcium	**240000**		5000	310	ug/L		01/26/18 14:00	01/29/18 18:21	1

Client Sample ID: PNMW-23
Date Collected: 01/22/18 10:50
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.14**		0.10	0.023	mg/L		01/26/18 14:00	01/29/18 18:25	1
Calcium	**330000**		5000	310	ug/L		01/26/18 14:00	01/29/18 18:25	1

Client Sample ID: PNMW-21EB
Date Collected: 01/23/18 16:15
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		01/26/18 14:00	01/29/18 18:30	1
Calcium	ND		5000	310	ug/L		01/26/18 14:00	01/29/18 18:30	1

Client Sample ID: PNMW-23DUP
Date Collected: 01/22/18 10:50
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.13**		0.10	0.023	mg/L		01/26/18 14:00	01/29/18 18:35	1
Calcium	**330000**		5000	310	ug/L		01/26/18 14:00	01/29/18 18:35	1

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

Client Sample ID: PNMW-17
Date Collected: 01/23/18 11:40
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		01/26/18 14:00	01/29/18 18:59	1
Arsenic	ND		0.0050	0.00075	mg/L		01/26/18 14:00	01/29/18 18:59	1
Barium	**0.089**		0.0050	0.0022	mg/L		01/26/18 14:00	01/29/18 18:59	1
Beryllium	ND		0.0010	0.00031	mg/L		01/26/18 14:00	01/29/18 18:59	1
Calcium	**230**		1.0	0.58	mg/L		01/26/18 14:00	01/29/18 18:59	1
Cadmium	ND		0.0010	0.00021	mg/L		01/26/18 14:00	01/29/18 18:59	1
Cobalt	ND		0.0010	0.00019	mg/L		01/26/18 14:00	01/29/18 18:59	1

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

Client Sample ID: PNMW-17
Date Collected: 01/23/18 11:40
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**0.0035**		0.0020	0.00098	mg/L		01/26/18 14:00	01/29/18 18:59	1
Molybdenum	ND		0.010	0.0011	mg/L		01/26/18 14:00	01/29/18 18:59	1
Lead	ND		0.0010	0.00045	mg/L		01/26/18 14:00	01/29/18 18:59	1
Selenium	**0.017**		0.0050	0.00089	mg/L		01/26/18 14:00	01/29/18 18:59	1
Thallium	ND		0.0010	0.00020	mg/L		01/26/18 14:00	01/29/18 18:59	1
Lithium	**0.037**		0.0080	0.0017	mg/L		01/26/18 14:00	01/29/18 18:59	1

Client Sample ID: PNMW-21
Date Collected: 01/23/18 13:40
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		01/26/18 14:00	01/29/18 19:13	1
Arsenic	**0.0017**	**J**	0.0050	0.00075	mg/L		01/26/18 14:00	01/29/18 19:13	1
Barium	**0.029**		0.0050	0.0022	mg/L		01/26/18 14:00	01/29/18 19:13	1
Beryllium	ND		0.0010	0.00031	mg/L		01/26/18 14:00	01/29/18 19:13	1
Calcium	**590**		2.0	1.2	mg/L		01/26/18 14:00	01/30/18 13:10	2
Cadmium	ND		0.0010	0.00021	mg/L		01/26/18 14:00	01/29/18 19:13	1
Cobalt	**0.00044**	**J**	0.0010	0.00019	mg/L		01/26/18 14:00	01/29/18 19:13	1
Chromium	**0.0092**		0.0020	0.00098	mg/L		01/26/18 14:00	01/29/18 19:13	1
Molybdenum	**0.0029**	**J**	0.010	0.0011	mg/L		01/26/18 14:00	01/29/18 19:13	1
Lead	**0.00052**	**J**	0.0010	0.00045	mg/L		01/26/18 14:00	01/29/18 19:13	1
Selenium	**0.0050**		0.0050	0.00089	mg/L		01/26/18 14:00	01/29/18 19:13	1
Thallium	ND		0.0010	0.00020	mg/L		01/26/18 14:00	01/29/18 19:13	1
Lithium	**0.11**		0.0080	0.0017	mg/L		01/26/18 14:00	01/29/18 19:13	1

Client Sample ID: PNMW-22
Date Collected: 01/22/18 13:25
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		01/26/18 14:00	01/29/18 19:17	1
Arsenic	ND		0.0050	0.00075	mg/L		01/26/18 14:00	01/29/18 19:17	1
Barium	**0.079**		0.0050	0.0022	mg/L		01/26/18 14:00	01/29/18 19:17	1
Beryllium	ND		0.0010	0.00031	mg/L		01/26/18 14:00	01/29/18 19:17	1
Calcium	**230**		1.0	0.58	mg/L		01/26/18 14:00	01/29/18 19:17	1
Cadmium	ND		0.0010	0.00021	mg/L		01/26/18 14:00	01/29/18 19:17	1
Cobalt	**0.00055**	**J**	0.0010	0.00019	mg/L		01/26/18 14:00	01/29/18 19:17	1
Chromium	**0.013**		0.0020	0.00098	mg/L		01/26/18 14:00	01/29/18 19:17	1
Molybdenum	**0.0058**	**J**	0.010	0.0011	mg/L		01/26/18 14:00	01/29/18 19:17	1
Lead	ND		0.0010	0.00045	mg/L		01/26/18 14:00	01/29/18 19:17	1
Selenium	**0.0061**		0.0050	0.00089	mg/L		01/26/18 14:00	01/29/18 19:17	1
Thallium	ND		0.0010	0.00020	mg/L		01/26/18 14:00	01/29/18 19:17	1
Lithium	**0.054**		0.0080	0.0017	mg/L		01/26/18 14:00	01/29/18 19:17	1

Client Sample ID: PNMW-23
Date Collected: 01/22/18 10:50
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		01/26/18 14:00	01/29/18 19:22	1
Arsenic	ND		0.0050	0.00075	mg/L		01/26/18 14:00	01/29/18 19:22	1
Barium	**0.032**		0.0050	0.0022	mg/L		01/26/18 14:00	01/29/18 19:22	1

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

Client Sample ID: PNMW-23
Date Collected: 01/22/18 10:50
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Beryllium	ND		0.0010	0.00031	mg/L		01/26/18 14:00	01/29/18 19:22	1
Calcium	**320**		1.0	0.58	mg/L		01/26/18 14:00	01/29/18 19:22	1
Cadmium	ND		0.0010	0.00021	mg/L		01/26/18 14:00	01/29/18 19:22	1
Cobalt	**0.00041**	**J**	0.0010	0.00019	mg/L		01/26/18 14:00	01/29/18 19:22	1
Chromium	**0.0094**		0.0020	0.00098	mg/L		01/26/18 14:00	01/29/18 19:22	1
Molybdenum	**0.0025**	**J**	0.010	0.0011	mg/L		01/26/18 14:00	01/29/18 19:22	1
Lead	ND		0.0010	0.00045	mg/L		01/26/18 14:00	01/29/18 19:22	1
Selenium	**0.0036**	**J**	0.0050	0.00089	mg/L		01/26/18 14:00	01/29/18 19:22	1
Thallium	ND		0.0010	0.00020	mg/L		01/26/18 14:00	01/29/18 19:22	1
Lithium	**0.046**		0.0080	0.0017	mg/L		01/26/18 14:00	01/29/18 19:22	1

Client Sample ID: PNMW-21EB
Date Collected: 01/23/18 16:15
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		01/26/18 14:00	01/29/18 19:26	1
Arsenic	ND		0.0050	0.00075	mg/L		01/26/18 14:00	01/29/18 19:26	1
Barium	ND		0.0050	0.0022	mg/L		01/26/18 14:00	01/29/18 19:26	1
Beryllium	ND		0.0010	0.00031	mg/L		01/26/18 14:00	01/29/18 19:26	1
Calcium	ND		1.0	0.58	mg/L		01/26/18 14:00	01/29/18 19:26	1
Cadmium	ND		0.0010	0.00021	mg/L		01/26/18 14:00	01/29/18 19:26	1
Cobalt	ND		0.0010	0.00019	mg/L		01/26/18 14:00	01/29/18 19:26	1
Chromium	ND		0.0020	0.00098	mg/L		01/26/18 14:00	01/29/18 19:26	1
Molybdenum	ND		0.010	0.0011	mg/L		01/26/18 14:00	01/29/18 19:26	1
Lead	ND		0.0010	0.00045	mg/L		01/26/18 14:00	01/29/18 19:26	1
Selenium	ND		0.0050	0.00089	mg/L		01/26/18 14:00	01/29/18 19:26	1
Thallium	ND		0.0010	0.00020	mg/L		01/26/18 14:00	01/29/18 19:26	1
Lithium	ND		0.0080	0.0017	mg/L		01/26/18 14:00	01/29/18 19:26	1

Client Sample ID: PNMW-23DUP
Date Collected: 01/22/18 10:50
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		01/26/18 14:00	01/29/18 19:31	1
Arsenic	ND		0.0050	0.00075	mg/L		01/26/18 14:00	01/29/18 19:31	1
Barium	**0.030**		0.0050	0.0022	mg/L		01/26/18 14:00	01/29/18 19:31	1
Beryllium	ND		0.0010	0.00031	mg/L		01/26/18 14:00	01/29/18 19:31	1
Calcium	**310**		1.0	0.58	mg/L		01/26/18 14:00	01/29/18 19:31	1
Cadmium	ND		0.0010	0.00021	mg/L		01/26/18 14:00	01/29/18 19:31	1
Cobalt	**0.00042**	**J**	0.0010	0.00019	mg/L		01/26/18 14:00	01/29/18 19:31	1
Chromium	**0.011**		0.0020	0.00098	mg/L		01/26/18 14:00	01/29/18 19:31	1
Molybdenum	**0.0028**	**J**	0.010	0.0011	mg/L		01/26/18 14:00	01/29/18 19:31	1
Lead	ND		0.0010	0.00045	mg/L		01/26/18 14:00	01/29/18 19:31	1
Selenium	**0.0035**	**J**	0.0050	0.00089	mg/L		01/26/18 14:00	01/29/18 19:31	1
Thallium	ND		0.0010	0.00020	mg/L		01/26/18 14:00	01/29/18 19:31	1
Lithium	**0.048**		0.0080	0.0017	mg/L		01/26/18 14:00	01/29/18 19:31	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: PNMW-17
Date Collected: 01/23/18 11:40
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		01/26/18 11:54	01/26/18 18:11	1

Client Sample ID: PNMW-21
Date Collected: 01/23/18 13:40
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		01/26/18 11:54	01/26/18 18:14	1

Client Sample ID: PNMW-22
Date Collected: 01/22/18 13:25
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		01/26/18 11:54	01/26/18 18:16	1

Client Sample ID: PNMW-23
Date Collected: 01/22/18 10:50
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		01/26/18 11:54	01/26/18 18:23	1

Client Sample ID: PNMW-21EB
Date Collected: 01/23/18 16:15
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		01/26/18 11:54	01/26/18 18:25	1

Client Sample ID: PNMW-23DUP
Date Collected: 01/22/18 10:50
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		01/26/18 11:54	01/26/18 18:27	1

General Chemistry

Client Sample ID: PNMW-17
Date Collected: 01/23/18 11:40
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-1
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			02/07/18 10:57	1
Temperature	19.5	HF	1.0	1.0	Degrees C			02/07/18 10:57	1
Chloride	220		15	1.3	mg/L			02/10/18 02:18	5
Fluoride	0.16	J	0.50	0.060	mg/L			02/10/18 01:56	1
Sulfate	510		25	1.2	mg/L			02/10/18 02:18	5
Total Dissolved Solids (TDS)	1300		20	9.4	mg/L			01/24/18 08:58	1
Total Suspended Solids	11		4.0	1.1	mg/L			01/25/18 08:04	1

Client Sample ID: PNMW-21
Date Collected: 01/23/18 13:40
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-2
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			02/07/18 11:01	1

General Chemistry (Continued)

Client Sample ID: PNMW-21
Date Collected: 01/23/18 13:40
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Temperature	18.9	HF	1.0	1.0	Degrees C			02/07/18 11:01	1
Chloride	610		150	13	mg/L			02/10/18 03:03	50
Fluoride	0.26	J	1.0	0.12	mg/L			02/10/18 02:41	2
Sulfate	2600		250	12	mg/L			02/10/18 03:03	50
Total Dissolved Solids (TDS)	5700		40	19	mg/L			01/24/18 08:58	1
Total Suspended Solids	50		4.0	1.1	mg/L			01/25/18 08:04	1

Client Sample ID: PNMW-22
Date Collected: 01/22/18 13:25
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-3
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			02/07/18 10:39	1
Temperature	17.7	HF	1.0	1.0	Degrees C			02/07/18 10:39	1
Chloride	200		15	1.3	mg/L			02/10/18 03:48	5
Fluoride	0.44	J	0.50	0.060	mg/L			02/10/18 03:26	1
Sulfate	570		25	1.2	mg/L			02/10/18 03:48	5
Total Dissolved Solids (TDS)	1500		20	9.4	mg/L			01/24/18 08:58	1
Total Suspended Solids	18		4.0	1.1	mg/L			01/25/18 08:04	1

Client Sample ID: PNMW-23
Date Collected: 01/22/18 10:50
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-4
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			02/07/18 11:05	1
Temperature	18.8	HF	1.0	1.0	Degrees C			02/07/18 11:05	1
Chloride	110		3.0	0.25	mg/L			02/10/18 04:10	1
Fluoride	0.15	J	0.50	0.060	mg/L			02/10/18 04:10	1
Sulfate	1400		50	2.3	mg/L			02/10/18 04:33	10
Total Dissolved Solids (TDS)	2400		20	9.4	mg/L			01/24/18 08:58	1
Total Suspended Solids	4.0		4.0	1.1	mg/L			01/25/18 08:04	1

Client Sample ID: PNMW-21EB
Date Collected: 01/23/18 16:15
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	5.9	HF	0.1	0.1	SU			02/07/18 11:09	1
Temperature	18.2	HF	1.0	1.0	Degrees C			02/07/18 11:09	1
Chloride	0.67	J	3.0	0.25	mg/L			02/10/18 04:55	1
Fluoride	ND		0.50	0.060	mg/L			02/10/18 04:55	1
Sulfate	0.42	J	5.0	0.23	mg/L			02/10/18 04:55	1
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			01/24/18 08:58	1
Total Suspended Solids	ND		4.0	1.1	mg/L			01/25/18 08:04	1

Client Sample ID: PNMW-23DUP
Date Collected: 01/22/18 10:50
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-6
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			02/07/18 10:43	1
Temperature	18.3	HF	1.0	1.0	Degrees C			02/07/18 10:43	1
Chloride	110		3.0	0.25	mg/L			02/10/18 06:02	1

General Chemistry (Continued)

Client Sample ID: PNMW-23DUP
Date Collected: 01/22/18 10:50
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.15	J	0.50	0.060	mg/L			02/10/18 06:02	1
Sulfate	1400		50	2.3	mg/L			02/10/18 06:25	10
Total Dissolved Solids (TDS)	2400		20	9.4	mg/L			01/24/18 08:58	1
Total Suspended Solids	40		4.0	1.1	mg/L			01/25/18 08:04	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: PNMW-17
Date Collected: 01/23/18 11:40
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.210		0.0791	0.0813	1.00	0.0755	pCi/L	01/26/18 09:12	02/19/18 06:10	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.1*		*40 - 110*	*01/26/18 09:12*	*02/19/18 06:10*	*1*

Client Sample ID: PNMW-21
Date Collected: 01/23/18 13:40
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.161		0.0706	0.0721	1.00	0.0718	pCi/L	01/26/18 09:12	02/19/18 06:10	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.4*		*40 - 110*	*01/26/18 09:12*	*02/19/18 06:10*	*1*

Client Sample ID: PNMW-22
Date Collected: 01/22/18 13:25
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.223		0.0783	0.0809	1.00	0.0756	pCi/L	01/26/18 09:12	02/19/18 06:11	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*99.1*		*40 - 110*	*01/26/18 09:12*	*02/19/18 06:11*	*1*

Client Sample ID: PNMW-23
Date Collected: 01/22/18 10:50
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.209		0.0763	0.0786	1.00	0.0677	pCi/L	01/26/18 09:12	02/19/18 06:11	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*99.1*		*40 - 110*	*01/26/18 09:12*	*02/19/18 06:11*	*1*

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: PNMW-21EB
Date Collected: 01/23/18 16:15
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0121	U	0.0341	0.0342	1.00	0.0658	pCi/L	01/26/18 09:12	02/19/18 06:11	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*105*		*40 - 110*	*01/26/18 09:12*	*02/19/18 06:11*	*1*

Client Sample ID: PNMW-23DUP
Date Collected: 01/22/18 10:50
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.117**		0.0601	0.0610	1.00	0.0655	pCi/L	01/26/18 09:12	02/19/18 06:11	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*99.1*		*40 - 110*	*01/26/18 09:12*	*02/19/18 06:11*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: PNMW-17
Date Collected: 01/23/18 11:40
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.380**		0.235	0.238	1.00	0.360	pCi/L	01/26/18 09:20	02/01/18 15:52	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.1*		*40 - 110*	*01/26/18 09:20*	*02/01/18 15:52*	*1*
Y Carrier	*83.7*		*40 - 110*	*01/26/18 09:20*	*02/01/18 15:52*	*1*

Client Sample ID: PNMW-21
Date Collected: 01/23/18 13:40
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.331	U	0.225	0.227	1.00	0.348	pCi/L	01/26/18 09:20	02/01/18 15:52	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.4*		*40 - 110*	*01/26/18 09:20*	*02/01/18 15:52*	*1*
Y Carrier	*84.5*		*40 - 110*	*01/26/18 09:20*	*02/01/18 15:52*	*1*

Client Sample ID: PNMW-22
Date Collected: 01/22/18 13:25
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.449**		0.211	0.215	1.00	0.301	pCi/L	01/26/18 09:20	02/01/18 15:52	1

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

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	99.1		40 - 110	01/26/18 09:20	02/01/18 15:52	1
Y Carrier	85.2		40 - 110	01/26/18 09:20	02/01/18 15:52	1

Client Sample ID: PNMW-23
Date Collected: 01/22/18 10:50
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.399**		0.215	0.218	1.00	0.319	pCi/L	01/26/18 09:20	02/01/18 15:52	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	99.1		40 - 110	01/26/18 09:20	02/01/18 15:52	1
Y Carrier	83.4		40 - 110	01/26/18 09:20	02/01/18 15:52	1

Client Sample ID: PNMW-21EB
Date Collected: 01/23/18 16:15
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0841	U	0.176	0.176	1.00	0.302	pCi/L	01/26/18 09:20	02/01/18 15:52	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	105		40 - 110	01/26/18 09:20	02/01/18 15:52	1
Y Carrier	87.5		40 - 110	01/26/18 09:20	02/01/18 15:52	1

Client Sample ID: PNMW-23DUP
Date Collected: 01/22/18 10:50
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.514**		0.230	0.235	1.00	0.330	pCi/L	01/26/18 09:20	02/01/18 15:52	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	99.1		40 - 110	01/26/18 09:20	02/01/18 15:52	1
Y Carrier	84.9		40 - 110	01/26/18 09:20	02/01/18 15:52	1

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

Client Sample ID: PNMW-17
Date Collected: 01/23/18 11:40
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.590**		0.248	0.252	5.00	0.360	pCi/L		02/20/18 11:37	1

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

Client Sample ID: PNMW-21
Date Collected: 01/23/18 13:40
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.492		0.236	0.238	5.00	0.348	pCi/L		02/20/18 11:37	1

Client Sample ID: PNMW-22
Date Collected: 01/22/18 13:25
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.671		0.225	0.230	5.00	0.301	pCi/L		02/20/18 11:37	1

Client Sample ID: PNMW-23
Date Collected: 01/22/18 10:50
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.608		0.228	0.232	5.00	0.319	pCi/L		02/20/18 11:37	1

Client Sample ID: PNMW-21EB
Date Collected: 01/23/18 16:15
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0962	U	0.179	0.179	5.00	0.302	pCi/L		02/20/18 11:37	1

Client Sample ID: PNMW-23DUP
Date Collected: 01/22/18 10:50
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.630		0.238	0.243	5.00	0.330	pCi/L		02/20/18 11:37	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-312502/1-A
Matrix: Water
Analysis Batch: 312771

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 312502

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		01/26/18 14:00	01/29/18 17:31	1
Calcium	ND		5000	310	ug/L		01/26/18 14:00	01/29/18 17:31	1

Lab Sample ID: LCS 240-312502/2-A
Matrix: Water
Analysis Batch: 312771

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 312502

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.09		mg/L		109	80 - 120
Calcium	50000	50200		ug/L		100	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-312502/1-A
Matrix: Water
Analysis Batch: 312786

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 312502

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		01/26/18 14:00	01/29/18 17:32	1
Arsenic	ND		0.0050	0.00075	mg/L		01/26/18 14:00	01/29/18 17:32	1
Barium	ND		0.0050	0.0022	mg/L		01/26/18 14:00	01/29/18 17:32	1
Beryllium	ND		0.0010	0.00031	mg/L		01/26/18 14:00	01/29/18 17:32	1
Calcium	ND		1.0	0.58	mg/L		01/26/18 14:00	01/29/18 17:32	1
Cadmium	ND		0.0010	0.00021	mg/L		01/26/18 14:00	01/29/18 17:32	1
Cobalt	ND		0.0010	0.00019	mg/L		01/26/18 14:00	01/29/18 17:32	1
Chromium	ND		0.0020	0.00098	mg/L		01/26/18 14:00	01/29/18 17:32	1
Molybdenum	ND		0.010	0.0011	mg/L		01/26/18 14:00	01/29/18 17:32	1
Lead	ND		0.0010	0.00045	mg/L		01/26/18 14:00	01/29/18 17:32	1
Selenium	ND		0.0050	0.00089	mg/L		01/26/18 14:00	01/29/18 17:32	1
Thallium	ND		0.0010	0.00020	mg/L		01/26/18 14:00	01/29/18 17:32	1
Lithium	ND		0.0080	0.0017	mg/L		01/26/18 14:00	01/29/18 17:32	1

Lab Sample ID: LCS 240-312502/3-A
Matrix: Water
Analysis Batch: 312786

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 312502

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.103		mg/L		103	80 - 120
Arsenic	1.00	1.03		mg/L		103	80 - 120
Barium	1.00	1.00		mg/L		100	80 - 120
Beryllium	1.00	1.09		mg/L		109	80 - 120
Calcium	10.0	10.3		mg/L		103	80 - 120
Cadmium	1.00	1.02		mg/L		102	80 - 120
Cobalt	1.00	1.05		mg/L		105	80 - 120
Chromium	1.00	1.05		mg/L		105	80 - 120
Molybdenum	0.100	0.0928		mg/L		93	80 - 120
Lead	1.00	0.994		mg/L		99	80 - 120
Selenium	1.00	1.04		mg/L		104	80 - 120

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

Lab Sample ID: LCS 240-312502/3-A
Matrix: Water
Analysis Batch: 312786

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 312502

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Thallium			0.250	0.244		mg/L		97	80 - 120		
Lithium			0.100	0.107		mg/L		107	80 - 120		

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-402896/1-A
Matrix: Water
Analysis Batch: 403053

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 402896

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		01/26/18 11:54	01/26/18 18:07	1

Lab Sample ID: LCS 280-402896/2-A
Matrix: Water
Analysis Batch: 403053

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 402896

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			0.00500	0.00487		mg/L		97	84 - 120		

Lab Sample ID: 280-105716-3 MS
Matrix: Water
Analysis Batch: 403053

Client Sample ID: PNMW-22
Prep Type: Total/NA
Prep Batch: 402896

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury	ND		0.00500	0.00491		mg/L		98	75 - 125		

Lab Sample ID: 280-105716-3 MSD
Matrix: Water
Analysis Batch: 403053

Client Sample ID: PNMW-22
Prep Type: Total/NA
Prep Batch: 402896

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		0.00500	0.00488		mg/L		98	75 - 125	1	20

Method: 9040B - pH

Lab Sample ID: LCS 280-404324/4
Matrix: Water
Analysis Batch: 404324

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 280-404482/6
Matrix: Water
Analysis Batch: 404482

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			02/09/18 15:48	1
Fluoride	ND		0.50	0.060	mg/L			02/09/18 15:48	1
Sulfate	ND		5.0	0.23	mg/L			02/09/18 15:48	1

Lab Sample ID: LCS 280-404482/4
Matrix: Water
Analysis Batch: 404482

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	92.3		mg/L		92	90 - 110
Fluoride	5.00	5.21		mg/L		104	90 - 110
Sulfate	100	92.4		mg/L		92	90 - 110

Lab Sample ID: LCSD 280-404482/5
Matrix: Water
Analysis Batch: 404482

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	92.3		mg/L		92	90 - 110	0	10
Fluoride	5.00	5.25		mg/L		105	90 - 110	1	10
Sulfate	100	92.4		mg/L		92	90 - 110	0	10

Lab Sample ID: MRL 280-404482/3
Matrix: Water
Analysis Batch: 404482

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	2.38	J	mg/L		95	50 - 150
Fluoride	0.200	0.247	J	mg/L		123	50 - 150
Sulfate	2.50	2.45	J	mg/L		98	50 - 150

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

Lab Sample ID: MB 280-402581/1
Matrix: Water
Analysis Batch: 402581

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			01/24/18 08:58	1

Lab Sample ID: LCS 280-402581/2
Matrix: Water
Analysis Batch: 402581

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	486		mg/L		97	86 - 110

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

Lab Sample ID: LCSD 280-402581/3
Matrix: Water
Analysis Batch: 402581

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	483		mg/L		97	86 - 110	1	20

Lab Sample ID: 280-105716-6 DU
Matrix: Water
Analysis Batch: 402581

Client Sample ID: PNMW-23DUP
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids (TDS)	2400			2440		mg/L				0.4	10

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

Lab Sample ID: MB 280-402741/1
Matrix: Water
Analysis Batch: 402741

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			01/25/18 08:04	1

Lab Sample ID: LCS 280-402741/2
Matrix: Water
Analysis Batch: 402741

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	98.4		mg/L		98	86 - 114		

Lab Sample ID: 280-105716-6 DU
Matrix: Water
Analysis Batch: 402741

Client Sample ID: PNMW-23DUP
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Suspended Solids	40			43.2		mg/L				7	10

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-348328/1-A
Matrix: Water
Analysis Batch: 351856

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 348328

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.06808	U	0.0500	0.0504	1.00	0.0687	pCi/L	01/26/18 09:12	02/19/18 06:10	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*105*		*40 - 110*	*01/26/18 09:12*	*02/19/18 06:10*	*1*

Method: 9315 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-348328/2-A
Matrix: Water
Analysis Batch: 351856

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 348328

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.8	11.16		1.12	1.00	0.0676	pCi/L	94	68 - 137		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*104*		*40 - 110*

Lab Sample ID: LCSD 160-348328/3-A
Matrix: Water
Analysis Batch: 351856

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 348328

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.8	10.59		1.07	1.00	0.0661	pCi/L	90	68 - 137	0.26	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*106*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-348329/1-A
Matrix: Water
Analysis Batch: 349169

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 348329

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1495	U	0.221	0.222	1.00	0.371	pCi/L	01/26/18 09:20	02/01/18 15:51	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*105*		*40 - 110*	*01/26/18 09:20*	*02/01/18 15:51*	*1*
Y Carrier	*77.0*		*40 - 110*	*01/26/18 09:20*	*02/01/18 15:51*	*1*

Lab Sample ID: LCS 160-348329/2-A
Matrix: Water
Analysis Batch: 349169

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 348329

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			8.60	8.461		0.977	1.00	0.331	pCi/L	98	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*104*		*40 - 110*
Y Carrier	*82.2*		*40 - 110*

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

Lab Sample ID: LCSD 160-348329/3-A
Matrix: Water
Analysis Batch: 349169

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 348329

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			8.60	8.273		0.953	1.00	0.357	pCi/L	96	56 - 140	0.1	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*106*		*40 - 110*
Y Carrier	*86.0*		*40 - 110*

Metals

Prep Batch: 312502

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-105716-1	PNMW-17	Total Recoverable	Water	3005A	
280-105716-2	PNMW-21	Total Recoverable	Water	3005A	
280-105716-3	PNMW-22	Total Recoverable	Water	3005A	
280-105716-4	PNMW-23	Total Recoverable	Water	3005A	
280-105716-5	PNMW-21EB	Total Recoverable	Water	3005A	
280-105716-6	PNMW-23DUP	Total Recoverable	Water	3005A	
MB 240-312502/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-312502/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-312502/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 312771

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-105716-1	PNMW-17	Total Recoverable	Water	6010C	312502
280-105716-2	PNMW-21	Total Recoverable	Water	6010C	312502
280-105716-3	PNMW-22	Total Recoverable	Water	6010C	312502
280-105716-4	PNMW-23	Total Recoverable	Water	6010C	312502
280-105716-5	PNMW-21EB	Total Recoverable	Water	6010C	312502
280-105716-6	PNMW-23DUP	Total Recoverable	Water	6010C	312502
MB 240-312502/1-A	Method Blank	Total Recoverable	Water	6010C	312502
LCS 240-312502/2-A	Lab Control Sample	Total Recoverable	Water	6010C	312502

Analysis Batch: 312786

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-105716-1	PNMW-17	Total Recoverable	Water	6020A	312502
280-105716-2	PNMW-21	Total Recoverable	Water	6020A	312502
280-105716-3	PNMW-22	Total Recoverable	Water	6020A	312502
280-105716-4	PNMW-23	Total Recoverable	Water	6020A	312502
280-105716-5	PNMW-21EB	Total Recoverable	Water	6020A	312502
280-105716-6	PNMW-23DUP	Total Recoverable	Water	6020A	312502
MB 240-312502/1-A	Method Blank	Total Recoverable	Water	6020A	312502
LCS 240-312502/3-A	Lab Control Sample	Total Recoverable	Water	6020A	312502

Analysis Batch: 312961

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-105716-2	PNMW-21	Total Recoverable	Water	6020A	312502

Prep Batch: 402896

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-105716-1	PNMW-17	Total/NA	Water	7470A	
280-105716-2	PNMW-21	Total/NA	Water	7470A	
280-105716-3	PNMW-22	Total/NA	Water	7470A	
280-105716-4	PNMW-23	Total/NA	Water	7470A	
280-105716-5	PNMW-21EB	Total/NA	Water	7470A	
280-105716-6	PNMW-23DUP	Total/NA	Water	7470A	
MB 280-402896/1-A	Method Blank	Total/NA	Water	7470A	
LCS 280-402896/2-A	Lab Control Sample	Total/NA	Water	7470A	
280-105716-3 MS	PNMW-22	Total/NA	Water	7470A	
280-105716-3 MSD	PNMW-22	Total/NA	Water	7470A	

Metals (Continued)

Analysis Batch: 403053

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-105716-1	PNMW-17	Total/NA	Water	7470A	402896
280-105716-2	PNMW-21	Total/NA	Water	7470A	402896
280-105716-3	PNMW-22	Total/NA	Water	7470A	402896
280-105716-4	PNMW-23	Total/NA	Water	7470A	402896
280-105716-5	PNMW-21EB	Total/NA	Water	7470A	402896
280-105716-6	PNMW-23DUP	Total/NA	Water	7470A	402896
MB 280-402896/1-A	Method Blank	Total/NA	Water	7470A	402896
LCS 280-402896/2-A	Lab Control Sample	Total/NA	Water	7470A	402896
280-105716-3 MS	PNMW-22	Total/NA	Water	7470A	402896
280-105716-3 MSD	PNMW-22	Total/NA	Water	7470A	402896

General Chemistry

Analysis Batch: 402581

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-105716-1	PNMW-17	Total/NA	Water	SM 2540C	
280-105716-2	PNMW-21	Total/NA	Water	SM 2540C	
280-105716-3	PNMW-22	Total/NA	Water	SM 2540C	
280-105716-4	PNMW-23	Total/NA	Water	SM 2540C	
280-105716-5	PNMW-21EB	Total/NA	Water	SM 2540C	
280-105716-6	PNMW-23DUP	Total/NA	Water	SM 2540C	
MB 280-402581/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-402581/2	Lab Control Sample	Total/NA	Water	SM 2540C	
LCSD 280-402581/3	Lab Control Sample Dup	Total/NA	Water	SM 2540C	
280-105716-6 DU	PNMW-23DUP	Total/NA	Water	SM 2540C	

Analysis Batch: 402741

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-105716-1	PNMW-17	Total/NA	Water	SM 2540D	
280-105716-2	PNMW-21	Total/NA	Water	SM 2540D	
280-105716-3	PNMW-22	Total/NA	Water	SM 2540D	
280-105716-4	PNMW-23	Total/NA	Water	SM 2540D	
280-105716-5	PNMW-21EB	Total/NA	Water	SM 2540D	
280-105716-6	PNMW-23DUP	Total/NA	Water	SM 2540D	
MB 280-402741/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-402741/2	Lab Control Sample	Total/NA	Water	SM 2540D	
280-105716-6 DU	PNMW-23DUP	Total/NA	Water	SM 2540D	

Analysis Batch: 404324

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-105716-1	PNMW-17	Total/NA	Water	9040B	
280-105716-2	PNMW-21	Total/NA	Water	9040B	
280-105716-3	PNMW-22	Total/NA	Water	9040B	
280-105716-4	PNMW-23	Total/NA	Water	9040B	
280-105716-5	PNMW-21EB	Total/NA	Water	9040B	
280-105716-6	PNMW-23DUP	Total/NA	Water	9040B	
LCS 280-404324/4	Lab Control Sample	Total/NA	Water	9040B	

General Chemistry (Continued)

Analysis Batch: 404482

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-105716-1	PNMW-17	Total/NA	Water	9056A	
280-105716-1	PNMW-17	Total/NA	Water	9056A	
280-105716-2	PNMW-21	Total/NA	Water	9056A	
280-105716-2	PNMW-21	Total/NA	Water	9056A	
280-105716-3	PNMW-22	Total/NA	Water	9056A	
280-105716-3	PNMW-22	Total/NA	Water	9056A	
280-105716-4	PNMW-23	Total/NA	Water	9056A	
280-105716-4	PNMW-23	Total/NA	Water	9056A	
280-105716-5	PNMW-21EB	Total/NA	Water	9056A	
280-105716-6	PNMW-23DUP	Total/NA	Water	9056A	
280-105716-6	PNMW-23DUP	Total/NA	Water	9056A	
MB 280-404482/6	Method Blank	Total/NA	Water	9056A	
LCS 280-404482/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-404482/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-404482/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 348328

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-105716-1	PNMW-17	Total/NA	Water	PrecSep-21	
280-105716-2	PNMW-21	Total/NA	Water	PrecSep-21	
280-105716-3	PNMW-22	Total/NA	Water	PrecSep-21	
280-105716-4	PNMW-23	Total/NA	Water	PrecSep-21	
280-105716-5	PNMW-21EB	Total/NA	Water	PrecSep-21	
280-105716-6	PNMW-23DUP	Total/NA	Water	PrecSep-21	
MB 160-348328/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-348328/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-348328/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 348329

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-105716-1	PNMW-17	Total/NA	Water	PrecSep_0	
280-105716-2	PNMW-21	Total/NA	Water	PrecSep_0	
280-105716-3	PNMW-22	Total/NA	Water	PrecSep_0	
280-105716-4	PNMW-23	Total/NA	Water	PrecSep_0	
280-105716-5	PNMW-21EB	Total/NA	Water	PrecSep_0	
280-105716-6	PNMW-23DUP	Total/NA	Water	PrecSep_0	
MB 160-348329/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-348329/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-348329/3-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: 280-105716-1

Client Sample ID: PNMW-17

Date Collected: 01/23/18 11:40
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-1

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	312502	01/26/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			312771	01/29/18 18:11	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	312502	01/26/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			312786	01/29/18 18:59	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	402896	01/26/18 11:54	CDH	TAL DEN
Total/NA	Analysis	7470A		1			403053	01/26/18 18:11	CDH	TAL DEN
Total/NA	Analysis	9040B		1			404324	02/07/18 10:57	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	404482	02/10/18 01:56	TLP	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	404482	02/10/18 02:18	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	402581	01/24/18 08:58	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	402741	01/25/18 08:04	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.28 mL	1.0 g	348328	01/26/18 09:12	SJC	TAL SL
Total/NA	Analysis	9315		1			351856	02/19/18 06:10	KLS	TAL SL
Total/NA	Prep	PrecSep_0			1000.28 mL	1.0 g	348329	01/26/18 09:20	SJC	TAL SL
Total/NA	Analysis	9320		1			349169	02/01/18 15:52	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			352137	02/20/18 11:37	RTM	TAL SL

Client Sample ID: PNMW-21

Date Collected: 01/23/18 13:40
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-2

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	312502	01/26/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			312771	01/29/18 18:16	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	312502	01/26/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			312786	01/29/18 19:13	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	312502	01/26/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		2			312961	01/30/18 13:10	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	402896	01/26/18 11:54	CDH	TAL DEN
Total/NA	Analysis	7470A		1			403053	01/26/18 18:14	CDH	TAL DEN
Total/NA	Analysis	9040B		1			404324	02/07/18 11:01	A1D	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	404482	02/10/18 02:41	TLP	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	404482	02/10/18 03:03	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	402581	01/24/18 08:58	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	402741	01/25/18 08:04	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.03 mL	1.0 g	348328	01/26/18 09:12	SJC	TAL SL
Total/NA	Analysis	9315		1			351856	02/19/18 06:10	KLS	TAL SL
Total/NA	Prep	PrecSep_0			1000.03 mL	1.0 g	348329	01/26/18 09:20	SJC	TAL SL
Total/NA	Analysis	9320		1			349169	02/01/18 15:52	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			352137	02/20/18 11:37	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-105716-1

Client Sample ID: PNMW-22

Date Collected: 01/22/18 13:25
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-3

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	312502	01/26/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			312771	01/29/18 18:21	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	312502	01/26/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			312786	01/29/18 19:17	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	402896	01/26/18 11:54	CDH	TAL DEN
Total/NA	Analysis	7470A		1			403053	01/26/18 18:16	CDH	TAL DEN
Total/NA	Analysis	9040B		1			404324	02/07/18 10:39	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	404482	02/10/18 03:26	TLP	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	404482	02/10/18 03:48	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	402581	01/24/18 08:58	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	402741	01/25/18 08:04	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			999.75 mL	1.0 g	348328	01/26/18 09:12	SJC	TAL SL
Total/NA	Analysis	9315		1			351856	02/19/18 06:11	KLS	TAL SL
Total/NA	Prep	PrecSep_0			999.75 mL	1.0 g	348329	01/26/18 09:20	SJC	TAL SL
Total/NA	Analysis	9320		1			349169	02/01/18 15:52	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			352137	02/20/18 11:37	RTM	TAL SL

Client Sample ID: PNMW-23

Date Collected: 01/22/18 10:50
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-4

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	312502	01/26/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			312771	01/29/18 18:25	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	312502	01/26/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			312786	01/29/18 19:22	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	402896	01/26/18 11:54	CDH	TAL DEN
Total/NA	Analysis	7470A		1			403053	01/26/18 18:23	CDH	TAL DEN
Total/NA	Analysis	9040B		1			404324	02/07/18 11:05	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	404482	02/10/18 04:10	TLP	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	404482	02/10/18 04:33	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	402581	01/24/18 08:58	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	402741	01/25/18 08:04	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.54 mL	1.0 g	348328	01/26/18 09:12	SJC	TAL SL
Total/NA	Analysis	9315		1			351856	02/19/18 06:11	KLS	TAL SL
Total/NA	Prep	PrecSep_0			1000.54 mL	1.0 g	348329	01/26/18 09:20	SJC	TAL SL
Total/NA	Analysis	9320		1			349169	02/01/18 15:52	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			352137	02/20/18 11:37	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-105716-1

Client Sample ID: PNMW-21EB

Date Collected: 01/23/18 16:15
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-5

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	312502	01/26/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			312771	01/29/18 18:30	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	312502	01/26/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			312786	01/29/18 19:26	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	402896	01/26/18 11:54	CDH	TAL DEN
Total/NA	Analysis	7470A		1			403053	01/26/18 18:25	CDH	TAL DEN
Total/NA	Analysis	9040B		1			404324	02/07/18 11:09	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	404482	02/10/18 04:55	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	402581	01/24/18 08:58	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	402741	01/25/18 08:04	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			999.31 mL	1.0 g	348328	01/26/18 09:12	SJC	TAL SL
Total/NA	Analysis	9315		1			351856	02/19/18 06:11	KLS	TAL SL
Total/NA	Prep	PrecSep_0			999.31 mL	1.0 g	348329	01/26/18 09:20	SJC	TAL SL
Total/NA	Analysis	9320		1			349169	02/01/18 15:52	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			352137	02/20/18 11:37	RTM	TAL SL

Client Sample ID: PNMW-23DUP

Date Collected: 01/22/18 10:50
Date Received: 01/23/18 16:30

Lab Sample ID: 280-105716-6

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	312502	01/26/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			312771	01/29/18 18:35	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	312502	01/26/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			312786	01/29/18 19:31	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	402896	01/26/18 11:54	CDH	TAL DEN
Total/NA	Analysis	7470A		1			403053	01/26/18 18:27	CDH	TAL DEN
Total/NA	Analysis	9040B		1			404324	02/07/18 10:43	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	404482	02/10/18 06:02	TLP	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	404482	02/10/18 06:25	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	402581	01/24/18 08:58	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	402741	01/25/18 08:04	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			999.13 mL	1.0 g	348328	01/26/18 09:12	SJC	TAL SL
Total/NA	Analysis	9315		1			351856	02/19/18 06:11	KLS	TAL SL
Total/NA	Prep	PrecSep_0			999.13 mL	1.0 g	348329	01/26/18 09:20	SJC	TAL SL
Total/NA	Analysis	9320		1			349169	02/01/18 15:52	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			352137	02/20/18 11:37	RTM	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: 280-105716-1

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 ELAP		2907.01	10-31-19

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
7470A	7470A	Water	Mercury
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	02-23-18 *
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-18
Illinois	NELAP	5	200004	07-31-18
Kansas	NELAP	7	E-10336	01-31-18 *
Kentucky (UST)	State Program	4	58	02-23-18 *
Kentucky (WW)	State Program	4	98016	12-31-18
Minnesota	NELAP	5	039-999-348	12-31-18
Minnesota (Petrofund)	State Program	1	3506	07-31-18
Nevada	State Program	9	OH-000482008A	07-31-18
New Jersey	NELAP	2	OH001	06-30-18
New York	NELAP	2	10975	03-31-18 *
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-18 *
Pennsylvania	NELAP	3	68-00340	08-31-18
Texas	NELAP	6	T104704517-17-9	08-31-18
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-18
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18

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	06-30-18
Arizona	State Program	9	AZ0813	12-08-18
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-18
Illinois	NELAP	5	200023	11-30-18
Iowa	State Program	7	373	12-01-18
Kansas	NELAP	7	E-10236	10-31-18
Kentucky (DW)	State Program	4	90125	12-31-18
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-18
Louisiana (DW)	NELAP	6	LA180017	12-31-18

* 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: 280-105716-1

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
Maryland	State Program	3	310	09-30-18
Missouri	State Program	7	780	06-30-18
Nevada	State Program	9	MO000542018-1	07-31-18
New Jersey	NELAP	2	MO002	06-30-18
New York	NELAP	2	11616	03-31-18
North Dakota	State Program	8	R207	06-30-18
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-18
Pennsylvania	NELAP	3	68-00540	02-21-18 *
South Carolina	State Program	4	85002001	06-30-18
Texas	NELAP	6	T104704193-17-11	07-31-18
US Fish & Wildlife	Federal		058448	08-31-18
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-18
Virginia	NELAP	3	460230	06-14-18
Washington	State Program	10	C592	08-30-18
West Virginia DEP	State Program	3	381	08-31-18

* 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: FISHBURN	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No:
Client Contact: Anna Lundin	Phone: 208 841 9707	E-Mail: stephanie.rothmeyer@testamericainc.com		Page: Page ___ of ___
Company: HDR Inc				Job #:
Address: 9781 S. Meridian Blve Suite 400	Due Date 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#:			

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 - Na2S2SO3, 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)	2540C - Total Dissolved Solids (TDS)	Metals - 6020A, 6010C, 7470A	pH - 9040B, Anions - 9056A_28D	2540D - Total Suspended Solids	9315_Ra226, 9320_Ra228	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	D	N	N	D		
PNMW-~~1B~~ 17	1·23·18	1140	G	Water	N	N	X	X	X	X	X		
PNMW-~~2B~~ 21	1·23·18	1340	G	Water	N	N	X	X	X	X	X		
PNMW-~~18~~ 22	1·22·18	1325	G	Water	N	N	X	X	X	X	X		
PNMW-~~14~~ 23	1·22·18	1050	G	Water	N	N	X	X	X	X	X		
PNMW-~~15~~ 21EB	1·23·18	1615	G	Water	N	N	X	X	X	X	X		
PNMW-~~16~~ 23DUP	1·22·18	1050	G	Water	N	N	X	X	X	X	X		
~~PNMW-17~~				Water		N							
~~Field Duplicate~~				Water		N							
~~Equipment Blank~~				Water		N							

280-105716 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
1	Kaitlin Fishburn	1·23·18 1630	HDR Inc		01/23/18 1630	TAD
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: 1.7, 0.1+0.1 IR#8 transferred by JS 1-23-18

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: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-425919.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-105716-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 2/21/2018			
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/ (MOD) Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
PNMW-17 (280-105716-1)	1/23/18	11:40 Mountain		Water			X	X	X	2	
PNMW-21 (280-105716-2)	1/23/18	13:40 Mountain		Water			X	X	X	2	
PNMW-22 (280-105716-3)	1/22/18	13:25 Mountain		Water			X	X	X	2	
PNMW-23 (280-105716-4)	1/22/18	10:50 Mountain		Water			X	X	X	2	
PNMW-21EB (280-105716-5)	1/23/18	16:15 Mountain		Water			X	X	X	2	
PNMW-23DUP (280-105716-6)	1/22/18	10:50 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	*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	[signature]	1/24/18 1430		[signature]	1-25-18/0910	TAS Tonia
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: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

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

9.0/C8.7

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-425918.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-105716-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 2/16/2018			
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:

S26

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) Calcium and Boron	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
PNMW-17 (280-105716-1)	1/23/18	11:40 Mountain		Water			X	X	1	Use Collision Cell
PNMW-21 (280-105716-2)	1/23/18	13:40 Mountain		Water			X	X	1	Use Collision Cell
PNMW-22 (280-105716-3)	1/22/18	13:25 Mountain		Water			X	X	1	Use Collision Cell
PNMW-23 (280-105716-4)	1/22/18	10:50 Mountain		Water			X	X	1	Use Collision Cell
PNMW-21EB (280-105716-5)	1/23/18	16:15 Mountain		Water			X	X	1	Use Collision Cell
PNMW-23DUP (280-105716-6)	1/22/18	10:50 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:

	Date/Time	Company	Received by:	Date/Time:	Company
Relinquished by:	1/24/18 1420			1-25-18 930	TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Ver: 09/08/2016

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

Client Denver Site Name _____ Cooler unpacked by:

Cooler Received on 1-25-18 Opened on 1-25-18

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

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

TestAmerica Cooler # _____ Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN# IR-8 (CF **-0.3** °C) Observed Cooler Temp. 9.0 °C Corrected Cooler Temp. 8.7 °C

IR GUN #36 (CF **+0.3**°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

~~IR GUN # 627 (CF **-1.3**°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C~~

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity_____	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# **HC730269**
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 _____

16. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by:

17. 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)

18. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

WI-NC-099

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-105716-1

Login Number: 105716
List Number: 1
Creator: True, Joshua 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: 280-105716-1

Login Number: 105716
List Number: 3
Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis
List Creation: 01/25/18 01:42 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	18.0
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?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

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

TestAmerica Job ID: 280-105716-1

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)
280-105716-1	PNMW-17	97.1
280-105716-2	PNMW-21	94.4
280-105716-3	PNMW-22	99.1
280-105716-4	PNMW-23	99.1
280-105716-5	PNMW-21EB	105
280-105716-6	PNMW-23DUP	99.1
LCS 160-348328/2-A	Lab Control Sample	104
LCSD 160-348328/3-A	Lab Control Sample Dup	106
MB 160-348328/1-A	Method Blank	105

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)
280-105716-1	PNMW-17	97.1	83.7
280-105716-2	PNMW-21	94.4	84.5
280-105716-3	PNMW-22	99.1	85.2
280-105716-4	PNMW-23	99.1	83.4
280-105716-5	PNMW-21EB	105	87.5
280-105716-6	PNMW-23DUP	99.1	84.9
LCS 160-348329/2-A	Lab Control Sample	104	82.2
LCSD 160-348329/3-A	Lab Control Sample Dup	106	86.0
MB 160-348329/1-A	Method Blank	105	77.0

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: 280-115334-2
Client Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

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

Attn: Molly Reeves

Elizabeth M. Hoerchler

Authorized for release by:
11/14/2018 3:10:46 PM
Elizabeth Hoerchler, Project Manager I
elizabeth.hoerchler@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

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: 280-115334-2

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.
*	LCS or LCSD is outside acceptance limits.

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: 280-115334-2

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Pawnee

Report Number: 280-115334-2

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 10/10/2018; the samples arrived in good condition, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 0.9º C, 1.0º C, 1.4º C and 2.5º C.

TOTAL RECOVERABLE METALS (ICPMS)

Samples PNMW-17 (280-115334-1), PNMW-17 DUP (280-115334-5), PNMW-17 EB (280-115334-6), PNMW-21 (280-115334-7), PNMW-22 (280-115334-8) and PNMW-23 (280-115334-9) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 10/15/2018, 10/17/2018 and 10/18/2018 and analyzed on 10/17/2018, 10/18/2018, 10/19/2018 and 10/24/2018.

The laboratory control sample (LCS) for preparation batch 240-350481 and analytical batch 240-351121 recovered outside control limits for the following analytes: Beryllium. The analyte was biased high in the LCS and was not detected in the associated samples; therefore, the data have been reported.

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

TOTAL MERCURY

Samples PNMW-17 (280-115334-1), PNMW-17 DUP (280-115334-5), PNMW-17 EB (280-115334-6), PNMW-21 (280-115334-7), PNMW-22 (280-115334-8) and PNMW-23 (280-115334-9) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared and analyzed on 10/16/2018.

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

ANIONS (28 DAYS)

Samples PNMW-17 (280-115334-1), PNMW-17 DUP (280-115334-5), PNMW-17 EB (280-115334-6), PNMW-21 (280-115334-7), PNMW-22 (280-115334-8) and PNMW-23 (280-115334-9) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 10/22/2018 and 10/23/2018.

The followings sample was analyzed at a dilution in anion batch 280-434305 due to the Matrix Conductivity Threshold (MCT) of the instrument: PNMW-21 (280-115334-7). 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.

Job ID: 280-115334-2 (Continued)

Laboratory: TestAmerica Denver (Continued)

RADIUM-226 (GFPC)

Samples PNMW-17 (280-115334-1), PNMW-17 DUP (280-115334-5), PNMW-17 EB (280-115334-6), PNMW-21 (280-115334-7), PNMW-22 (280-115334-8) and PNMW-23 (280-115334-9) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 10/15/2018 and analyzed on 11/06/2018.

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples in batch 160-395167: PNMW-17 (280-115334-1), PNMW-17 DUP (280-115334-5), PNMW-17 EB (280-115334-6), PNMW-21 (280-115334-7), PNMW-22 (280-115334-8) and PNMW-23 (280-115334-9). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

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

RADIUM-228

Samples PNMW-17 (280-115334-1), PNMW-17 DUP (280-115334-5), PNMW-17 EB (280-115334-6), PNMW-21 (280-115334-7), PNMW-22 (280-115334-8) and PNMW-23 (280-115334-9) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 10/15/2018 and analyzed on 10/31/2018.

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples in batch 160-395282: PNMW-17 (280-115334-1), PNMW-17 DUP (280-115334-5), PNMW-17 EB (280-115334-6), PNMW-21 (280-115334-7), PNMW-22 (280-115334-8) and PNMW-23 (280-115334-9). 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)

Samples PNMW-17 (280-115334-1), PNMW-17 DUP (280-115334-5), PNMW-17 EB (280-115334-6), PNMW-21 (280-115334-7), PNMW-22 (280-115334-8) and PNMW-23 (280-115334-9) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 11/08/2018.

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: 280-115334-2

Client Sample ID: PNMW-17 — Lab Sample ID: 280-115334-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.078		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.00067	J	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Cobalt	0.00027	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0045		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0064	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.018		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.039		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Fluoride	0.20	J	0.50	0.060	mg/L	1		9056A	Total/NA

Client Sample ID: PNMW-17 DUP — Lab Sample ID: 280-115334-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.080		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Chromium	0.0045		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0071	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.017		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.037		0.0080	0.0017	mg/L	1		6020A	Total Recoverable

Client Sample ID: PNMW-17 EB — Lab Sample ID: 280-115334-6

No Detections.

Client Sample ID: PNMW-21 — Lab Sample ID: 280-115334-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.0025	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.072		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.00085	J	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Cadmium	0.00033	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.0018		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.028		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0050	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.0026		0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.0064		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: 280-115334-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lithium	0.095		0.0080	0.0017	mg/L	1		6020A	Total Recoverable

Client Sample ID: PNMW-22 — Lab Sample ID: 280-115334-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.073		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Chromium	0.0024		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0034	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.00049	J	0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.0062		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.053		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Fluoride	0.38	J	0.50	0.060	mg/L	1		9056A	Total/NA

Client Sample ID: PNMW-23 — Lab Sample ID: 280-115334-9

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	0.0016	J	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0011	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0025	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.044		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Fluoride	0.16	J	0.50	0.060	mg/L	1		9056A	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: 280-115334-2

Method	Method Description	Protocol	Laboratory
6020A	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL DEN
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 DEN
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 = 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: 280-115334-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-115334-1	PNMW-17	Water	10/08/18 18:50	10/10/18 14:30
280-115334-5	PNMW-17 DUP	Water	10/08/18 18:50	10/10/18 14:30
280-115334-6	PNMW-17 EB	Water	10/09/18 10:00	10/10/18 14:30
280-115334-7	PNMW-21	Water	10/09/18 18:10	10/10/18 14:30
280-115334-8	PNMW-22	Water	10/09/18 15:40	10/10/18 14:30
280-115334-9	PNMW-23	Water	10/09/18 13:40	10/10/18 14:30

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

Client Sample ID: PNMW-17
Date Collected: 10/08/18 18:50
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/15/18 14:00	10/17/18 19:38	1
Arsenic	ND		0.0050	0.00075	mg/L		10/15/18 14:00	10/17/18 19:38	1
Barium	**0.078**		0.0050	0.0022	mg/L		10/15/18 14:00	10/17/18 19:38	1
Beryllium	**0.00067**	**J**	0.0010	0.00031	mg/L		10/15/18 14:00	10/17/18 19:38	1
Cadmium	ND		0.0010	0.00021	mg/L		10/15/18 14:00	10/17/18 19:38	1
Cobalt	**0.00027**	**J**	0.0010	0.00019	mg/L		10/15/18 14:00	10/17/18 19:38	1
Chromium	**0.0045**		0.0020	0.00098	mg/L		10/15/18 14:00	10/18/18 20:38	1
Molybdenum	**0.0064**	**J**	0.010	0.0011	mg/L		10/15/18 14:00	10/17/18 19:38	1
Lead	ND		0.0010	0.00045	mg/L		10/15/18 14:00	10/17/18 19:38	1
Selenium	**0.018**		0.0050	0.00089	mg/L		10/15/18 14:00	10/17/18 19:38	1
Thallium	ND		0.0010	0.00020	mg/L		10/15/18 14:00	10/17/18 19:38	1
Lithium	**0.039**		0.0080	0.0017	mg/L		10/15/18 14:00	10/17/18 19:38	1

Client Sample ID: PNMW-17 DUP
Date Collected: 10/08/18 18:50
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/17/18 14:00	10/19/18 17:13	1
Arsenic	ND		0.0050	0.00075	mg/L		10/17/18 14:00	10/19/18 17:13	1
Barium	**0.080**		0.0050	0.0022	mg/L		10/17/18 14:00	10/19/18 17:13	1
Beryllium	ND	*	0.0010	0.00031	mg/L		10/17/18 14:00	10/19/18 17:13	1
Cadmium	ND		0.0010	0.00021	mg/L		10/17/18 14:00	10/19/18 17:13	1
Cobalt	ND		0.0010	0.00019	mg/L		10/17/18 14:00	10/19/18 17:13	1
Chromium	**0.0045**		0.0020	0.00098	mg/L		10/17/18 14:00	10/19/18 17:13	1
Molybdenum	**0.0071**	**J**	0.010	0.0011	mg/L		10/17/18 14:00	10/19/18 17:13	1
Lead	ND		0.0010	0.00045	mg/L		10/17/18 14:00	10/19/18 17:13	1
Selenium	**0.017**		0.0050	0.00089	mg/L		10/17/18 14:00	10/19/18 17:13	1
Thallium	ND		0.0010	0.00020	mg/L		10/17/18 14:00	10/19/18 17:13	1
Lithium	**0.037**		0.0080	0.0017	mg/L		10/17/18 14:00	10/19/18 17:13	1

Client Sample ID: PNMW-17 EB
Date Collected: 10/09/18 10:00
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/17/18 14:00	10/19/18 17:15	1
Arsenic	ND		0.0050	0.00075	mg/L		10/17/18 14:00	10/19/18 17:15	1
Barium	ND		0.0050	0.0022	mg/L		10/17/18 14:00	10/19/18 17:15	1
Beryllium	ND	*	0.0010	0.00031	mg/L		10/17/18 14:00	10/19/18 17:15	1
Cadmium	ND		0.0010	0.00021	mg/L		10/17/18 14:00	10/19/18 17:15	1
Cobalt	ND		0.0010	0.00019	mg/L		10/17/18 14:00	10/19/18 17:15	1
Chromium	ND		0.0020	0.00098	mg/L		10/17/18 14:00	10/19/18 17:15	1
Molybdenum	ND		0.010	0.0011	mg/L		10/17/18 14:00	10/19/18 17:15	1
Lead	ND		0.0010	0.00045	mg/L		10/17/18 14:00	10/19/18 17:15	1
Selenium	ND		0.0050	0.00089	mg/L		10/17/18 14:00	10/19/18 17:15	1
Thallium	ND		0.0010	0.00020	mg/L		10/17/18 14:00	10/19/18 17:15	1
Lithium	ND		0.0080	0.0017	mg/L		10/17/18 14:00	10/19/18 17:15	1

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

Client Sample ID: PNMW-21
Date Collected: 10/09/18 18:10
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/18/18 14:00	10/24/18 15:08	1
Arsenic	**0.0025**	**J**	0.0050	0.00075	mg/L		10/18/18 14:00	10/24/18 15:08	1
Barium	**0.072**		0.0050	0.0022	mg/L		10/18/18 14:00	10/24/18 15:08	1
Beryllium	**0.00085**	**J**	0.0010	0.00031	mg/L		10/18/18 14:00	10/24/18 15:08	1
Cadmium	**0.00033**	**J**	0.0010	0.00021	mg/L		10/18/18 14:00	10/24/18 15:08	1
Cobalt	**0.0018**		0.0010	0.00019	mg/L		10/18/18 14:00	10/24/18 15:08	1
Chromium	**0.028**		0.0020	0.00098	mg/L		10/18/18 14:00	10/24/18 15:08	1
Molybdenum	**0.0050**	**J**	0.010	0.0011	mg/L		10/18/18 14:00	10/24/18 15:08	1
Lead	**0.0026**		0.0010	0.00045	mg/L		10/18/18 14:00	10/24/18 15:08	1
Selenium	**0.0064**		0.0050	0.00089	mg/L		10/18/18 14:00	10/24/18 15:08	1
Thallium	ND		0.0010	0.00020	mg/L		10/18/18 14:00	10/24/18 15:08	1
Lithium	**0.095**		0.0080	0.0017	mg/L		10/18/18 14:00	10/24/18 15:08	1

Client Sample ID: PNMW-22
Date Collected: 10/09/18 15:40
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/18/18 14:00	10/24/18 15:10	1
Arsenic	ND		0.0050	0.00075	mg/L		10/18/18 14:00	10/24/18 15:10	1
Barium	**0.073**		0.0050	0.0022	mg/L		10/18/18 14:00	10/24/18 15:10	1
Beryllium	ND		0.0010	0.00031	mg/L		10/18/18 14:00	10/24/18 15:10	1
Cadmium	ND		0.0010	0.00021	mg/L		10/18/18 14:00	10/24/18 15:10	1
Cobalt	ND		0.0010	0.00019	mg/L		10/18/18 14:00	10/24/18 15:10	1
Chromium	**0.0024**		0.0020	0.00098	mg/L		10/18/18 14:00	10/24/18 15:10	1
Molybdenum	**0.0034**	**J**	0.010	0.0011	mg/L		10/18/18 14:00	10/24/18 15:10	1
Lead	**0.00049**	**J**	0.0010	0.00045	mg/L		10/18/18 14:00	10/24/18 15:10	1
Selenium	**0.0062**		0.0050	0.00089	mg/L		10/18/18 14:00	10/24/18 15:10	1
Thallium	ND		0.0010	0.00020	mg/L		10/18/18 14:00	10/24/18 15:10	1
Lithium	**0.053**		0.0080	0.0017	mg/L		10/18/18 14:00	10/24/18 15:10	1

Client Sample ID: PNMW-23
Date Collected: 10/09/18 13:40
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/18/18 14:00	10/24/18 15:12	1
Arsenic	ND		0.0050	0.00075	mg/L		10/18/18 14:00	10/24/18 15:12	1
Barium	**0.027**		0.0050	0.0022	mg/L		10/18/18 14:00	10/24/18 15:12	1
Beryllium	ND		0.0010	0.00031	mg/L		10/18/18 14:00	10/24/18 15:12	1
Cadmium	ND		0.0010	0.00021	mg/L		10/18/18 14:00	10/24/18 15:12	1
Cobalt	ND		0.0010	0.00019	mg/L		10/18/18 14:00	10/24/18 15:12	1
Chromium	**0.0016**	**J**	0.0020	0.00098	mg/L		10/18/18 14:00	10/24/18 15:12	1
Molybdenum	**0.0011**	**J**	0.010	0.0011	mg/L		10/18/18 14:00	10/24/18 15:12	1
Lead	ND		0.0010	0.00045	mg/L		10/18/18 14:00	10/24/18 15:12	1
Selenium	**0.0025**	**J**	0.0050	0.00089	mg/L		10/18/18 14:00	10/24/18 15:12	1
Thallium	ND		0.0010	0.00020	mg/L		10/18/18 14:00	10/24/18 15:12	1
Lithium	**0.044**		0.0080	0.0017	mg/L		10/18/18 14:00	10/24/18 15:12	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: PNMW-17
Date Collected: 10/08/18 18:50
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		10/16/18 11:15	10/16/18 17:45	1

Client Sample ID: PNMW-17 DUP
Date Collected: 10/08/18 18:50
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		10/16/18 11:15	10/16/18 17:53	1

Client Sample ID: PNMW-17 EB
Date Collected: 10/09/18 10:00
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		10/16/18 11:15	10/16/18 17:56	1

Client Sample ID: PNMW-21
Date Collected: 10/09/18 18:10
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		10/16/18 11:15	10/16/18 17:58	1

Client Sample ID: PNMW-22
Date Collected: 10/09/18 15:40
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		10/16/18 11:15	10/16/18 18:00	1

Client Sample ID: PNMW-23
Date Collected: 10/09/18 13:40
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		10/16/18 11:15	10/16/18 18:02	1

General Chemistry

Client Sample ID: PNMW-17
Date Collected: 10/08/18 18:50
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	**0.20**	**J**	0.50	0.060	mg/L			10/22/18 02:48	1

Client Sample ID: PNMW-17 DUP
Date Collected: 10/08/18 18:50
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		2.5	0.30	mg/L			10/22/18 06:51	5

Client Sample ID: PNMW-17 EB
Date Collected: 10/09/18 10:00
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.50	0.060	mg/L			10/22/18 07:10	1

General Chemistry

Client Sample ID: PNMW-21
Date Collected: 10/09/18 18:10
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		2.5	0.30	mg/L			10/22/18 07:29	5

Client Sample ID: PNMW-22
Date Collected: 10/09/18 15:40
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.38	J	0.50	0.060	mg/L			10/22/18 08:06	1

Client Sample ID: PNMW-23
Date Collected: 10/09/18 13:40
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.16	J	0.50	0.060	mg/L			10/23/18 23:18	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: PNMW-17
Date Collected: 10/08/18 18:50
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.485		0.139	0.146	1.00	0.103	pCi/L	10/15/18 09:41	11/06/18 14:20	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*90.3*		*40 - 110*	*10/15/18 09:41*	*11/06/18 14:20*	*1*

Client Sample ID: PNMW-17 DUP
Date Collected: 10/08/18 18:50
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.329		0.113	0.117	1.00	0.109	pCi/L	10/15/18 09:41	11/06/18 14:20	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*10/15/18 09:41*	*11/06/18 14:20*	*1*

Client Sample ID: PNMW-17 EB
Date Collected: 10/09/18 10:00
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.143		0.0876	0.0886	1.00	0.118	pCi/L	10/15/18 09:41	11/06/18 14:20	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*106*		*40 - 110*	*10/15/18 09:41*	*11/06/18 14:20*	*1*

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: PNMW-21
Date Collected: 10/09/18 18:10
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.273		0.103	0.105	1.00	0.0991	pCi/L	10/15/18 09:41	11/06/18 14:20	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*103*		*40 - 110*	*10/15/18 09:41*	*11/06/18 14:20*	*1*

Client Sample ID: PNMW-22
Date Collected: 10/09/18 15:40
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.366		0.117	0.121	1.00	0.101	pCi/L	10/15/18 09:41	11/06/18 14:20	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*10/15/18 09:41*	*11/06/18 14:20*	*1*

Client Sample ID: PNMW-23
Date Collected: 10/09/18 13:40
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.330		0.114	0.118	1.00	0.110	pCi/L	10/15/18 09:41	11/06/18 14:20	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*98.8*		*40 - 110*	*10/15/18 09:41*	*11/06/18 14:20*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: PNMW-17
Date Collected: 10/08/18 18:50
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.337	U	0.269	0.271	1.00	0.426	pCi/L	10/15/18 13:37	10/31/18 10:11	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*90.3*		*40 - 110*	*10/15/18 13:37*	*10/31/18 10:11*	*1*
Y Carrier	*81.5*		*40 - 110*	*10/15/18 13:37*	*10/31/18 10:11*	*1*

Client Sample ID: PNMW-17 DUP
Date Collected: 10/08/18 18:50
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.438	U	0.287	0.290	1.00	0.443	pCi/L	10/15/18 13:37	10/31/18 10:12	1

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

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110	10/15/18 13:37	10/31/18 10:12	1
Y Carrier	71.8		40 - 110	10/15/18 13:37	10/31/18 10:12	1

Client Sample ID: PNMW-17 EB
Date Collected: 10/09/18 10:00
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.354		0.229	0.231	1.00	0.349	pCi/L	10/15/18 13:37	10/31/18 10:12	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	106		40 - 110	10/15/18 13:37	10/31/18 10:12	1
Y Carrier	75.9		40 - 110	10/15/18 13:37	10/31/18 10:12	1

Client Sample ID: PNMW-21
Date Collected: 10/09/18 18:10
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.529		0.244	0.248	1.00	0.347	pCi/L	10/15/18 13:37	10/31/18 10:12	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	103		40 - 110	10/15/18 13:37	10/31/18 10:12	1
Y Carrier	78.1		40 - 110	10/15/18 13:37	10/31/18 10:12	1

Client Sample ID: PNMW-22
Date Collected: 10/09/18 15:40
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.391	U	0.269	0.272	1.00	0.419	pCi/L	10/15/18 13:37	10/31/18 10:12	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110	10/15/18 13:37	10/31/18 10:12	1
Y Carrier	76.6		40 - 110	10/15/18 13:37	10/31/18 10:12	1

Client Sample ID: PNMW-23
Date Collected: 10/09/18 13:40
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.616		0.279	0.285	1.00	0.401	pCi/L	10/15/18 13:37	10/31/18 10:12	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	98.8		40 - 110	10/15/18 13:37	10/31/18 10:12	1
Y Carrier	76.6		40 - 110	10/15/18 13:37	10/31/18 10:12	1

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

Client Sample ID: PNMW-17
Date Collected: 10/08/18 18:50
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.822		0.303	0.308	5.00	0.426	pCi/L		11/08/18 16:41	1

Client Sample ID: PNMW-17 DUP
Date Collected: 10/08/18 18:50
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.767		0.308	0.313	5.00	0.443	pCi/L		11/08/18 16:41	1

Client Sample ID: PNMW-17 EB
Date Collected: 10/09/18 10:00
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.497		0.245	0.247	5.00	0.349	pCi/L		11/08/18 16:41	1

Client Sample ID: PNMW-21
Date Collected: 10/09/18 18:10
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.803		0.265	0.269	5.00	0.347	pCi/L		11/08/18 16:41	1

Client Sample ID: PNMW-22
Date Collected: 10/09/18 15:40
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.758		0.293	0.298	5.00	0.419	pCi/L		11/08/18 16:41	1

Client Sample ID: PNMW-23
Date Collected: 10/09/18 13:40
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.946		0.301	0.308	5.00	0.401	pCi/L		11/08/18 16:41	1

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-350172/1-A
Matrix: Water
Analysis Batch: 350736

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 350172

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/15/18 14:00	10/17/18 19:34	1
Arsenic	ND		0.0050	0.00075	mg/L		10/15/18 14:00	10/17/18 19:34	1
Barium	ND		0.0050	0.0022	mg/L		10/15/18 14:00	10/17/18 19:34	1
Beryllium	ND		0.0010	0.00031	mg/L		10/15/18 14:00	10/17/18 19:34	1
Cadmium	ND		0.0010	0.00021	mg/L		10/15/18 14:00	10/17/18 19:34	1
Cobalt	ND		0.0010	0.00019	mg/L		10/15/18 14:00	10/17/18 19:34	1
Molybdenum	ND		0.010	0.0011	mg/L		10/15/18 14:00	10/17/18 19:34	1
Lead	ND		0.0010	0.00045	mg/L		10/15/18 14:00	10/17/18 19:34	1
Selenium	ND		0.0050	0.00089	mg/L		10/15/18 14:00	10/17/18 19:34	1
Thallium	ND		0.0010	0.00020	mg/L		10/15/18 14:00	10/17/18 19:34	1
Lithium	ND		0.0080	0.0017	mg/L		10/15/18 14:00	10/17/18 19:34	1

Lab Sample ID: MB 240-350172/1-A
Matrix: Water
Analysis Batch: 350851

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 350172

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	ND		0.0020	0.00098	mg/L		10/15/18 14:00	10/18/18 20:34	1

Lab Sample ID: LCS 240-350172/25-A
Matrix: Water
Analysis Batch: 350736

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 350172

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0955		mg/L		96	80 - 120
Arsenic	1.00	0.988		mg/L		99	80 - 120
Barium	1.00	1.01		mg/L		101	80 - 120
Beryllium	1.00	0.985		mg/L		98	80 - 120
Cadmium	1.00	1.02		mg/L		102	80 - 120
Cobalt	1.00	0.948		mg/L		95	80 - 120
Molybdenum	0.100	0.0938		mg/L		94	80 - 120
Lead	1.00	1.04		mg/L		104	80 - 120
Selenium	1.00	0.923		mg/L		92	80 - 120
Thallium	0.250	0.256		mg/L		102	80 - 120
Lithium	0.100	0.0931		mg/L		93	80 - 120

Lab Sample ID: LCS 240-350172/25-A
Matrix: Water
Analysis Batch: 350851

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 350172

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium	1.00	0.951		mg/L		95	80 - 120

Lab Sample ID: MB 240-350481/1-A
Matrix: Water
Analysis Batch: 351121

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 350481

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/17/18 14:00	10/19/18 16:27	1

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

Lab Sample ID: MB 240-350481/1-A
Matrix: Water
Analysis Batch: 351121

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 350481

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050	0.00075	mg/L		10/17/18 14:00	10/19/18 16:27	1
Barium	ND		0.0050	0.0022	mg/L		10/17/18 14:00	10/19/18 16:27	1
Beryllium	ND		0.0010	0.00031	mg/L		10/17/18 14:00	10/19/18 16:27	1
Cadmium	ND		0.0010	0.00021	mg/L		10/17/18 14:00	10/19/18 16:27	1
Cobalt	ND		0.0010	0.00019	mg/L		10/17/18 14:00	10/19/18 16:27	1
Chromium	ND		0.0020	0.00098	mg/L		10/17/18 14:00	10/19/18 16:27	1
Molybdenum	ND		0.010	0.0011	mg/L		10/17/18 14:00	10/19/18 16:27	1
Lead	ND		0.0010	0.00045	mg/L		10/17/18 14:00	10/19/18 16:27	1
Selenium	ND		0.0050	0.00089	mg/L		10/17/18 14:00	10/19/18 16:27	1
Thallium	ND		0.0010	0.00020	mg/L		10/17/18 14:00	10/19/18 16:27	1
Lithium	ND		0.0080	0.0017	mg/L		10/17/18 14:00	10/19/18 16:27	1

Lab Sample ID: LCS 240-350481/3-A
Matrix: Water
Analysis Batch: 351121

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 350481

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0980		mg/L		98	80 - 120
Arsenic	1.00	0.862		mg/L		86	80 - 120
Barium	1.00	1.01		mg/L		101	80 - 120
Beryllium	1.00	1.22	*	mg/L		122	80 - 120
Cadmium	1.00	0.980		mg/L		98	80 - 120
Cobalt	1.00	0.910		mg/L		91	80 - 120
Chromium	1.00	0.963		mg/L		96	80 - 120
Molybdenum	0.100	0.0969		mg/L		97	80 - 120
Lead	1.00	0.993		mg/L		99	80 - 120
Selenium	1.00	0.889		mg/L		89	80 - 120
Thallium	0.250	0.245		mg/L		98	80 - 120
Lithium	0.100	0.109		mg/L		109	80 - 120

Lab Sample ID: MB 240-350747/1-A
Matrix: Water
Analysis Batch: 351820

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 350747

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/18/18 14:00	10/24/18 15:04	1
Arsenic	ND		0.0050	0.00075	mg/L		10/18/18 14:00	10/24/18 15:04	1
Barium	ND		0.0050	0.0022	mg/L		10/18/18 14:00	10/24/18 15:04	1
Beryllium	ND		0.0010	0.00031	mg/L		10/18/18 14:00	10/24/18 15:04	1
Cadmium	ND		0.0010	0.00021	mg/L		10/18/18 14:00	10/24/18 15:04	1
Cobalt	ND		0.0010	0.00019	mg/L		10/18/18 14:00	10/24/18 15:04	1
Chromium	ND		0.0020	0.00098	mg/L		10/18/18 14:00	10/24/18 15:04	1
Molybdenum	ND		0.010	0.0011	mg/L		10/18/18 14:00	10/24/18 15:04	1
Lead	ND		0.0010	0.00045	mg/L		10/18/18 14:00	10/24/18 15:04	1
Selenium	ND		0.0050	0.00089	mg/L		10/18/18 14:00	10/24/18 15:04	1
Thallium	ND		0.0010	0.00020	mg/L		10/18/18 14:00	10/24/18 15:04	1
Lithium	ND		0.0080	0.0017	mg/L		10/18/18 14:00	10/24/18 15:04	1

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

Lab Sample ID: LCS 240-350747/2-A
Matrix: Water
Analysis Batch: 351820

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 350747

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0995		mg/L		99	80 - 120
Arsenic	1.00	0.954		mg/L		95	80 - 120
Barium	1.00	0.993		mg/L		99	80 - 120
Beryllium	1.00	0.939		mg/L		94	80 - 120
Cadmium	1.00	1.02		mg/L		102	80 - 120
Cobalt	1.00	0.976		mg/L		98	80 - 120
Chromium	1.00	1.00		mg/L		100	80 - 120
Molybdenum	0.100	0.0997		mg/L		100	80 - 120
Lead	1.00	1.00		mg/L		100	80 - 120
Selenium	1.00	0.928		mg/L		93	80 - 120
Thallium	0.250	0.244		mg/L		98	80 - 120
Lithium	0.100	0.100		mg/L		100	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-433538/1-A
Matrix: Water
Analysis Batch: 433723

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 433538

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		10/16/18 11:15	10/16/18 17:02	1

Lab Sample ID: LCS 280-433538/2-A
Matrix: Water
Analysis Batch: 433723

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 433538

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00500	0.00498		mg/L		100	84 - 120

Lab Sample ID: LCSD 280-433538/3-A
Matrix: Water
Analysis Batch: 433723

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 433538

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.00500	0.00499		mg/L		100	84 - 120	0	15

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-434305/6
Matrix: Water
Analysis Batch: 434305

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			10/21/18 09:16	1

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

Lab Sample ID: LCS 280-434305/4
Matrix: Water
Analysis Batch: 434305

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	5.07		mg/L		101	90 - 110

Lab Sample ID: LCSD 280-434305/5
Matrix: Water
Analysis Batch: 434305

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	5.10		mg/L		102	90 - 110	0	10

Lab Sample ID: MRL 280-434305/3
Matrix: Water
Analysis Batch: 434305

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	0.193	J	mg/L		97	50 - 150

Lab Sample ID: MB 280-434562/6
Matrix: Water
Analysis Batch: 434562

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			10/23/18 14:25	1

Lab Sample ID: LCS 280-434562/4
Matrix: Water
Analysis Batch: 434562

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	5.19		mg/L		104	90 - 110

Lab Sample ID: LCSD 280-434562/5
Matrix: Water
Analysis Batch: 434562

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	5.18		mg/L		104	90 - 110	0	10

Lab Sample ID: MRL 280-434562/3
Matrix: Water
Analysis Batch: 434562

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	0.206	J	mg/L		103	50 - 150

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-395167/19-A
Matrix: Water
Analysis Batch: 399568

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 395167

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1291		0.0866	0.0874	1.00	0.118	pCi/L	10/15/18 09:41	11/06/18 14:17	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*107*		*40 - 110*	*10/15/18 09:41*	*11/06/18 14:17*	*1*

Lab Sample ID: LCS 160-395167/1-A
Matrix: Water
Analysis Batch: 399569

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 395167

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	11.29		1.20	1.00	0.0805	pCi/L	99	68 - 137		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*88.2*		*40 - 110*

Lab Sample ID: LCSD 160-395167/2-A
Matrix: Water
Analysis Batch: 399569

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 395167

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.4	11.02		1.16	1.00	0.110	pCi/L	97	68 - 137	0.12	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*98.2*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-395282/19-A
Matrix: Water
Analysis Batch: 398413

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 395282

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.008077	U	0.173	0.173	1.00	0.313	pCi/L	10/15/18 13:37	10/31/18 10:13	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*107*		*40 - 110*	*10/15/18 13:37*	*10/31/18 10:13*	*1*
Y Carrier	*81.5*		*40 - 110*	*10/15/18 13:37*	*10/31/18 10:13*	*1*

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

Lab Sample ID: LCS 160-395282/1-A
Matrix: Water
Analysis Batch: 398413

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 395282

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.26	8.991		1.09	1.00	0.434	pCi/L	97	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*88.2*		*40 - 110*
Y Carrier	*81.1*		*40 - 110*

Lab Sample ID: LCSD 160-395282/2-A
Matrix: Water
Analysis Batch: 398413

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 395282

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			9.26	8.590		1.05	1.00	0.445	pCi/L	93	56 - 140	0.19	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*98.2*		*40 - 110*
Y Carrier	*73.3*		*40 - 110*

Metals

Prep Batch: 350172

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-1	PNMW-17	Total Recoverable	Water	3005A	
MB 240-350172/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-350172/25-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 350481

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-5	PNMW-17 DUP	Total Recoverable	Water	3005A	
280-115334-6	PNMW-17 EB	Total Recoverable	Water	3005A	
MB 240-350481/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-350481/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 350736

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-1	PNMW-17	Total Recoverable	Water	6020A	350172
MB 240-350172/1-A	Method Blank	Total Recoverable	Water	6020A	350172
LCS 240-350172/25-A	Lab Control Sample	Total Recoverable	Water	6020A	350172

Prep Batch: 350747

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-7	PNMW-21	Total Recoverable	Water	3005A	
280-115334-8	PNMW-22	Total Recoverable	Water	3005A	
280-115334-9	PNMW-23	Total Recoverable	Water	3005A	
MB 240-350747/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-350747/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 350851

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-1	PNMW-17	Total Recoverable	Water	6020A	350172
MB 240-350172/1-A	Method Blank	Total Recoverable	Water	6020A	350172
LCS 240-350172/25-A	Lab Control Sample	Total Recoverable	Water	6020A	350172

Analysis Batch: 351121

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-5	PNMW-17 DUP	Total Recoverable	Water	6020A	350481
280-115334-6	PNMW-17 EB	Total Recoverable	Water	6020A	350481
MB 240-350481/1-A	Method Blank	Total Recoverable	Water	6020A	350481
LCS 240-350481/3-A	Lab Control Sample	Total Recoverable	Water	6020A	350481

Analysis Batch: 351820

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-7	PNMW-21	Total Recoverable	Water	6020A	350747
280-115334-8	PNMW-22	Total Recoverable	Water	6020A	350747
280-115334-9	PNMW-23	Total Recoverable	Water	6020A	350747
MB 240-350747/1-A	Method Blank	Total Recoverable	Water	6020A	350747
LCS 240-350747/2-A	Lab Control Sample	Total Recoverable	Water	6020A	350747

Prep Batch: 433538

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-1	PNMW-17	Total/NA	Water	7470A	
280-115334-5	PNMW-17 DUP	Total/NA	Water	7470A	
280-115334-6	PNMW-17 EB	Total/NA	Water	7470A	

Metals (Continued)

Prep Batch: 433538 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-7	PNMW-21	Total/NA	Water	7470A	
280-115334-8	PNMW-22	Total/NA	Water	7470A	
280-115334-9	PNMW-23	Total/NA	Water	7470A	
MB 280-433538/1-A	Method Blank	Total/NA	Water	7470A	
LCS 280-433538/2-A	Lab Control Sample	Total/NA	Water	7470A	
LCSD 280-433538/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	

Analysis Batch: 433723

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-1	PNMW-17	Total/NA	Water	7470A	433538
280-115334-5	PNMW-17 DUP	Total/NA	Water	7470A	433538
280-115334-6	PNMW-17 EB	Total/NA	Water	7470A	433538
280-115334-7	PNMW-21	Total/NA	Water	7470A	433538
280-115334-8	PNMW-22	Total/NA	Water	7470A	433538
280-115334-9	PNMW-23	Total/NA	Water	7470A	433538
MB 280-433538/1-A	Method Blank	Total/NA	Water	7470A	433538
LCS 280-433538/2-A	Lab Control Sample	Total/NA	Water	7470A	433538
LCSD 280-433538/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	433538

General Chemistry

Analysis Batch: 434305

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-1	PNMW-17	Total/NA	Water	9056A	
280-115334-5	PNMW-17 DUP	Total/NA	Water	9056A	
280-115334-6	PNMW-17 EB	Total/NA	Water	9056A	
280-115334-7	PNMW-21	Total/NA	Water	9056A	
280-115334-8	PNMW-22	Total/NA	Water	9056A	
MB 280-434305/6	Method Blank	Total/NA	Water	9056A	
LCS 280-434305/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-434305/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-434305/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 434562

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-9	PNMW-23	Total/NA	Water	9056A	
MB 280-434562/6	Method Blank	Total/NA	Water	9056A	
LCS 280-434562/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-434562/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-434562/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 395167

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-1	PNMW-17	Total/NA	Water	PrecSep-21	
280-115334-5	PNMW-17 DUP	Total/NA	Water	PrecSep-21	
280-115334-6	PNMW-17 EB	Total/NA	Water	PrecSep-21	
280-115334-7	PNMW-21	Total/NA	Water	PrecSep-21	
280-115334-8	PNMW-22	Total/NA	Water	PrecSep-21	

Rad (Continued)

Prep Batch: 395167 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-9	PNMW-23	Total/NA	Water	PrecSep-21	
MB 160-395167/19-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-395167/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-395167/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 395282

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-1	PNMW-17	Total/NA	Water	PrecSep_0	
280-115334-5	PNMW-17 DUP	Total/NA	Water	PrecSep_0	
280-115334-6	PNMW-17 EB	Total/NA	Water	PrecSep_0	
280-115334-7	PNMW-21	Total/NA	Water	PrecSep_0	
280-115334-8	PNMW-22	Total/NA	Water	PrecSep_0	
280-115334-9	PNMW-23	Total/NA	Water	PrecSep_0	
MB 160-395282/19-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-395282/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-395282/2-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: 280-115334-2

Client Sample ID: PNMW-17

Date Collected: 10/08/18 18:50
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-1

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	350172	10/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			350736	10/17/18 19:38	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350172	10/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			350851	10/18/18 20:38	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	433538	10/16/18 11:15	THP	TAL DEN
Total/NA	Analysis	7470A		1			433723	10/16/18 17:45	THP	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	434305	10/22/18 02:48	ARM	TAL DEN
Total/NA	Prep	PrecSep-21			999.97 mL	1.0 g	395167	10/15/18 09:41	JLC	TAL SL
Total/NA	Analysis	9315		1			399569	11/06/18 14:20	CDR	TAL SL
Total/NA	Prep	PrecSep_0			999.97 mL	1.0 g	395282	10/15/18 13:37	JLC	TAL SL
Total/NA	Analysis	9320		1			398413	10/31/18 10:11	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			400041	11/08/18 16:41	RTM	TAL SL

Client Sample ID: PNMW-17 DUP

Date Collected: 10/08/18 18:50
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-5

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	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			351121	10/19/18 17:13	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	433538	10/16/18 11:15	THP	TAL DEN
Total/NA	Analysis	7470A		1			433723	10/16/18 17:53	THP	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	434305	10/22/18 06:51	ARM	TAL DEN
Total/NA	Prep	PrecSep-21			1000.29 mL	1.0 g	395167	10/15/18 09:41	JLC	TAL SL
Total/NA	Analysis	9315		1			399569	11/06/18 14:20	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.29 mL	1.0 g	395282	10/15/18 13:37	JLC	TAL SL
Total/NA	Analysis	9320		1			398413	10/31/18 10:12	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			400041	11/08/18 16:41	RTM	TAL SL

Client Sample ID: PNMW-17 EB

Date Collected: 10/09/18 10:00
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-6

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	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			351121	10/19/18 17:15	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	433538	10/16/18 11:15	THP	TAL DEN
Total/NA	Analysis	7470A		1			433723	10/16/18 17:56	THP	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	434305	10/22/18 07:10	ARM	TAL DEN
Total/NA	Prep	PrecSep-21			999.85 mL	1.0 g	395167	10/15/18 09:41	JLC	TAL SL
Total/NA	Analysis	9315		1			399569	11/06/18 14:20	CDR	TAL SL
Total/NA	Prep	PrecSep_0			999.85 mL	1.0 g	395282	10/15/18 13:37	JLC	TAL SL
Total/NA	Analysis	9320		1			398413	10/31/18 10:12	CDR	TAL SL

Lab Chronicle

Client: HDR Inc
TestAmerica Job ID: 280-115334-2
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Ra226_Ra228		1			400041	11/08/18 16:41	RTM	TAL SL

Client Sample ID: PNMW-21
Date Collected: 10/09/18 18:10
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-7
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	350747	10/18/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			351820	10/24/18 15:08	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	433538	10/16/18 11:15	THP	TAL DEN
Total/NA	Analysis	7470A		1			433723	10/16/18 17:58	THP	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	434305	10/22/18 07:29	ARM	TAL DEN
Total/NA	Prep	PrecSep-21			999.93 mL	1.0 g	395167	10/15/18 09:41	JLC	TAL SL
Total/NA	Analysis	9315		1			399569	11/06/18 14:20	CDR	TAL SL
Total/NA	Prep	PrecSep_0			999.93 mL	1.0 g	395282	10/15/18 13:37	JLC	TAL SL
Total/NA	Analysis	9320		1			398413	10/31/18 10:12	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			400041	11/08/18 16:41	RTM	TAL SL

Client Sample ID: PNMW-22
Date Collected: 10/09/18 15:40
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-8
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	350747	10/18/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			351820	10/24/18 15:10	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	433538	10/16/18 11:15	THP	TAL DEN
Total/NA	Analysis	7470A		1			433723	10/16/18 18:00	THP	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	434305	10/22/18 08:06	ARM	TAL DEN
Total/NA	Prep	PrecSep-21			1000.09 mL	1.0 g	395167	10/15/18 09:41	JLC	TAL SL
Total/NA	Analysis	9315		1			399569	11/06/18 14:20	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.09 mL	1.0 g	395282	10/15/18 13:37	JLC	TAL SL
Total/NA	Analysis	9320		1			398413	10/31/18 10:12	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			400041	11/08/18 16:41	RTM	TAL SL

Client Sample ID: PNMW-23
Date Collected: 10/09/18 13:40
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-9
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	350747	10/18/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			351820	10/24/18 15:12	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	433538	10/16/18 11:15	THP	TAL DEN
Total/NA	Analysis	7470A		1			433723	10/16/18 18:02	THP	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	434562	10/23/18 23:18	ARM	TAL DEN
Total/NA	Prep	PrecSep-21			1000.34 mL	1.0 g	395167	10/15/18 09:41	JLC	TAL SL
Total/NA	Analysis	9315		1			399569	11/06/18 14:20	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.34 mL	1.0 g	395282	10/15/18 13:37	JLC	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-115334-2

Client Sample ID: PNMW-23
Date Collected: 10/09/18 13:40
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-9
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	9320		1			398413	10/31/18 10:12	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			400041	11/08/18 16:41	RTM	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: 280-115334-2

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 ELAP		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
7470A	7470A	Water	Mercury
9056A		Water	Fluoride

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	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18 *
Minnesota	NELAP	5	039-999-348	12-31-18 *
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	T104704517-17-9	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18 *

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 ELAP		L2305	04-06-19
Arizona	State Program	9	AZ0813	12-08-18 *
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	11-30-18 *
Iowa	State Program	7	373	12-01-18 *
Kansas	NELAP	7	E-10236	10-31-18 *
Kentucky (DW)	State Program	4	90125	12-31-18
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA180017	12-31-18 *
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-18 *

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

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
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

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

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

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

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Molly Reeves	Site Contact: Kaitlin Fishburn	Date:	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 INACTIVE POND	☐ 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	10-8-18	1850	G	W	9	N	N	X	X	X	X	X	X	
PNMW-18	10-8-18	1415	G	W	9	N	N	X	X	X	X	X	X	
PNMW-19	10-8-18	1645	G	W	9	N	N	X	X	X	X	X	X	
PNMW-20	10-9-18	1130	G	W	9	N	N	X	X	X	X	X	X	
PNMW17 DUP	10-8-18	1850	G	W	9	N	N	X	X	X	X	X	X	
PNMW17 EB	10-9-18	1000	G	W	9	N	N	X	X	X	X	X	X	

280-115334 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

(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:

0-7, 0.3, 0.2, 1.8 / 1.4, 1.0, 0.9, 2-5 9

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: ____ Corr'd: ____ Therm ID No.: ____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
K. Fishburn	HDR	10.10.18	Den Boulder Courier		
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
				TA-Den	10-10-18 1430
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

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	Sampler:	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-80090-26203.1
Client Contact: Anna Lundin	Phone:	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 EAST LF	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)	App IV Total Metals	9315_Ra226, 9320_Ra228	Fluoride	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	D	N		App IV Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Tl
PNMW-17	10-8-18	1850	G	Water	N	N	X	X	X		
~~PNMW-18~~ PNMW-21	10-9-18	1810	G	Water	N	N	X	X	X		
~~PNMW-19~~ PNMW-22	10-9-18	1540	G	Water	N	N	X	X	X		
~~PNMW-20~~ PNMW-23	10-9-18	~~1320~~	G	Water	N	N	X	X	X		time: 1340
DUP PNMW17DUP	10-8-18	1850	G	Water	N	N	X	X	X		
PNMW17EB	10-9-18	1000	G	W	N	N	X	X	X		

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
K. Ashburn	10.10.18	HDR	Den-Golden Courier		
Relinquished by:	Date/Time:	Company	Received by: Reed	Date/Time: 10-10-18 1930	Company TA-Den
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

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: 280-457879.1
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 #: 280-115334-2
Address: 13715 Rider Trail North, ,	Due Date Requested: 11/7/2018			
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-17 (280-115334-1)	10/8/18	18:50 Mountain		Water			X	X	X	2	
PNMW-17 DUP (280-115334-5)	10/8/18	18:50 Mountain		Water			X	X	X	2	
PNMW-17 EB (280-115334-6)	10/9/18	10:00 Mountain		Water			X	X	X	2	
PNMW-21 (280-115334-7)	10/9/18	18:10 Mountain		Water			X	X	X	1	
PNMW-22 (280-115334-8)	10/9/18	15:40 Mountain		Water			X	X	X	1	
PNMW-23 (280-115334-9)	10/9/18	13:40 Mountain		Water			X	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:

	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	10-11-2018 1608	TAL Den		10/12/18 0850	TAL 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: 09/20/2016

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: 280-457879.1
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 #: 280-115334-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 11/7/2018			
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 (280-115334-1)	10/8/18	18:50 Mountain		Water			X	X	X	2	analyze once but report twice, once for job series -1 and once for job series -2
PNMW-18 (280-115334-2)	10/8/18	14:15 Mountain		Water			X	X	X	2	
PNMW-19 (280-115334-3)	10/8/18	16:45 Mountain		Water			X	X	X	2	
PNMW-20 (280-115334-4)	10/9/18	11:30 Mountain		Water			X	X	X	2	
PNMW-17 DUP (280-115334-5)	10/8/18	18:50 Mountain		Water			X	X	X	2	
PNMW-17 EB (280-115334-6)	10/9/18	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 *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: 10/12/2018 1608	Company: [illegible]	Received by: Stacie Dupart	Date/Time: 10/12/18 0850	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: 09/20/2016

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: 280-457879.1
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 #: 280-115334-2
Address: 13715 Rider Trail North, ,	Due Date Requested: 11/7/2018			
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-17 (280-115334-1)	10/8/18	18:50 Mountain		Water			X	X	X	2	
PNMW-17 DUP (280-115334-5)	10/8/18	18:50 Mountain		Water			X	X	X	2	
PNMW-17 EB (280-115334-6)	10/9/18	10:00 Mountain		Water			X	X	X	2	
PNMW-21 (280-115334-7)	10/9/18	18:10 Mountain		Water			X	X	X	1	
PNMW-22 (280-115334-8)	10/9/18	15:40 Mountain		Water			X	X	X	1	
PNMW-23 (280-115334-9)	10/9/18	13:40 Mountain		Water			X	X	X	1	

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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	[signature]	10-11-2018 1608	TAL Den	[signature]	10/12/18 0850	TAL STL
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: 09/20/2016

TestAmerica Denver
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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: 280-457879.1
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 #: 280-115334-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 11/7/2018			
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 (280-115334-1)	10/8/18	18:50 Mountain		Water			X	X	X	2	analyze once but report twice, once for job series -1 and once for job series -2
PNMW-18 (280-115334-2)	10/8/18	14:15 Mountain		Water			X	X	X	2	
PNMW-19 (280-115334-3)	10/8/18	16:45 Mountain		Water			X	X	X	2	
PNMW-20 (280-115334-4)	10/9/18	11:30 Mountain		Water			X	X	X	2	
PNMW-17 DUP (280-115334-5)	10/8/18	18:50 Mountain		Water			X	X	X	2	
PNMW-17 EB (280-115334-6)	10/9/18	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.

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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: 10/12/18 1608	Company: [illegible]	Received by: Stacie Dupart	Date/Time: 10/12/18 0850	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: 09/20/2016

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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: 280-457879.1
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 #: 280-115334-2
Address: 13715 Rider Trail North, ,	Due Date Requested: 11/7/2018			
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-17 (280-115334-1)	10/8/18	18:50 Mountain		Water			X	X	X	3	
PNMW-17 DUP (280-115334-6)	10/8/18	18:50 Mountain		Water			X	X	X	3	
PNMW-17 EB (280-115334-5)	10/9/18	10:00 Mountain		Water			X	X	X	3	
PNMW-21 (280-115334-7)	10/9/18	18:10 Mountain		Water			X	X	X	1	
PNMW-22 (280-115334-8)	10/9/18	15:40 Mountain		Water			X	X	X	1	
PNMW-23 (280-115334-9)	10/9/18	13:40 Mountain		Water			X	X	X	1	

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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		10/15/18 1530			10/16/18 0945	TA STL
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: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

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Chain of Custody Record

TestAmerica
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Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-457880.1
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 #: 280-115334-2
Address: 4101 Shuffel Street NW,	Due Date Requested: 10/30/2018			
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:

S4

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)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
PNMW-17 (280-115334-1)	10/8/18	18:50 Mountain		Water			X	1	Use Collision Cell
PNMW-17 DUP (280-115334-5)	10/8/18	18:50 Mountain		Water			X	1	Use Collision Cell
PNMW-17 EB (280-115334-6)	10/9/18	10:00 Mountain		Water			X	1	Use Collision Cell
PNMW-21 (280-115334-7)	10/9/18	18:10 Mountain		Water			X	1	Use Collision Cell
PNMW-22 (280-115334-8)	10/9/18	15:40 Mountain		Water			X	1	Use Collision Cell
PNMW-23 (280-115334-9)	10/9/18	13:40 Mountain		Water			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		10/11/2018 1752	TAL DEN		10/12/18 930	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: 09/20/2016

11/14/2018

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

Client TA Denver Site Name _____ Cooler unpacked by: SRC
Cooler Received on 10/12/18 Opened on 10/12/18
FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

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

TestAmerica Cooler # 179 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 +0.9 °C) Observed Cooler Temp. 10.6 °C Corrected Cooler Temp. 11.5 °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# **HC849161**
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): _____

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Arvada, CO 80002
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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: 280-457880.1
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 #: 280-115334-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 10/30/2018			
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	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:

S4

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 (MOD) Boron + Calcium	6020A/3005A (MOD) 12 Total Metals (w/collision cell)	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
PNMW-17 (280-115334-1)	10/8/18	18:50 Mountain		Water			X	X	1	, Use Collision Cell, analyze once but report twice, once for job series -1 and once for
PNMW-18 (280-115334-2)	10/8/18	14:15 Mountain		Water			X	X	1	Use Collision Cell
PNMW-19 (280-115334-3)	10/8/18	16:45 Mountain		Water			X	X	1	Use Collision Cell
PNMW-20 (280-115334-4)	10/9/18	11:30 Mountain		Water			X	X	1	Use Collision Cell
PNMW-17 DUP (280-115334-5)	10/8/18	18:50 Mountain		Water			X	X	1	, Use Collision Cell
PNMW-17 EB (280-115334-6)	10/9/18	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
1		10/9/2018 1752	TAL DEN		10/12/18 930	
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: 09/20/2016

11/14/2018

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

Client TA Denver Site Name _____ Cooler unpacked by: SC

Cooler Received on 10/12/18 Opened on 10/12/18

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

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

TestAmerica Cooler # 17 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 +0.9 °C) Observed Cooler Temp. 10.6 °C Corrected Cooler Temp. 11.5 °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# **HC849161**
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): _____

0.6/1.5

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

Chain of Custody Record

TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-458463.1
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 #: 280-115334-2
Address: 4101 Shuffel Street NW,	Due Date Requested: 10/30/2018			
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	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)	6020A/3005A (MOD) 12 Total Metals (w/collision cell)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						S13
PNMW-21 (280-115334-7)	10/9/18	18:10 Mountain		Water			X	1	Use Collision Cell
PNMW-22 (280-115334-8)	10/9/18	15:40 Mountain		Water			X	1	Use Collision Cell
PNMW-23 (280-115334-9)	10/9/18	13:40 Mountain		Water			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:

	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	10-16-18 1530	TAL Den		10/17/18 930	TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Ver: 09/20/2016

11/14/2018

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

Client TA Denver Site Name _____ Cooler unpacked by:

Cooler Received on 10/17/18 Opened on 10/17/18

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 +0.9 °C) Observed Cooler Temp. 0.6 °C Corrected Cooler Temp. 1.5 °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# **HC849161**
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: 280-115334-2

Login Number: 115334
List Number: 1
Creator: Pottruff, Reed W

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: 280-115334-2

Login Number: 115334
List Number: 2
Creator: Dupart, Lacee S

List Source: TestAmerica St. Louis
List Creation: 10/12/18 12:49 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	2.9
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").	True	
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: 280-115334-2

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)
280-115334-1	PNMW-17	90.3
280-115334-5	PNMW-17 DUP	101
280-115334-6	PNMW-17 EB	106
280-115334-7	PNMW-21	103
280-115334-8	PNMW-22	101
280-115334-9	PNMW-23	98.8
LCS 160-395167/1-A	Lab Control Sample	88.2
LCSD 160-395167/2-A	Lab Control Sample Dup	98.2
MB 160-395167/19-A	Method Blank	107

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)
280-115334-1	PNMW-17	90.3	81.5
280-115334-5	PNMW-17 DUP	101	71.8
280-115334-6	PNMW-17 EB	106	75.9
280-115334-7	PNMW-21	103	78.1
280-115334-8	PNMW-22	101	76.6
280-115334-9	PNMW-23	98.8	76.6
LCS 160-395282/1-A	Lab Control Sample	88.2	81.1
LCSD 160-395282/2-A	Lab Control Sample Dup	98.2	73.3
MB 160-395282/19-A	Method Blank	107	81.5

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: 280-112264-1
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:
8/21/2018 12:00:13 PM

Stephanie Rothmeyer, Project Manager I
(303)736-0182
stephanie.rothmeyer@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: 280-112264-1

Qualifiers

Metals

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.
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
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: 280-112264-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Pawnee

Report Number: 280-112264-1

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 7/20/2018 at 5:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 0.6º C, 1.2º C and 1.3º C.

No sampling times were given on the CoC. The samples were logged per the times given on the sample labels.

TOTAL RECOVERABLE METALS

Samples PNMW-17 (280-112264-2), PNMW-17D (280-112264-3), PNMW-17EB (280-112264-4), PNMW-18 (280-112264-5), PNMW-19 (280-112264-6) and PNMW-20 (280-112264-7) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 07/25/2018 and analyzed on 07/26/2018.

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

TOTAL RECOVERABLE METALS (ICPMS)

Samples PNMW-14 (280-112264-1), PNMW-17 (280-112264-2), PNMW-17D (280-112264-3), PNMW-17EB (280-112264-4), PNMW-18 (280-112264-5), PNMW-19 (280-112264-6) and PNMW-20 (280-112264-7) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 07/25/2018 and 07/27/2018 and analyzed on 08/04/2018, 08/13/2018 and 08/14/2018.

Chromium was detected in method blank MB 240-337904/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. 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.

Calcium failed the recovery criteria high for the MS and MSD of sample PNMW-17 (280-112264-2) in batch 240-340754. 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.

Sample PNMW-20 (280-112264-7)[2X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

TOTAL MERCURY

Samples PNMW-17 (280-112264-2), PNMW-17D (280-112264-3), PNMW-17EB (280-112264-4), PNMW-18 (280-112264-5), PNMW-19 (280-112264-6) and PNMW-20 (280-112264-7) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The

Job ID: 280-112264-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

samples were prepared on 07/30/2018 and analyzed on 07/31/2018.

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

TOTAL DISSOLVED SOLIDS

Samples PNMW-17 (280-112264-2), PNMW-17D (280-112264-3), PNMW-17EB (280-112264-4), PNMW-18 (280-112264-5), PNMW-19 (280-112264-6) and PNMW-20 (280-112264-7) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 07/24/2018.

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

TOTAL SUSPENDED SOLIDS

Samples PNMW-14 (280-112264-1), PNMW-17 (280-112264-2), PNMW-17D (280-112264-3), PNMW-17EB (280-112264-4), PNMW-18 (280-112264-5), PNMW-19 (280-112264-6) and PNMW-20 (280-112264-7) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 07/23/2018.

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

CORROSIVITY (PH)

Samples PNMW-17 (280-112264-2), PNMW-17D (280-112264-3), PNMW-17EB (280-112264-4), PNMW-18 (280-112264-5), PNMW-19 (280-112264-6) and PNMW-20 (280-112264-7) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 08/07/2018 and 08/08/2018.

The following samples failed to reach constant pH after 3 replicates: PNMW-17EB (280-112264-4).

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 (280-112264-2), PNMW-17D (280-112264-3), PNMW-17EB (280-112264-4), PNMW-18 (280-112264-5), PNMW-19 (280-112264-6) and PNMW-20 (280-112264-7) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 08/08/2018 and 08/09/2018.

Chloride and Sulfate were detected in method blank MB 280-425202/6 at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have 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.

Samples PNMW-17 (280-112264-2)[10X], PNMW-17D (280-112264-3)[10X], PNMW-17EB (280-112264-4)[2X], PNMW-18 (280-112264-5) [10X], PNMW-19 (280-112264-6)[5X], PNMW-20 (280-112264-7)[5X] and PNMW-20 (280-112264-7)[50X] required dilution prior to analysis due to the Matrix Conductivity Threshold (MCT) of the instrument. The reporting limits have been adjusted accordingly.

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

RADIUM-226 (GFPC)

Samples PNMW-17 (280-112264-2), PNMW-17D (280-112264-3), PNMW-17EB (280-112264-4), PNMW-18 (280-112264-5), PNMW-19 (280-112264-6) and PNMW-20 (280-112264-7) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 07/25/2018 and analyzed on 08/17/2018.

Radium-226 was detected in method blank MB 160-377775/20-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. 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.

Insufficient sample volume was available to perform a sample duplicate (DUP) associated with batch 160-377775.

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

Job ID: 280-112264-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

RADIUM-228

Samples PNMW-17 (280-112264-2), PNMW-17D (280-112264-3), PNMW-17EB (280-112264-4), PNMW-18 (280-112264-5), PNMW-19 (280-112264-6) and PNMW-20 (280-112264-7) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 07/25/2018 and analyzed on 08/06/2018.

Insufficient sample volume was available to perform a sample duplicate (DUP) associated with batch 160-377795.

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 (280-112264-2), PNMW-17D (280-112264-3), PNMW-17EB (280-112264-4), PNMW-18 (280-112264-5), PNMW-19 (280-112264-6) and PNMW-20 (280-112264-7) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 08/21/2018.

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: 280-112264-1

Client Sample ID: PNMW-14 — Lab Sample ID: 280-112264-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lithium	0.036		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Total Suspended Solids	100		5.0	1.4	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-17 — Lab Sample ID: 280-112264-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.89		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.093		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	270		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	B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0013	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.00073	J	0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.020		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	7.5	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.3	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	350	B	30	2.5	mg/L	10		9056A	Total/NA
Fluoride	0.12	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	650	B	50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	1600		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	36		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-17D — Lab Sample ID: 280-112264-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.95		0.10	0.023	mg/L	1		6010C	Total Recoverable
Antimony	0.00069	J	0.0020	0.00057	mg/L	1		6020A	Total Recoverable
Arsenic	0.0010	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.079		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	280		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.00052	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0093	B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Selenium	0.018		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	7.5	HF	0.1	0.1	SU	1		9040B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: PNMW-17D (Continued) — Lab Sample ID: 280-112264-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Temperature	18.4	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	340	B	30	2.5	mg/L	10		9056A	Total/NA
Fluoride	0.13	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	670	B	50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	1600		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	5.2		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-17EB — Lab Sample ID: 280-112264-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.0017	J B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	6.5	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	1.3	J B	6.0	0.51	mg/L	2		9056A	Total/NA
Sulfate	3.2	J B	10	0.46	mg/L	2		9056A	Total/NA

Client Sample ID: PNMW-18 — Lab Sample ID: 280-112264-5

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
Arsenic	0.00098	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.057		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	230		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cadmium	0.00023	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.00065	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0044	B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0015	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.00077	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	0.034		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	18.9	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	290	B	30	2.5	mg/L	10		9056A	Total/NA
Fluoride	0.21	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	890	B	50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	2000		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	55		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-19 — Lab Sample ID: 280-112264-6

This Detection Summary does not include radiochemical test results.

Client Sample ID: PNMW-19 (Continued)

Lab Sample ID: 280-112264-6

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
Barium	0.36		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	90		1.0	0.58	mg/L	1		6020A	Total Recoverable
Chromium	0.0029	B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0011	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0019	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.026		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	19.3	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	33	B	15	1.3	mg/L	5		9056A	Total/NA
Fluoride	0.20	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	74	B	25	1.2	mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	440		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	30		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-20

Lab Sample ID: 280-112264-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	2.1		0.10	0.023	mg/L	1		6010C	Total Recoverable
Arsenic	0.0010	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.020		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	500		2.0	1.2	mg/L	2		6020A	Total Recoverable
Cobalt	0.00055	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0032	B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Selenium	0.0094		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.077		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	19.5	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	480	B	15	1.3	mg/L	5		9056A	Total/NA
Fluoride	0.88	J	2.5	0.30	mg/L	5		9056A	Total/NA
Sulfate	5000	B	250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	8200		100	47	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	23		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: 280-112264-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL DEN
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 DEN
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: 280-112264-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-112264-1	PNMW-14	Water	07/20/18 13:15	07/20/18 17:00
280-112264-2	PNMW-17	Water	07/19/18 11:55	07/20/18 17:00
280-112264-3	PNMW-17D	Water	07/19/18 11:55	07/20/18 17:00
280-112264-4	PNMW-17EB	Water	07/19/18 12:15	07/20/18 17:00
280-112264-5	PNMW-18	Water	07/19/18 15:40	07/20/18 17:00
280-112264-6	PNMW-19	Water	07/20/18 10:25	07/20/18 17:00
280-112264-7	PNMW-20	Water	07/19/18 12:40	07/20/18 17:00

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

Client Sample ID: PNMW-17
Date Collected: 07/19/18 11:55
Date Received: 07/20/18 17:00
Lab Sample ID: 280-112264-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.89**		0.10	0.023	mg/L		07/25/18 14:00	07/26/18 14:52	1

Client Sample ID: PNMW-17D
Date Collected: 07/19/18 11:55
Date Received: 07/20/18 17:00
Lab Sample ID: 280-112264-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.95**		0.10	0.023	mg/L		07/25/18 14:00	07/26/18 15:15	1

Client Sample ID: PNMW-17EB
Date Collected: 07/19/18 12:15
Date Received: 07/20/18 17:00
Lab Sample ID: 280-112264-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		07/25/18 14:00	07/26/18 15:20	1

Client Sample ID: PNMW-18
Date Collected: 07/19/18 15:40
Date Received: 07/20/18 17:00
Lab Sample ID: 280-112264-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.19**		0.10	0.023	mg/L		07/25/18 14:00	07/26/18 15:25	1

Client Sample ID: PNMW-19
Date Collected: 07/20/18 10:25
Date Received: 07/20/18 17:00
Lab Sample ID: 280-112264-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.033**	**J**	0.10	0.023	mg/L		07/25/18 14:00	07/26/18 15:30	1

Client Sample ID: PNMW-20
Date Collected: 07/19/18 12:40
Date Received: 07/20/18 17:00
Lab Sample ID: 280-112264-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**2.1**		0.10	0.023	mg/L		07/25/18 14:00	07/26/18 15:35	1

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

Client Sample ID: PNMW-14
Date Collected: 07/20/18 13:15
Date Received: 07/20/18 17:00
Lab Sample ID: 280-112264-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	**0.036**		0.0080	0.0017	mg/L		07/27/18 14:00	08/04/18 20:54	1

Client Sample ID: PNMW-17
Date Collected: 07/19/18 11:55
Date Received: 07/20/18 17:00
Lab Sample ID: 280-112264-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		07/25/18 14:00	08/13/18 18:37	1
Arsenic	ND		0.0050	0.00075	mg/L		07/25/18 14:00	08/13/18 18:37	1
Barium	**0.093**		0.0050	0.0022	mg/L		07/25/18 14:00	08/13/18 18:37	1
Beryllium	ND		0.0010	0.00031	mg/L		07/25/18 14:00	08/13/18 18:37	1
Calcium	**270**		1.0	0.58	mg/L		07/25/18 14:00	08/13/18 18:37	1
Cadmium	ND		0.0010	0.00021	mg/L		07/25/18 14:00	08/13/18 18:37	1
Cobalt	**0.00075**	**J**	0.0010	0.00019	mg/L		07/25/18 14:00	08/13/18 18:37	1

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

Client Sample ID: PNMW-17
Date Collected: 07/19/18 11:55
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**0.012**	**B**	0.0020	0.00098	mg/L		07/25/18 14:00	08/13/18 18:37	1
Molybdenum	**0.0013**	**J**	0.010	0.0011	mg/L		07/25/18 14:00	08/13/18 18:37	1
Lead	**0.00073**	**J**	0.0010	0.00045	mg/L		07/25/18 14:00	08/13/18 18:37	1
Selenium	**0.020**		0.0050	0.00089	mg/L		07/25/18 14:00	08/13/18 18:37	1
Thallium	ND		0.0010	0.00020	mg/L		07/25/18 14:00	08/13/18 18:37	1
Lithium	**0.036**		0.0080	0.0017	mg/L		07/25/18 14:00	08/13/18 18:37	1

Client Sample ID: PNMW-17D
Date Collected: 07/19/18 11:55
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.00069**	**J**	0.0020	0.00057	mg/L		07/25/18 14:00	08/13/18 18:59	1
Arsenic	**0.0010**	**J**	0.0050	0.00075	mg/L		07/25/18 14:00	08/13/18 18:59	1
Barium	**0.079**		0.0050	0.0022	mg/L		07/25/18 14:00	08/13/18 18:59	1
Beryllium	ND		0.0010	0.00031	mg/L		07/25/18 14:00	08/13/18 18:59	1
Calcium	**280**		1.0	0.58	mg/L		07/25/18 14:00	08/13/18 18:59	1
Cadmium	ND		0.0010	0.00021	mg/L		07/25/18 14:00	08/13/18 18:59	1
Cobalt	**0.00052**	**J**	0.0010	0.00019	mg/L		07/25/18 14:00	08/13/18 18:59	1
Chromium	**0.0093**	**B**	0.0020	0.00098	mg/L		07/25/18 14:00	08/13/18 18:59	1
Molybdenum	ND		0.010	0.0011	mg/L		07/25/18 14:00	08/13/18 18:59	1
Lead	ND		0.0010	0.00045	mg/L		07/25/18 14:00	08/13/18 18:59	1
Selenium	**0.018**		0.0050	0.00089	mg/L		07/25/18 14:00	08/13/18 18:59	1
Thallium	ND		0.0010	0.00020	mg/L		07/25/18 14:00	08/13/18 18:59	1
Lithium	**0.036**		0.0080	0.0017	mg/L		07/25/18 14:00	08/13/18 18:59	1

Client Sample ID: PNMW-17EB
Date Collected: 07/19/18 12:15
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		07/25/18 14:00	08/13/18 19:04	1
Arsenic	ND		0.0050	0.00075	mg/L		07/25/18 14:00	08/13/18 19:04	1
Barium	ND		0.0050	0.0022	mg/L		07/25/18 14:00	08/13/18 19:04	1
Beryllium	ND		0.0010	0.00031	mg/L		07/25/18 14:00	08/13/18 19:04	1
Calcium	ND		1.0	0.58	mg/L		07/25/18 14:00	08/13/18 19:04	1
Cadmium	ND		0.0010	0.00021	mg/L		07/25/18 14:00	08/13/18 19:04	1
Cobalt	ND		0.0010	0.00019	mg/L		07/25/18 14:00	08/13/18 19:04	1
Chromium	**0.0017**	**J B**	0.0020	0.00098	mg/L		07/25/18 14:00	08/13/18 19:04	1
Molybdenum	ND		0.010	0.0011	mg/L		07/25/18 14:00	08/13/18 19:04	1
Lead	ND		0.0010	0.00045	mg/L		07/25/18 14:00	08/13/18 19:04	1
Selenium	ND		0.0050	0.00089	mg/L		07/25/18 14:00	08/13/18 19:04	1
Thallium	ND		0.0010	0.00020	mg/L		07/25/18 14:00	08/13/18 19:04	1
Lithium	ND		0.0080	0.0017	mg/L		07/25/18 14:00	08/13/18 19:04	1

Client Sample ID: PNMW-18
Date Collected: 07/19/18 15:40
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		07/25/18 14:00	08/13/18 19:08	1
Arsenic	**0.00098**	**J**	0.0050	0.00075	mg/L		07/25/18 14:00	08/13/18 19:08	1
Barium	**0.057**		0.0050	0.0022	mg/L		07/25/18 14:00	08/13/18 19:08	1

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

Client Sample ID: PNMW-18
Date Collected: 07/19/18 15:40
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Beryllium	ND		0.0010	0.00031	mg/L		07/25/18 14:00	08/13/18 19:08	1
Calcium	**230**		1.0	0.58	mg/L		07/25/18 14:00	08/13/18 19:08	1
Cadmium	**0.00023**	**J**	0.0010	0.00021	mg/L		07/25/18 14:00	08/13/18 19:08	1
Cobalt	**0.00065**	**J**	0.0010	0.00019	mg/L		07/25/18 14:00	08/13/18 19:08	1
Chromium	**0.0044**	**B**	0.0020	0.00098	mg/L		07/25/18 14:00	08/13/18 19:08	1
Molybdenum	**0.0015**	**J**	0.010	0.0011	mg/L		07/25/18 14:00	08/13/18 19:08	1
Lead	**0.00077**	**J**	0.0010	0.00045	mg/L		07/25/18 14:00	08/13/18 19:08	1
Selenium	**0.0029**	**J**	0.0050	0.00089	mg/L		07/25/18 14:00	08/13/18 19:08	1
Thallium	ND		0.0010	0.00020	mg/L		07/25/18 14:00	08/13/18 19:08	1
Lithium	**0.034**		0.0080	0.0017	mg/L		07/25/18 14:00	08/13/18 19:08	1

Client Sample ID: PNMW-19
Date Collected: 07/20/18 10:25
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		07/25/18 14:00	08/13/18 19:22	1
Arsenic	ND		0.0050	0.00075	mg/L		07/25/18 14:00	08/13/18 19:22	1
Barium	**0.36**		0.0050	0.0022	mg/L		07/25/18 14:00	08/13/18 19:22	1
Beryllium	ND		0.0010	0.00031	mg/L		07/25/18 14:00	08/13/18 19:22	1
Calcium	**90**		1.0	0.58	mg/L		07/25/18 14:00	08/13/18 19:22	1
Cadmium	ND		0.0010	0.00021	mg/L		07/25/18 14:00	08/13/18 19:22	1
Cobalt	ND		0.0010	0.00019	mg/L		07/25/18 14:00	08/13/18 19:22	1
Chromium	**0.0029**	**B**	0.0020	0.00098	mg/L		07/25/18 14:00	08/13/18 19:22	1
Molybdenum	**0.0011**	**J**	0.010	0.0011	mg/L		07/25/18 14:00	08/13/18 19:22	1
Lead	ND		0.0010	0.00045	mg/L		07/25/18 14:00	08/13/18 19:22	1
Selenium	**0.0019**	**J**	0.0050	0.00089	mg/L		07/25/18 14:00	08/13/18 19:22	1
Thallium	ND		0.0010	0.00020	mg/L		07/25/18 14:00	08/13/18 19:22	1
Lithium	**0.026**		0.0080	0.0017	mg/L		07/25/18 14:00	08/13/18 19:22	1

Client Sample ID: PNMW-20
Date Collected: 07/19/18 12:40
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		07/25/18 14:00	08/13/18 19:26	1
Arsenic	**0.0010**	**J**	0.0050	0.00075	mg/L		07/25/18 14:00	08/13/18 19:26	1
Barium	**0.020**		0.0050	0.0022	mg/L		07/25/18 14:00	08/13/18 19:26	1
Beryllium	ND		0.0010	0.00031	mg/L		07/25/18 14:00	08/13/18 19:26	1
Calcium	**500**		2.0	1.2	mg/L		07/25/18 14:00	08/14/18 11:14	2
Cadmium	ND		0.0010	0.00021	mg/L		07/25/18 14:00	08/13/18 19:26	1
Cobalt	**0.00055**	**J**	0.0010	0.00019	mg/L		07/25/18 14:00	08/13/18 19:26	1
Chromium	**0.0032**	**B**	0.0020	0.00098	mg/L		07/25/18 14:00	08/13/18 19:26	1
Molybdenum	ND		0.010	0.0011	mg/L		07/25/18 14:00	08/13/18 19:26	1
Lead	ND		0.0010	0.00045	mg/L		07/25/18 14:00	08/13/18 19:26	1
Selenium	**0.0094**		0.0050	0.00089	mg/L		07/25/18 14:00	08/13/18 19:26	1
Thallium	ND		0.0010	0.00020	mg/L		07/25/18 14:00	08/13/18 19:26	1
Lithium	**0.077**		0.0080	0.0017	mg/L		07/25/18 14:00	08/13/18 19:26	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: PNMW-17
Date Collected: 07/19/18 11:55
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		07/30/18 11:24	07/31/18 13:37	1

Client Sample ID: PNMW-17D
Date Collected: 07/19/18 11:55
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		07/30/18 11:24	07/31/18 13:40	1

Client Sample ID: PNMW-17EB
Date Collected: 07/19/18 12:15
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		07/30/18 11:24	07/31/18 13:42	1

Client Sample ID: PNMW-18
Date Collected: 07/19/18 15:40
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		07/30/18 11:24	07/31/18 13:44	1

Client Sample ID: PNMW-19
Date Collected: 07/20/18 10:25
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		07/30/18 11:24	07/31/18 13:46	1

Client Sample ID: PNMW-20
Date Collected: 07/19/18 12:40
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		07/30/18 11:24	07/31/18 13:48	1

General Chemistry

Client Sample ID: PNMW-14
Date Collected: 07/20/18 13:15
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	**100**		5.0	1.4	mg/L			07/23/18 18:20	1

Client Sample ID: PNMW-17
Date Collected: 07/19/18 11:55
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-2
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			08/07/18 17:55	1
Temperature	**19.3**	**HF**	1.0	1.0	Degrees C			08/07/18 17:55	1
Chloride	**350**	**B**	30	2.5	mg/L			08/08/18 09:09	10
Fluoride	**0.12**	**J**	0.50	0.060	mg/L			08/09/18 02:08	1
Sulfate	**650**	**B**	50	2.3	mg/L			08/08/18 09:09	10
Total Dissolved Solids (TDS)	**1600**		20	9.4	mg/L			07/24/18 12:35	1
Total Suspended Solids	**36**		4.0	1.1	mg/L			07/23/18 18:20	1

General Chemistry

Client Sample ID: PNMW-17D
Date Collected: 07/19/18 11:55
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-3
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			08/07/18 18:02	1
Temperature	18.4	HF	1.0	1.0	Degrees C			08/07/18 18:02	1
Chloride	340	B	30	2.5	mg/L			08/08/18 09:44	10
Fluoride	0.13	J	0.50	0.060	mg/L			08/09/18 02:30	1
Sulfate	670	B	50	2.3	mg/L			08/08/18 09:44	10
Total Dissolved Solids (TDS)	1600		20	9.4	mg/L			07/24/18 12:35	1
Total Suspended Solids	5.2		4.0	1.1	mg/L			07/23/18 18:20	1

Client Sample ID: PNMW-17EB
Date Collected: 07/19/18 12:15
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	6.5	HF	0.1	0.1	SU			08/08/18 17:34	1
Temperature	19.0	HF	1.0	1.0	Degrees C			08/08/18 17:34	1
Chloride	1.3	J B	6.0	0.51	mg/L			08/08/18 10:01	2
Fluoride	ND		0.50	0.060	mg/L			08/09/18 02:52	1
Sulfate	3.2	J B	10	0.46	mg/L			08/08/18 10:01	2
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			07/24/18 12:35	1
Total Suspended Solids	ND		4.0	1.1	mg/L			07/23/18 18:20	1

Client Sample ID: PNMW-18
Date Collected: 07/19/18 15:40
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-5
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			08/07/18 18:11	1
Temperature	18.9	HF	1.0	1.0	Degrees C			08/07/18 18:11	1
Chloride	290	B	30	2.5	mg/L			08/08/18 11:28	10
Fluoride	0.21	J	0.50	0.060	mg/L			08/09/18 03:15	1
Sulfate	890	B	50	2.3	mg/L			08/08/18 11:28	10
Total Dissolved Solids (TDS)	2000		20	9.4	mg/L			07/24/18 12:35	1
Total Suspended Solids	55		4.0	1.1	mg/L			07/23/18 18:20	1

Client Sample ID: PNMW-19
Date Collected: 07/20/18 10:25
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-6
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			08/07/18 18:15	1
Temperature	19.3	HF	1.0	1.0	Degrees C			08/07/18 18:15	1
Chloride	33	B	15	1.3	mg/L			08/08/18 11:46	5
Fluoride	0.20	J	0.50	0.060	mg/L			08/09/18 04:00	1
Sulfate	74	B	25	1.2	mg/L			08/08/18 11:46	5
Total Dissolved Solids (TDS)	440		10	4.7	mg/L			07/24/18 12:35	1
Total Suspended Solids	30		4.0	1.1	mg/L			07/23/18 18:20	1

Client Sample ID: PNMW-20
Date Collected: 07/19/18 12:40
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-7
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			08/07/18 18:19	1
Temperature	19.5	HF	1.0	1.0	Degrees C			08/07/18 18:19	1

General Chemistry (Continued)

Client Sample ID: PNMW-20
Date Collected: 07/19/18 12:40
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	480	B	15	1.3	mg/L			08/08/18 12:21	5
Fluoride	0.88	J	2.5	0.30	mg/L			08/09/18 03:37	5
Sulfate	5000	B	250	12	mg/L			08/08/18 12:38	50
Total Dissolved Solids (TDS)	8200		100	47	mg/L			07/24/18 12:35	1
Total Suspended Solids	23		4.0	1.1	mg/L			07/23/18 18:20	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: PNMW-17
Date Collected: 07/19/18 11:55
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.472		0.121	0.128	1.00	0.0893	pCi/L	07/25/18 08:40	08/17/18 09:20	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.0*		*40 - 110*	*07/25/18 08:40*	*08/17/18 09:20*	*1*

Client Sample ID: PNMW-17D
Date Collected: 07/19/18 11:55
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.280		0.0976	0.101	1.00	0.0927	pCi/L	07/25/18 08:40	08/17/18 09:20	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.9*		*40 - 110*	*07/25/18 08:40*	*08/17/18 09:20*	*1*

Client Sample ID: PNMW-17EB
Date Collected: 07/19/18 12:15
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.220		0.0861	0.0883	1.00	0.0845	pCi/L	07/25/18 08:40	08/17/18 09:20	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*103*		*40 - 110*	*07/25/18 08:40*	*08/17/18 09:20*	*1*

Client Sample ID: PNMW-18
Date Collected: 07/19/18 15:40
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.314		0.104	0.108	1.00	0.103	pCi/L	07/25/18 08:40	08/17/18 09:21	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*91.7*		*40 - 110*	*07/25/18 08:40*	*08/17/18 09:21*	*1*

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: PNMW-19
Date Collected: 07/20/18 10:25
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.437		0.109	0.116	1.00	0.0709	pCi/L	07/25/18 08:40	08/17/18 09:21	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.1*		*40 - 110*	*07/25/18 08:40*	*08/17/18 09:21*	*1*

Client Sample ID: PNMW-20
Date Collected: 07/19/18 12:40
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.306		0.0956	0.0995	1.00	0.0825	pCi/L	07/25/18 08:40	08/17/18 09:21	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*99.1*		*40 - 110*	*07/25/18 08:40*	*08/17/18 09:21*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: PNMW-17
Date Collected: 07/19/18 11:55
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.470		0.300	0.304	1.00	0.468	pCi/L	07/25/18 09:55	08/06/18 17:08	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.0*		*40 - 110*	*07/25/18 09:55*	*08/06/18 17:08*	*1*
Y Carrier	*78.5*		*40 - 110*	*07/25/18 09:55*	*08/06/18 17:08*	*1*

Client Sample ID: PNMW-17D
Date Collected: 07/19/18 11:55
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.350	U	0.267	0.269	1.00	0.422	pCi/L	07/25/18 09:55	08/06/18 17:08	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.9*		*40 - 110*	*07/25/18 09:55*	*08/06/18 17:08*	*1*
Y Carrier	*77.8*		*40 - 110*	*07/25/18 09:55*	*08/06/18 17:08*	*1*

Client Sample ID: PNMW-17EB
Date Collected: 07/19/18 12:15
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.100	U	0.227	0.228	1.00	0.389	pCi/L	07/25/18 09:55	08/06/18 17:08	1

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

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	103		40 - 110	07/25/18 09:55	08/06/18 17:08	1
Y Carrier	80.4		40 - 110	07/25/18 09:55	08/06/18 17:08	1

Client Sample ID: PNMW-18
Date Collected: 07/19/18 15:40
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.293	U	0.271	0.273	1.00	0.438	pCi/L	07/25/18 09:55	08/06/18 17:08	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	91.7		40 - 110	07/25/18 09:55	08/06/18 17:08	1
Y Carrier	75.1		40 - 110	07/25/18 09:55	08/06/18 17:08	1

Client Sample ID: PNMW-19
Date Collected: 07/20/18 10:25
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.588**		0.260	0.265	1.00	0.371	pCi/L	07/25/18 09:55	08/06/18 17:08	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	97.1		40 - 110	07/25/18 09:55	08/06/18 17:08	1
Y Carrier	78.5		40 - 110	07/25/18 09:55	08/06/18 17:08	1

Client Sample ID: PNMW-20
Date Collected: 07/19/18 12:40
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.717**		0.259	0.267	1.00	0.347	pCi/L	07/25/18 09:55	08/06/18 17:08	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	99.1		40 - 110	07/25/18 09:55	08/06/18 17:08	1
Y Carrier	77.8		40 - 110	07/25/18 09:55	08/06/18 17:08	1

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

Client Sample ID: PNMW-17
Date Collected: 07/19/18 11:55
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.942**		0.323	0.330	5.00	0.468	pCi/L		08/21/18 03:20	1

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

Client Sample ID: PNMW-17D
Date Collected: 07/19/18 11:55
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.630		0.284	0.287	5.00	0.422	pCi/L		08/21/18 03:20	1

Client Sample ID: PNMW-17EB
Date Collected: 07/19/18 12:15
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.321	U	0.243	0.245	5.00	0.389	pCi/L		08/21/18 03:20	1

Client Sample ID: PNMW-18
Date Collected: 07/19/18 15:40
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.606		0.290	0.294	5.00	0.438	pCi/L		08/21/18 03:20	1

Client Sample ID: PNMW-19
Date Collected: 07/20/18 10:25
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.03		0.282	0.289	5.00	0.371	pCi/L		08/21/18 03:20	1

Client Sample ID: PNMW-20
Date Collected: 07/19/18 12:40
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.02		0.276	0.285	5.00	0.347	pCi/L		08/21/18 03:20	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-337904/1-A
Matrix: Water
Analysis Batch: 338163

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 337904

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		07/25/18 14:00	07/26/18 10:29	1

Lab Sample ID: LCS 240-337904/14-A
Matrix: Water
Analysis Batch: 338163

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 337904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.07		mg/L		107	80 - 120

Lab Sample ID: 280-112264-2 MS
Matrix: Water
Analysis Batch: 338163

Client Sample ID: PNMW-17
Prep Type: Total Recoverable
Prep Batch: 337904

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	0.89		1.00	1.95		mg/L		106	75 - 125

Lab Sample ID: 280-112264-2 MSD
Matrix: Water
Analysis Batch: 338163

Client Sample ID: PNMW-17
Prep Type: Total Recoverable
Prep Batch: 337904

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	0.89		1.00	2.07		mg/L		118	75 - 125	6	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-337904/1-A
Matrix: Water
Analysis Batch: 340754

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 337904

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		07/25/18 14:00	08/13/18 18:28	1
Arsenic	ND		0.0050	0.00075	mg/L		07/25/18 14:00	08/13/18 18:28	1
Barium	ND		0.0050	0.0022	mg/L		07/25/18 14:00	08/13/18 18:28	1
Beryllium	ND		0.0010	0.00031	mg/L		07/25/18 14:00	08/13/18 18:28	1
Calcium	ND		1.0	0.58	mg/L		07/25/18 14:00	08/13/18 18:28	1
Cadmium	ND		0.0010	0.00021	mg/L		07/25/18 14:00	08/13/18 18:28	1
Cobalt	ND		0.0010	0.00019	mg/L		07/25/18 14:00	08/13/18 18:28	1
Chromium	0.00134	J	0.0020	0.00098	mg/L		07/25/18 14:00	08/13/18 18:28	1
Molybdenum	ND		0.010	0.0011	mg/L		07/25/18 14:00	08/13/18 18:28	1
Lead	ND		0.0010	0.00045	mg/L		07/25/18 14:00	08/13/18 18:28	1
Selenium	ND		0.0050	0.00089	mg/L		07/25/18 14:00	08/13/18 18:28	1
Thallium	ND		0.0010	0.00020	mg/L		07/25/18 14:00	08/13/18 18:28	1
Lithium	ND		0.0080	0.0017	mg/L		07/25/18 14:00	08/13/18 18:28	1

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

Lab Sample ID: LCS 240-337904/2-A
Matrix: Water
Analysis Batch: 340754

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 337904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0983		mg/L		98	80 - 120
Arsenic	1.00	0.924		mg/L		92	80 - 120
Barium	1.00	0.970		mg/L		97	80 - 120
Beryllium	1.00	0.809		mg/L		81	80 - 120
Calcium	10.0	10.6		mg/L		106	80 - 120
Cadmium	1.00	0.984		mg/L		98	80 - 120
Cobalt	1.00	0.981		mg/L		98	80 - 120
Chromium	1.00	1.00		mg/L		100	80 - 120
Molybdenum	0.100	0.0956		mg/L		96	80 - 120
Lead	1.00	1.01		mg/L		101	80 - 120
Selenium	1.00	0.923		mg/L		92	80 - 120
Thallium	0.250	0.259		mg/L		103	80 - 120
Lithium	0.100	0.0900		mg/L		90	80 - 120

Lab Sample ID: 280-112264-2 MS
Matrix: Water
Analysis Batch: 340754

Client Sample ID: PNMW-17
Prep Type: Total Recoverable
Prep Batch: 337904

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	ND		0.100	0.103		mg/L		103	75 - 125
Arsenic	ND		1.00	0.972		mg/L		97	75 - 125
Barium	0.093		1.00	1.10		mg/L		101	75 - 125
Beryllium	ND		1.00	0.822		mg/L		82	75 - 125
Calcium	270		10.0	291	4	mg/L		230	75 - 125
Cadmium	ND		1.00	0.991		mg/L		99	75 - 125
Cobalt	0.00075	J	1.00	0.952		mg/L		95	75 - 125
Chromium	0.012	B	1.00	1.07		mg/L		106	75 - 125
Molybdenum	0.0013	J	0.100	0.102		mg/L		101	75 - 125
Lead	0.00073	J	1.00	1.12		mg/L		112	75 - 125
Selenium	0.020		1.00	0.995		mg/L		98	75 - 125
Thallium	ND		0.250	0.289		mg/L		115	75 - 125
Lithium	0.036		0.100	0.137		mg/L		101	75 - 125

Lab Sample ID: 280-112264-2 MSD
Matrix: Water
Analysis Batch: 340754

Client Sample ID: PNMW-17
Prep Type: Total Recoverable
Prep Batch: 337904

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	ND		0.100	0.107		mg/L		107	75 - 125	4	20
Arsenic	ND		1.00	0.992		mg/L		99	75 - 125	2	20
Barium	0.093		1.00	1.13		mg/L		104	75 - 125	3	20
Beryllium	ND		1.00	0.832		mg/L		83	75 - 125	1	20
Calcium	270		10.0	295	4	mg/L		271	75 - 125	1	20
Cadmium	ND		1.00	1.01		mg/L		101	75 - 125	2	20
Cobalt	0.00075	J	1.00	1.00		mg/L		100	75 - 125	5	20
Chromium	0.012	B	1.00	1.08		mg/L		107	75 - 125	1	20
Molybdenum	0.0013	J	0.100	0.105		mg/L		104	75 - 125	3	20
Lead	0.00073	J	1.00	1.11		mg/L		111	75 - 125	1	20

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

Lab Sample ID: 280-112264-2 MSD
Matrix: Water
Analysis Batch: 340754

Client Sample ID: PNMW-17
Prep Type: Total Recoverable
Prep Batch: 337904

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Selenium	0.020		1.00	1.01		mg/L		99	75 - 125	2	20
Thallium	ND		0.250	0.276		mg/L		110	75 - 125	4	20
Lithium	0.036		0.100	0.139		mg/L		103	75 - 125	1	20

Lab Sample ID: MB 240-338275/1-A
Matrix: Water
Analysis Batch: 339495

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 338275

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	ND		0.0080	0.0017	mg/L		07/27/18 14:00	08/04/18 19:06	1

Lab Sample ID: LCS 240-338275/2-A
Matrix: Water
Analysis Batch: 339495

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 338275

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lithium	0.100	0.0968		mg/L		97	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-424052/1-A
Matrix: Water
Analysis Batch: 424391

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 424052

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		07/30/18 11:24	07/31/18 12:48	1

Lab Sample ID: LCS 280-424052/2-A
Matrix: Water
Analysis Batch: 424391

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 424052

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00500	0.00514		mg/L		103	84 - 120

Lab Sample ID: LCSD 280-424052/3-A
Matrix: Water
Analysis Batch: 424391

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 424052

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.00500	0.00513		mg/L		103	84 - 120	0	15

Method: 9040B - pH

Lab Sample ID: LCS 280-425277/4
Matrix: Water
Analysis Batch: 425277

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: 9040B - pH (Continued)

Lab Sample ID: 280-112264-2 DU
Matrix: Water
Analysis Batch: 425277

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	7.5	HF		7.5		SU				0.4	5
Temperature	19.3	HF		18.8		Degrees C				3	10

Lab Sample ID: LCS 280-425596/4
Matrix: Water
Analysis Batch: 425596

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 280-425202/6
Matrix: Water
Analysis Batch: 425202

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.493	J	3.0	0.25	mg/L			08/07/18 21:13	1
Fluoride	ND		0.50	0.060	mg/L			08/07/18 21:13	1
Sulfate	0.589	J	5.0	0.23	mg/L			08/07/18 21:13	1

Lab Sample ID: LCS 280-425202/4
Matrix: Water
Analysis Batch: 425202

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride			100	102		mg/L		102	90 - 110		
Fluoride			5.00	4.55		mg/L		91	90 - 110		
Sulfate			100	101		mg/L		101	90 - 110		

Lab Sample ID: LCSD 280-425202/5
Matrix: Water
Analysis Batch: 425202

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	102		mg/L		102	90 - 110	0	10
Fluoride			5.00	4.63		mg/L		93	90 - 110	2	10
Sulfate			100	101		mg/L		101	90 - 110	0	10

Lab Sample ID: MRL 280-425202/3
Matrix: Water
Analysis Batch: 425202

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	2.31	J	mg/L		92	50 - 150		
Fluoride			0.200	0.191	J	mg/L		95	50 - 150		
Sulfate			2.50	3.20	J	mg/L		128	50 - 150		

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

Lab Sample ID: MB 280-425413/13
Matrix: Water
Analysis Batch: 425413

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			08/08/18 19:46	1

Lab Sample ID: LCS 280-425413/11
Matrix: Water
Analysis Batch: 425413

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	4.90		mg/L		98	90 - 110

Lab Sample ID: LCSD 280-425413/12
Matrix: Water
Analysis Batch: 425413

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	4.97		mg/L		99	90 - 110	1	10

Lab Sample ID: MRL 280-425413/10
Matrix: Water
Analysis Batch: 425413

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	0.218	J	mg/L		109	50 - 150

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

Lab Sample ID: MB 280-423440/1
Matrix: Water
Analysis Batch: 423440

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			07/24/18 12:35	1

Lab Sample ID: LCS 280-423440/2
Matrix: Water
Analysis Batch: 423440

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	486		mg/L		97	86 - 110

Lab Sample ID: 280-112264-3 DU
Matrix: Water
Analysis Batch: 423440

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

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids (TDS)	1600		1590		mg/L		0.8	10

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

Lab Sample ID: MB 280-423320/1
Matrix: Water
Analysis Batch: 423320

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			07/23/18 18:20	1

Lab Sample ID: LCS 280-423320/2
Matrix: Water
Analysis Batch: 423320

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	85.6		mg/L		86	86 - 114

Lab Sample ID: LCSD 280-423320/3
Matrix: Water
Analysis Batch: 423320

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	93.2		mg/L		93	86 - 114	9	20

Lab Sample ID: 280-112264-7 DU
Matrix: Water
Analysis Batch: 423320

Client Sample ID: PNMW-20
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	23		23.2		mg/L		2	10

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-377775/20-A
Matrix: Water
Analysis Batch: 383015

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 377775

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1375		0.0678	0.0689	1.00	0.0725	pCi/L	07/25/18 08:40	08/17/18 09:21	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*98.8*		*40 - 110*	*07/25/18 08:40*	*08/17/18 09:21*	*1*

Lab Sample ID: LCS 160-377775/1-A
Matrix: Water
Analysis Batch: 383308

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 377775

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.4	11.53		1.19	1.00	0.0706	pCi/L	102	68 - 137

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*97.1*		*40 - 110*

Method: 9315 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCSD 160-377775/2-A
Matrix: Water
Analysis Batch: 383308

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 377775

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.4	11.09		1.14	1.00	0.100	pCi/L	98	68 - 137	0.19	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*99.1*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-377795/20-A
Matrix: Water
Analysis Batch: 380641

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 377795

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1503	U	0.210	0.210	1.00	0.351	pCi/L	07/25/18 09:55	08/06/18 17:08	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*98.8*		*40 - 110*	*07/25/18 09:55*	*08/06/18 17:08*	*1*
Y Carrier	*79.3*		*40 - 110*	*07/25/18 09:55*	*08/06/18 17:08*	*1*

Lab Sample ID: LCS 160-377795/1-A
Matrix: Water
Analysis Batch: 380641

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 377795

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			11.1	12.94		1.44	1.00	0.407	pCi/L	116	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*97.1*		*40 - 110*
Y Carrier	*71.4*		*40 - 110*

Lab Sample ID: LCSD 160-377795/2-A
Matrix: Water
Analysis Batch: 380641

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 377795

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			11.1	11.55		1.29	1.00	0.365	pCi/L	104	56 - 140	0.51	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*99.1*		*40 - 110*
Y Carrier	*77.0*		*40 - 110*

Metals

Prep Batch: 337904

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112264-2	PNMW-17	Total Recoverable	Water	3005A	
280-112264-3	PNMW-17D	Total Recoverable	Water	3005A	
280-112264-4	PNMW-17EB	Total Recoverable	Water	3005A	
280-112264-5	PNMW-18	Total Recoverable	Water	3005A	
280-112264-6	PNMW-19	Total Recoverable	Water	3005A	
280-112264-7	PNMW-20	Total Recoverable	Water	3005A	
MB 240-337904/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-337904/14-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-337904/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
280-112264-2 MS	PNMW-17	Total Recoverable	Water	3005A	
280-112264-2 MS	PNMW-17	Total Recoverable	Water	3005A	
280-112264-2 MSD	PNMW-17	Total Recoverable	Water	3005A	
280-112264-2 MSD	PNMW-17	Total Recoverable	Water	3005A	

Analysis Batch: 338163

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112264-2	PNMW-17	Total Recoverable	Water	6010C	337904
280-112264-3	PNMW-17D	Total Recoverable	Water	6010C	337904
280-112264-4	PNMW-17EB	Total Recoverable	Water	6010C	337904
280-112264-5	PNMW-18	Total Recoverable	Water	6010C	337904
280-112264-6	PNMW-19	Total Recoverable	Water	6010C	337904
280-112264-7	PNMW-20	Total Recoverable	Water	6010C	337904
MB 240-337904/1-A	Method Blank	Total Recoverable	Water	6010C	337904
LCS 240-337904/14-A	Lab Control Sample	Total Recoverable	Water	6010C	337904
280-112264-2 MS	PNMW-17	Total Recoverable	Water	6010C	337904
280-112264-2 MSD	PNMW-17	Total Recoverable	Water	6010C	337904

Prep Batch: 338275

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112264-1	PNMW-14	Total Recoverable	Water	3005A	
MB 240-338275/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-338275/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 339495

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112264-1	PNMW-14	Total Recoverable	Water	6020A	338275
MB 240-338275/1-A	Method Blank	Total Recoverable	Water	6020A	338275
LCS 240-338275/2-A	Lab Control Sample	Total Recoverable	Water	6020A	338275

Analysis Batch: 340754

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112264-2	PNMW-17	Total Recoverable	Water	6020A	337904
280-112264-3	PNMW-17D	Total Recoverable	Water	6020A	337904
280-112264-4	PNMW-17EB	Total Recoverable	Water	6020A	337904
280-112264-5	PNMW-18	Total Recoverable	Water	6020A	337904
280-112264-6	PNMW-19	Total Recoverable	Water	6020A	337904
280-112264-7	PNMW-20	Total Recoverable	Water	6020A	337904
MB 240-337904/1-A	Method Blank	Total Recoverable	Water	6020A	337904
LCS 240-337904/2-A	Lab Control Sample	Total Recoverable	Water	6020A	337904
280-112264-2 MS	PNMW-17	Total Recoverable	Water	6020A	337904
280-112264-2 MSD	PNMW-17	Total Recoverable	Water	6020A	337904

Analysis Batch: 340977

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112264-7	PNMW-20	Total Recoverable	Water	6020A	337904

Prep Batch: 424052

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112264-2	PNMW-17	Total/NA	Water	7470A	
280-112264-3	PNMW-17D	Total/NA	Water	7470A	
280-112264-4	PNMW-17EB	Total/NA	Water	7470A	
280-112264-5	PNMW-18	Total/NA	Water	7470A	
280-112264-6	PNMW-19	Total/NA	Water	7470A	
280-112264-7	PNMW-20	Total/NA	Water	7470A	
MB 280-424052/1-A	Method Blank	Total/NA	Water	7470A	
LCS 280-424052/2-A	Lab Control Sample	Total/NA	Water	7470A	
LCSD 280-424052/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	

Analysis Batch: 424391

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112264-2	PNMW-17	Total/NA	Water	7470A	424052
280-112264-3	PNMW-17D	Total/NA	Water	7470A	424052
280-112264-4	PNMW-17EB	Total/NA	Water	7470A	424052
280-112264-5	PNMW-18	Total/NA	Water	7470A	424052
280-112264-6	PNMW-19	Total/NA	Water	7470A	424052
280-112264-7	PNMW-20	Total/NA	Water	7470A	424052
MB 280-424052/1-A	Method Blank	Total/NA	Water	7470A	424052
LCS 280-424052/2-A	Lab Control Sample	Total/NA	Water	7470A	424052
LCSD 280-424052/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	424052

General Chemistry

Analysis Batch: 423320

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112264-1	PNMW-14	Total/NA	Water	SM 2540D	
280-112264-2	PNMW-17	Total/NA	Water	SM 2540D	
280-112264-3	PNMW-17D	Total/NA	Water	SM 2540D	
280-112264-4	PNMW-17EB	Total/NA	Water	SM 2540D	
280-112264-5	PNMW-18	Total/NA	Water	SM 2540D	
280-112264-6	PNMW-19	Total/NA	Water	SM 2540D	
280-112264-7	PNMW-20	Total/NA	Water	SM 2540D	
MB 280-423320/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-423320/2	Lab Control Sample	Total/NA	Water	SM 2540D	
LCSD 280-423320/3	Lab Control Sample Dup	Total/NA	Water	SM 2540D	
280-112264-7 DU	PNMW-20	Total/NA	Water	SM 2540D	

Analysis Batch: 423440

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112264-2	PNMW-17	Total/NA	Water	SM 2540C	
280-112264-3	PNMW-17D	Total/NA	Water	SM 2540C	
280-112264-4	PNMW-17EB	Total/NA	Water	SM 2540C	
280-112264-5	PNMW-18	Total/NA	Water	SM 2540C	
280-112264-6	PNMW-19	Total/NA	Water	SM 2540C	
280-112264-7	PNMW-20	Total/NA	Water	SM 2540C	
MB 280-423440/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-423440/2	Lab Control Sample	Total/NA	Water	SM 2540C	
280-112264-3 DU	PNMW-17D	Total/NA	Water	SM 2540C	

Analysis Batch: 425202

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112264-2	PNMW-17	Total/NA	Water	9056A	
280-112264-3	PNMW-17D	Total/NA	Water	9056A	
280-112264-4	PNMW-17EB	Total/NA	Water	9056A	
280-112264-5	PNMW-18	Total/NA	Water	9056A	
280-112264-6	PNMW-19	Total/NA	Water	9056A	
280-112264-7	PNMW-20	Total/NA	Water	9056A	
280-112264-7	PNMW-20	Total/NA	Water	9056A	
MB 280-425202/6	Method Blank	Total/NA	Water	9056A	
LCS 280-425202/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-425202/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-425202/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 425277

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112264-2	PNMW-17	Total/NA	Water	9040B	
280-112264-3	PNMW-17D	Total/NA	Water	9040B	
280-112264-5	PNMW-18	Total/NA	Water	9040B	
280-112264-6	PNMW-19	Total/NA	Water	9040B	
280-112264-7	PNMW-20	Total/NA	Water	9040B	
LCS 280-425277/4	Lab Control Sample	Total/NA	Water	9040B	
280-112264-2 DU	PNMW-17	Total/NA	Water	9040B	

Analysis Batch: 425413

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112264-2	PNMW-17	Total/NA	Water	9056A	
280-112264-3	PNMW-17D	Total/NA	Water	9056A	
280-112264-4	PNMW-17EB	Total/NA	Water	9056A	
280-112264-5	PNMW-18	Total/NA	Water	9056A	
280-112264-6	PNMW-19	Total/NA	Water	9056A	
280-112264-7	PNMW-20	Total/NA	Water	9056A	
MB 280-425413/13	Method Blank	Total/NA	Water	9056A	
LCS 280-425413/11	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-425413/12	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-425413/10	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 425596

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112264-4	PNMW-17EB	Total/NA	Water	9040B	
LCS 280-425596/4	Lab Control Sample	Total/NA	Water	9040B	

Rad

Prep Batch: 377775

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112264-2	PNMW-17	Total/NA	Water	PrecSep-21	
280-112264-3	PNMW-17D	Total/NA	Water	PrecSep-21	
280-112264-4	PNMW-17EB	Total/NA	Water	PrecSep-21	
280-112264-5	PNMW-18	Total/NA	Water	PrecSep-21	
280-112264-6	PNMW-19	Total/NA	Water	PrecSep-21	
280-112264-7	PNMW-20	Total/NA	Water	PrecSep-21	
MB 160-377775/20-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-377775/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-377775/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

QC Association Summary

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

TestAmerica Job ID: 280-112264-1

Prep Batch: 377795

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-112264-2	PNMW-17	Total/NA	Water	PrecSep_0	
280-112264-3	PNMW-17D	Total/NA	Water	PrecSep_0	
280-112264-4	PNMW-17EB	Total/NA	Water	PrecSep_0	
280-112264-5	PNMW-18	Total/NA	Water	PrecSep_0	
280-112264-6	PNMW-19	Total/NA	Water	PrecSep_0	
280-112264-7	PNMW-20	Total/NA	Water	PrecSep_0	
MB 160-377795/20-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-377795/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-377795/2-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: 280-112264-1

Client Sample ID: PNMW-14

Date Collected: 07/20/18 13:15
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-1

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	338275	07/27/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			339495	08/04/18 20:54	DSH	TAL CAN
Total/NA	Analysis	SM 2540D		1	200 mL	250 mL	423320	07/23/18 18:20	BJP	TAL DEN

Client Sample ID: PNMW-17

Date Collected: 07/19/18 11:55
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-2

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	337904	07/25/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			338163	07/26/18 14:52	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	337904	07/25/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			340754	08/13/18 18:37	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	424052	07/30/18 11:24	TEB	TAL DEN
Total/NA	Analysis	7470A		1			424391	07/31/18 13:37	TEB	TAL DEN
Total/NA	Analysis	9040B		1			425277	08/07/18 17:55	LPL	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	425202	08/08/18 09:09	ARM	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	425413	08/09/18 02:08	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	423440	07/24/18 12:35	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	423320	07/23/18 18:20	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.05 mL	1.0 g	377775	07/25/18 08:40	JLC	TAL SL
Total/NA	Analysis	9315		1			383308	08/17/18 09:20	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.05 mL	1.0 g	377795	07/25/18 09:55	JLC	TAL SL
Total/NA	Analysis	9320		1			380641	08/06/18 17:08	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			384175	08/21/18 03:20	RTM	TAL SL

Client Sample ID: PNMW-17D

Date Collected: 07/19/18 11:55
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-3

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	337904	07/25/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			338163	07/26/18 15:15	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	337904	07/25/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			340754	08/13/18 18:59	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	424052	07/30/18 11:24	TEB	TAL DEN
Total/NA	Analysis	7470A		1			424391	07/31/18 13:40	TEB	TAL DEN
Total/NA	Analysis	9040B		1			425277	08/07/18 18:02	LPL	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	425202	08/08/18 09:44	ARM	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	425413	08/09/18 02:30	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	423440	07/24/18 12:35	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	423320	07/23/18 18:20	BJP	TAL DEN

Lab Chronicle

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

TestAmerica Job ID: 280-112264-1

Client Sample ID: PNMW-17D

Date Collected: 07/19/18 11:55
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-3

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			1000.72 mL	1.0 g	377775	07/25/18 08:40	JLC	TAL SL
Total/NA	Analysis	9315		1			383308	08/17/18 09:20	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.72 mL	1.0 g	377795	07/25/18 09:55	JLC	TAL SL
Total/NA	Analysis	9320		1			380641	08/06/18 17:08	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			384175	08/21/18 03:20	RTM	TAL SL

Client Sample ID: PNMW-17EB

Date Collected: 07/19/18 12:15
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-4

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	337904	07/25/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			338163	07/26/18 15:20	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	337904	07/25/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			340754	08/13/18 19:04	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	424052	07/30/18 11:24	TEB	TAL DEN
Total/NA	Analysis	7470A		1			424391	07/31/18 13:42	TEB	TAL DEN
Total/NA	Analysis	9040B		1			425596	08/08/18 17:34	LPL	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	425202	08/08/18 10:01	ARM	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	425413	08/09/18 02:52	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	423440	07/24/18 12:35	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	423320	07/23/18 18:20	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.23 mL	1.0 g	377775	07/25/18 08:40	JLC	TAL SL
Total/NA	Analysis	9315		1			383308	08/17/18 09:20	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.23 mL	1.0 g	377795	07/25/18 09:55	JLC	TAL SL
Total/NA	Analysis	9320		1			380641	08/06/18 17:08	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			384175	08/21/18 03:20	RTM	TAL SL

Client Sample ID: PNMW-18

Date Collected: 07/19/18 15:40
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-5

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	337904	07/25/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			338163	07/26/18 15:25	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	337904	07/25/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			340754	08/13/18 19:08	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	424052	07/30/18 11:24	TEB	TAL DEN
Total/NA	Analysis	7470A		1			424391	07/31/18 13:44	TEB	TAL DEN
Total/NA	Analysis	9040B		1			425277	08/07/18 18:11	LPL	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	425202	08/08/18 11:28	ARM	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	425413	08/09/18 03:15	TLP	TAL DEN

Lab Chronicle

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

TestAmerica Job ID: 280-112264-1

Client Sample ID: PNMW-18

Date Collected: 07/19/18 15:40
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	423440	07/24/18 12:35	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	423320	07/23/18 18:20	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			999.89 mL	1.0 g	377775	07/25/18 08:40	JLC	TAL SL
Total/NA	Analysis	9315		1			383015	08/17/18 09:21	RTM	TAL SL
Total/NA	Prep	PrecSep_0			999.89 mL	1.0 g	377795	07/25/18 09:55	JLC	TAL SL
Total/NA	Analysis	9320		1			380641	08/06/18 17:08	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			384175	08/21/18 03:20	RTM	TAL SL

Client Sample ID: PNMW-19

Date Collected: 07/20/18 10:25
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-6

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	337904	07/25/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			338163	07/26/18 15:30	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	337904	07/25/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			340754	08/13/18 19:22	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	424052	07/30/18 11:24	TEB	TAL DEN
Total/NA	Analysis	7470A		1			424391	07/31/18 13:46	TEB	TAL DEN
Total/NA	Analysis	9040B		1			425277	08/07/18 18:15	LPL	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	425202	08/08/18 11:46	ARM	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	425413	08/09/18 04:00	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	423440	07/24/18 12:35	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	423320	07/23/18 18:20	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.29 mL	1.0 g	377775	07/25/18 08:40	JLC	TAL SL
Total/NA	Analysis	9315		1			383015	08/17/18 09:21	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.29 mL	1.0 g	377795	07/25/18 09:55	JLC	TAL SL
Total/NA	Analysis	9320		1			380641	08/06/18 17:08	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			384175	08/21/18 03:20	RTM	TAL SL

Client Sample ID: PNMW-20

Date Collected: 07/19/18 12:40
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-7

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	337904	07/25/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			338163	07/26/18 15:35	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	337904	07/25/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			340754	08/13/18 19:26	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	337904	07/25/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		2			340977	08/14/18 11:14	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	424052	07/30/18 11:24	TEB	TAL DEN

Lab Chronicle

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

TestAmerica Job ID: 280-112264-1

Client Sample ID: PNMW-20

Date Collected: 07/19/18 12:40
Date Received: 07/20/18 17:00

Lab Sample ID: 280-112264-7

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	7470A		1			424391	07/31/18 13:48	TEB	TAL DEN
Total/NA	Analysis	9040B		1			425277	08/07/18 18:19	LPL	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	425202	08/08/18 12:21	ARM	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	425202	08/08/18 12:38	ARM	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	425413	08/09/18 03:37	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	423440	07/24/18 12:35	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	423320	07/23/18 18:20	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.52 mL	1.0 g	377775	07/25/18 08:40	JLC	TAL SL
Total/NA	Analysis	9315		1			383015	08/17/18 09:21	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.52 mL	1.0 g	377795	07/25/18 09:55	JLC	TAL SL
Total/NA	Analysis	9320		1			380641	08/06/18 17:08	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			384175	08/21/18 03:20	RTM	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: 280-112264-1

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 ELAP		2907.01	10-31-19

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
7470A	7470A	Water	Mercury
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	07-31-18 *
Kansas	NELAP	7	E-10336	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18
Minnesota	NELAP	5	039-999-348	12-31-18
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	T104704517-17-9	08-31-18 *
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-18 *
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18

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 ELAP		L2305	04-06-19
Arizona	State Program	9	AZ0813	12-08-18
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	11-30-18
Iowa	State Program	7	373	12-01-18
Kansas	NELAP	7	E-10236	10-31-18
Kentucky (DW)	State Program	4	90125	12-31-18
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA180017	12-31-18

* 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: 280-112264-1

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
Maryland	State Program	3	310	09-30-18 *
Michigan	State Program	5	9005	06-30-18 *
Missouri	State Program	7	780	06-30-18 *
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	08-31-18 *
Pennsylvania	NELAP	3	68-00540	02-28-19
South Carolina	State Program	4	85002001	06-30-18 *
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	MO000542016-8	07-31-18 *
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-18 *
West Virginia DEP	State Program	3	381	08-31-18 *

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

Chain of Custody Record

Temperature on Receipt _____

Drinking Water? Yes☐ No☐

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client	Project Manager	Date	Chain of Custody Number
HDR, Inc.	Matthew Rohr matthew.rohr@hdrinc.com	7/20/18	287479
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 1**
9781 S Meridian Blvd Ste 400	(303) 764-1537		
City / State / Zip Code	**Site Contact**	**Lab Contact**	**Analysis (Attach list if more space is needed)**
Englewood / CO / 80112	Emily Munoz	Stephanie Rothmeyer	
Project Name and Location (State)	**Carrier/Waybill Number**		
Xcel - Pawnee (CO)	Hand Carry		
Contract/Purchase Order/Quote No.			
28014378			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed	Soil	Containers & Preservatives: Unpres	H_2SO_4	HNO_3	HCl	NaOH	ZnAc/NaOH	Metals	Ra 226/228	Anions/pH	TDS	TSS
PNMW-14	7/20/18			X			3		4				→ Contact Molly Reeves to confirm analyses				
PNMW-17	7/19/18			X			3		4				X	X	X	X	X
PNMW-17D	7/19/18			X			3		4				X	X	X	X	X
PNMW-17EB	7/19/18			X			3		4				X	X	X	X	X
PNMW-18	7/19/18			X			3		4				X	X	X	X	X
PNMW-19	7/20/18			X			3		4				X	X	X	X	X
PNMW-20	7/20/18			X			3		4				X	X	X	X	X

280-112264 Chain of Custody

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☒ Other per contract

QC Requirements (Specify)

	Relinquished By	Date	Time	Received By	Date	Time
1.		7/20/18	1700		7/20/18	1700
2.				Alyssa Gomez	7.20.18	1700
3.				0.6, 1.3, 1.2, +0.0, IR8, stored by ALS	7.20.18	

Comments
PNMW-14 - Contact Molly Reeves at Molly.reeves@hdrinc.com or (734) 263-7138 to confirm analyses. All others per contract.

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

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: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-448137.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-112264-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 8/15/2018			
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/ (MOD) Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
PNMW-17 (280-112264-2)	7/19/18	11:55 Mountain		Water			X	X	X	1	
PNMW-17D (280-112264-3)	7/19/18	11:55 Mountain		Water			X	X	X	1	
PNMW-17EB (280-112264-4)	7/19/18	12:15 Mountain		Water			X	X	X	1	
PNMW-18 (280-112264-5)	7/19/18	15:40 Mountain		Water			X	X	X	1	
PNMW-19 (280-112264-6)	7/20/18	10:25 Mountain		Water			X	X	X	1	
PNMW-20 (280-112264-7)	7/19/18	12:40 Mountain		Water			X	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: 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	Raina Castro	7-23-18 1530	TALDen	[signature]	7/24/18 0920	TAStl
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: 09/20/2016

8/21/2018

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: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-448137.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-112264-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 8/15/2018			
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/ (MOD) Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
PNMW-17 (280-112264-2)	7/19/18	11:55 Mountain		Water			X	X	X	1	
PNMW-17D (280-112264-3)	7/19/18	11:55 Mountain		Water			X	X	X	1	
PNMW-17EB (280-112264-4)	7/19/18	12:15 Mountain		Water			X	X	X	1	
PNMW-18 (280-112264-5)	7/19/18	15:40 Mountain		Water			X	X	X	1	
PNMW-19 (280-112264-6)	7/20/18	10:25 Mountain		Water			X	X	X	1	
PNMW-20 (280-112264-7)	7/19/18	12:40 Mountain		Water			X	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
Laura Castro	7-23-18 1530	TALDen	[illegible]	7/24/18 0920	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:

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

16.4/16.4

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-448138.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-112264-1
Address: 4101 Shuffel Street NW,	Due Date Requested: 8/13/2018			
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:

S63

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)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
PNMW-17 (280-112264-2)	7/19/18	11:55 Mountain		Water			X	1	Use Collision Cell
PNMW-17D (280-112264-3)	7/19/18	11:55 Mountain		Water			X	1	Use Collision Cell
PNMW-17EB (280-112264-4)	7/19/18	12:15 Mountain		Water			X	1	Use Collision Cell
PNMW-18 (280-112264-5)	7/19/18	15:40 Mountain		Water			X	1	Use Collision Cell
PNMW-19 (280-112264-6)	7/20/18	10:25 Mountain		Water			X	1	Use Collision Cell
PNMW-20 (280-112264-7)	7/19/18	12:40 Mountain		Water			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
Diana Castro	7-23-18 1605	TAL Den		7/24/18 1000	TAL
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: 09/20/2016

8/21/2018

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

Client TA Denver Site Name _____ Cooler unpacked by:

Cooler Received on 7/24/18 Opened on 7/24/18

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 °C) Observed Cooler Temp. 16.4 °C Corrected Cooler Temp. 16.4 °C

IR GUN #36 (CF -0.3°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# **HC849161**
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): _____.

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

0,8/C0.8

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-448138.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-112264-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 8/13/2018			
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:

S67

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)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
PNMW-14 (280-112264-1)	7/20/18	13:15 Mountain		Water			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: Fedex

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		7-25-2018 1634	TAL Den		7/26/18 945	TAL
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: ∆ Yes ∆ 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: [signature]

Cooler Received on 7/26/18 Opened on 7/26/18

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 Coolers 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 °C) Observed Cooler Temp. 0.8 °C Corrected Cooler Temp. 0.8 °C
   IR GUN #36 (CF -0.3°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# **HC849161**
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: 280-112264-1

Login Number: 112264
List Number: 1
Creator: Gomez, Alyssa I

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: 280-112264-1

Login Number: 112264
List Number: 3
Creator: Press, Nicholas B

List Source: TestAmerica St. Louis
List Creation: 07/24/18 05:14 PM

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

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-112264-1

Login Number: 112264
List Number: 4
Creator: Press, Nicholas B

List Source: TestAmerica St. Louis
List Creation: 07/24/18 05:22 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.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	4.3, 3.9
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

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

TestAmerica Job ID: 280-112264-1

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)
280-112264-2	PNMW-17	95.0
280-112264-3	PNMW-17D	95.9
280-112264-4	PNMW-17EB	103
280-112264-5	PNMW-18	91.7
280-112264-6	PNMW-19	97.1
280-112264-7	PNMW-20	99.1
LCS 160-377775/1-A	Lab Control Sample	97.1
LCSD 160-377775/2-A	Lab Control Sample Dup	99.1
MB 160-377775/20-A	Method Blank	98.8

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)
280-112264-2	PNMW-17	95.0	78.5
280-112264-3	PNMW-17D	95.9	77.8
280-112264-4	PNMW-17EB	103	80.4
280-112264-5	PNMW-18	91.7	75.1
280-112264-6	PNMW-19	97.1	78.5
280-112264-7	PNMW-20	99.1	77.8
LCS 160-377795/1-A	Lab Control Sample	97.1	71.4
LCSD 160-377795/2-A	Lab Control Sample Dup	99.1	77.0
MB 160-377795/20-A	Method Blank	98.8	79.3

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: 280-114277-1
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:
10/23/2018 8:31:30 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
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-114277-1

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
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.
B	Compound was found in the blank and sample.
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.

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: 280-114277-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Pawnee

Report Number: 280-114277-1

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 9/13/2018 1:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.4º C, 2.8º C and 4.7º C.

Receipt Exceptions

The containers listed below were noted as having no sampling time given on the container label. All sampling times were logged per the Chain of Custody.
1) All containers received for sample ID PNMW19EB
2) Two plastic 500mL nitric bottles and two plastic 1L nitric bottles for sample ID PNMW-17

TOTAL RECOVERABLE METALS

Samples PNMW-17 (280-114277-1), PNMW-18 (280-114277-2), PNMW-19 (280-114277-3), PNMW-20 (280-114277-4), PNMW19-DUP (280-114277-5) and PNMW19-EB (280-114277-6) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 09/18/2018 and analyzed on 09/19/2018.

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 (280-114277-1), PNMW-18 (280-114277-2), PNMW-19 (280-114277-3), PNMW-20 (280-114277-4), PNMW19-DUP (280-114277-5) and PNMW19-EB (280-114277-6) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 09/18/2018 and analyzed on 10/02/2018.

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

TOTAL MERCURY

Samples PNMW-17 (280-114277-1), PNMW-18 (280-114277-2), PNMW-19 (280-114277-3), PNMW-20 (280-114277-4), PNMW19-DUP (280-114277-5) and PNMW19-EB (280-114277-6) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared and analyzed on 09/28/2018.

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

Job ID: 280-114277-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

TOTAL DISSOLVED SOLIDS

Samples PNMW-17 (280-114277-1), PNMW-18 (280-114277-2), PNMW-19 (280-114277-3), PNMW-20 (280-114277-4), PNMW19-DUP (280-114277-5) and PNMW19-EB (280-114277-6) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 09/17/2018.

Constant weight was not achieved after 4 drying cycles for the following samples: PNMW-17 (280-114277-1), PNMW-18 (280-114277-2) and PNMW19-EB (280-114277-6).

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 (280-114277-1), PNMW-18 (280-114277-2), PNMW-19 (280-114277-3), PNMW-20 (280-114277-4), PNMW19-DUP (280-114277-5) and PNMW19-EB (280-114277-6) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 09/17/2018.

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

CORROSIVITY (PH)

Samples PNMW-17 (280-114277-1), PNMW-18 (280-114277-2), PNMW-19 (280-114277-3), PNMW-20 (280-114277-4), PNMW19-DUP (280-114277-5) and PNMW19-EB (280-114277-6) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 09/14/2018 and 09/21/2018.

The following sample failed to converge to constant pH after three measurements: PNMW19-EB (280-114277-6). This behavior was observed previously in analytical batch 429847.

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 (280-114277-1), PNMW-18 (280-114277-2), PNMW-19 (280-114277-3), PNMW-20 (280-114277-4), PNMW19-DUP (280-114277-5) and PNMW19-EB (280-114277-6) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 10/01/2018 and 10/02/2018.

Samples PNMW-17 (280-114277-1)[20X], PNMW-18 (280-114277-2)[20X], PNMW-20 (280-114277-4)[100X] and PNMW-20 (280-114277-4)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

Sulfate was detected in method blank MB 280-431512/6 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.

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.

RADIUM-226 (GFPC)

Samples PNMW-17 (280-114277-1), PNMW-18 (280-114277-2), PNMW-19 (280-114277-3), PNMW-20 (280-114277-4), PNMW19-DUP (280-114277-5) and PNMW19-EB (280-114277-6) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 09/18/2018 and analyzed on 10/10/2018.

The following samples were prepared at a reduced aliquot due to potential matrix interference: PNMW-18 (280-114277-2) and PNMW-19 (280-114277-3). Samples were yellow and contained heavy levels of floating white particulates.

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: PNMW-17 (280-114277-1), PNMW-18 (280-114277-2), PNMW-19 (280-114277-3), PNMW-20 (280-114277-4), PNMW19-DUP (280-114277-5) and PNMW19-EB (280-114277-6). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate

Job ID: 280-114277-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

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 (280-114277-1), PNMW-18 (280-114277-2), PNMW-19 (280-114277-3), PNMW-20 (280-114277-4), PNMW19-DUP (280-114277-5) and PNMW19-EB (280-114277-6) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 09/18/2018 and analyzed on 09/25/2018.

The following samples were prepared at a reduced aliquot due to potential matrix interference: PNMW-18 (280-114277-2) and PNMW-19 (280-114277-3). Samples were yellow and contained heavy levels of floating white particulates.

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: PNMW-17 (280-114277-1), PNMW-18 (280-114277-2), PNMW-19 (280-114277-3), PNMW-20 (280-114277-4), PNMW19-DUP (280-114277-5) and PNMW19-EB (280-114277-6). 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)
Samples PNMW-17 (280-114277-1), PNMW-18 (280-114277-2), PNMW-19 (280-114277-3), PNMW-20 (280-114277-4), PNMW19-DUP (280-114277-5) and PNMW19-EB (280-114277-6) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 10/18/2018.

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: 280-114277-1

Client Sample ID: PNMW-17 — Lab Sample ID: 280-114277-1

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	240		5.0	0.31	mg/L	1		6010C	Total Recoverable
Barium	0.092		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Chromium	0.0044		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Selenium	0.018		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.038		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	21.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	320		60	5.1	mg/L	20		9056A	Total/NA
Fluoride	0.23	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	570	B	100	4.6	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	1400		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	3.6	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-18 — Lab Sample ID: 280-114277-2

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	200		5.0	0.31	mg/L	1		6010C	Total Recoverable
Arsenic	0.00096	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.064		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cobalt	0.00046	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0021		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0015	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.00078	J	0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.0022	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	21.8	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	300		60	5.1	mg/L	20		9056A	Total/NA
Fluoride	0.31	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	860	B	100	4.6	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	1400		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	33		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-19 — Lab Sample ID: 280-114277-3

This Detection Summary does not include radiochemical test results.

Client Sample ID: PNMW-19 (Continued) — Lab Sample ID: 280-114277-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.027	J	0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	110		5.0	0.31	mg/L	1		6010C	Total Recoverable
Barium	0.31		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	0.0023	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.026		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Mercury	0.000027	J	0.00020	0.000027	mg/L	1		7470A	Total/NA
pH adj. to 25 deg C	7.8	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	44		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.26	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	100	B	5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	470		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	2.4	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-20 — Lab Sample ID: 280-114277-4

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
Calcium	450		5.0	0.31	mg/L	1		6010C	Total Recoverable
Arsenic	0.0011	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.017		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Selenium	0.0074		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.070		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	21.4	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	610		15	1.3	mg/L	5		9056A	Total/NA
Fluoride	0.11	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	5100	B	500	23	mg/L	100		9056A	Total/NA
Total Dissolved Solids (TDS)	8200		100	47	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	9.6		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW19-DUP — Lab Sample ID: 280-114277-5

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	100		5.0	0.31	mg/L	1		6010C	Total Recoverable
Barium	0.30		0.0050	0.0022	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: PNMW19-DUP (Continued)

Lab Sample ID: 280-114277-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.0016	J	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Selenium	0.0023	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.026		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	20.8	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	45		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.27	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	100	B	5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	500		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	2.8	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW19-EB

Lab Sample ID: 280-114277-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
pH adj. to 25 deg C	5.5	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.5	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	1.3	J	3.0	0.25	mg/L	1		9056A	Total/NA
Sulfate	2.1	J B	5.0	0.23	mg/L	1		9056A	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: 280-114277-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL DEN
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 DEN
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: 280-114277-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-114277-1	PNMW-17	Water	09/11/18 18:20	09/13/18 13:30
280-114277-2	PNMW-18	Water	09/12/18 17:20	09/13/18 13:30
280-114277-3	PNMW-19	Water	09/12/18 12:20	09/13/18 13:30
280-114277-4	PNMW-20	Water	09/11/18 16:15	09/13/18 13:30
280-114277-5	PNMW19-DUP	Water	09/12/18 12:20	09/13/18 13:30
280-114277-6	PNMW19-EB	Water	09/12/18 13:35	09/13/18 13:30

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

Client Sample ID: PNMW-17
Date Collected: 09/11/18 18:20
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.30**		0.10	0.023	mg/L		09/18/18 15:00	09/19/18 11:57	1
Calcium	**240**		5.0	0.31	mg/L		09/18/18 15:00	09/19/18 11:57	1

Client Sample ID: PNMW-18
Date Collected: 09/12/18 17:20
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.12**		0.10	0.023	mg/L		09/18/18 15:00	09/19/18 12:02	1
Calcium	**200**		5.0	0.31	mg/L		09/18/18 15:00	09/19/18 12:02	1

Client Sample ID: PNMW-19
Date Collected: 09/12/18 12:20
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.027**	**J**	0.10	0.023	mg/L		09/18/18 15:00	09/19/18 12:06	1
Calcium	**110**		5.0	0.31	mg/L		09/18/18 15:00	09/19/18 12:06	1

Client Sample ID: PNMW-20
Date Collected: 09/11/18 16:15
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**1.8**		0.10	0.023	mg/L		09/18/18 15:00	09/19/18 12:11	1
Calcium	**450**		5.0	0.31	mg/L		09/18/18 15:00	09/19/18 12:11	1

Client Sample ID: PNMW19-DUP
Date Collected: 09/12/18 12:20
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.029**	**J**	0.10	0.023	mg/L		09/18/18 15:00	09/19/18 12:15	1
Calcium	**100**		5.0	0.31	mg/L		09/18/18 15:00	09/19/18 12:15	1

Client Sample ID: PNMW19-EB
Date Collected: 09/12/18 13:35
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		09/18/18 15:00	09/19/18 12:20	1
Calcium	ND		5.0	0.31	mg/L		09/18/18 15:00	09/19/18 12:20	1

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

Client Sample ID: PNMW-17
Date Collected: 09/11/18 18:20
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		09/18/18 15:00	10/02/18 21:08	1
Arsenic	ND		0.0050	0.00075	mg/L		09/18/18 15:00	10/02/18 21:08	1
Barium	**0.092**		0.0050	0.0022	mg/L		09/18/18 15:00	10/02/18 21:08	1
Beryllium	ND		0.0010	0.00031	mg/L		09/18/18 15:00	10/02/18 21:08	1
Cadmium	ND		0.0010	0.00021	mg/L		09/18/18 15:00	10/02/18 21:08	1
Cobalt	ND		0.0010	0.00019	mg/L		09/18/18 15:00	10/02/18 21:08	1
Chromium	**0.0044**		0.0020	0.00098	mg/L		09/18/18 15:00	10/02/18 21:08	1

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

Client Sample ID: PNMW-17
Date Collected: 09/11/18 18:20
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	ND		0.010	0.0011	mg/L		09/18/18 15:00	10/02/18 21:08	1
Lead	ND		0.0010	0.00045	mg/L		09/18/18 15:00	10/02/18 21:08	1
Selenium	**0.018**		0.0050	0.00089	mg/L		09/18/18 15:00	10/02/18 21:08	1
Thallium	ND		0.0010	0.00020	mg/L		09/18/18 15:00	10/02/18 21:08	1
Lithium	**0.038**		0.0080	0.0017	mg/L		09/18/18 15:00	10/02/18 21:08	1

Client Sample ID: PNMW-18
Date Collected: 09/12/18 17:20
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		09/18/18 15:00	10/02/18 21:10	1
Arsenic	**0.00096**	**J**	0.0050	0.00075	mg/L		09/18/18 15:00	10/02/18 21:10	1
Barium	**0.064**		0.0050	0.0022	mg/L		09/18/18 15:00	10/02/18 21:10	1
Beryllium	ND		0.0010	0.00031	mg/L		09/18/18 15:00	10/02/18 21:10	1
Cadmium	ND		0.0010	0.00021	mg/L		09/18/18 15:00	10/02/18 21:10	1
Cobalt	**0.00046**	**J**	0.0010	0.00019	mg/L		09/18/18 15:00	10/02/18 21:10	1
Chromium	**0.0021**		0.0020	0.00098	mg/L		09/18/18 15:00	10/02/18 21:10	1
Molybdenum	**0.0015**	**J**	0.010	0.0011	mg/L		09/18/18 15:00	10/02/18 21:10	1
Lead	**0.00078**	**J**	0.0010	0.00045	mg/L		09/18/18 15:00	10/02/18 21:10	1
Selenium	**0.0022**	**J**	0.0050	0.00089	mg/L		09/18/18 15:00	10/02/18 21:10	1
Thallium	ND		0.0010	0.00020	mg/L		09/18/18 15:00	10/02/18 21:10	1
Lithium	**0.031**		0.0080	0.0017	mg/L		09/18/18 15:00	10/02/18 21:10	1

Client Sample ID: PNMW-19
Date Collected: 09/12/18 12:20
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		09/18/18 15:00	10/02/18 21:12	1
Arsenic	ND		0.0050	0.00075	mg/L		09/18/18 15:00	10/02/18 21:12	1
Barium	**0.31**		0.0050	0.0022	mg/L		09/18/18 15:00	10/02/18 21:12	1
Beryllium	ND		0.0010	0.00031	mg/L		09/18/18 15:00	10/02/18 21:12	1
Cadmium	ND		0.0010	0.00021	mg/L		09/18/18 15:00	10/02/18 21:12	1
Cobalt	ND		0.0010	0.00019	mg/L		09/18/18 15:00	10/02/18 21:12	1
Chromium	**0.0017**	**J**	0.0020	0.00098	mg/L		09/18/18 15:00	10/02/18 21:12	1
Molybdenum	ND		0.010	0.0011	mg/L		09/18/18 15:00	10/02/18 21:12	1
Lead	ND		0.0010	0.00045	mg/L		09/18/18 15:00	10/02/18 21:12	1
Selenium	**0.0023**	**J**	0.0050	0.00089	mg/L		09/18/18 15:00	10/02/18 21:12	1
Thallium	ND		0.0010	0.00020	mg/L		09/18/18 15:00	10/02/18 21:12	1
Lithium	**0.026**		0.0080	0.0017	mg/L		09/18/18 15:00	10/02/18 21:12	1

Client Sample ID: PNMW-20
Date Collected: 09/11/18 16:15
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		09/18/18 15:00	10/02/18 21:14	1
Arsenic	**0.0011**	**J**	0.0050	0.00075	mg/L		09/18/18 15:00	10/02/18 21:14	1
Barium	**0.017**		0.0050	0.0022	mg/L		09/18/18 15:00	10/02/18 21:14	1
Beryllium	ND		0.0010	0.00031	mg/L		09/18/18 15:00	10/02/18 21:14	1
Cadmium	ND		0.0010	0.00021	mg/L		09/18/18 15:00	10/02/18 21:14	1
Cobalt	ND		0.0010	0.00019	mg/L		09/18/18 15:00	10/02/18 21:14	1

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

Client Sample ID: PNMW-20
Date Collected: 09/11/18 16:15
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	ND		0.0020	0.00098	mg/L		09/18/18 15:00	10/02/18 21:14	1
Molybdenum	ND		0.010	0.0011	mg/L		09/18/18 15:00	10/02/18 21:14	1
Lead	ND		0.0010	0.00045	mg/L		09/18/18 15:00	10/02/18 21:14	1
Selenium	**0.0074**		0.0050	0.00089	mg/L		09/18/18 15:00	10/02/18 21:14	1
Thallium	ND		0.0010	0.00020	mg/L		09/18/18 15:00	10/02/18 21:14	1
Lithium	**0.070**		0.0080	0.0017	mg/L		09/18/18 15:00	10/02/18 21:14	1

Client Sample ID: PNMW19-DUP
Date Collected: 09/12/18 12:20
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		09/18/18 15:00	10/02/18 21:17	1
Arsenic	ND		0.0050	0.00075	mg/L		09/18/18 15:00	10/02/18 21:17	1
Barium	**0.30**		0.0050	0.0022	mg/L		09/18/18 15:00	10/02/18 21:17	1
Beryllium	ND		0.0010	0.00031	mg/L		09/18/18 15:00	10/02/18 21:17	1
Cadmium	ND		0.0010	0.00021	mg/L		09/18/18 15:00	10/02/18 21:17	1
Cobalt	ND		0.0010	0.00019	mg/L		09/18/18 15:00	10/02/18 21:17	1
Chromium	**0.0016**	**J**	0.0020	0.00098	mg/L		09/18/18 15:00	10/02/18 21:17	1
Molybdenum	ND		0.010	0.0011	mg/L		09/18/18 15:00	10/02/18 21:17	1
Lead	ND		0.0010	0.00045	mg/L		09/18/18 15:00	10/02/18 21:17	1
Selenium	**0.0023**	**J**	0.0050	0.00089	mg/L		09/18/18 15:00	10/02/18 21:17	1
Thallium	ND		0.0010	0.00020	mg/L		09/18/18 15:00	10/02/18 21:17	1
Lithium	**0.026**		0.0080	0.0017	mg/L		09/18/18 15:00	10/02/18 21:17	1

Client Sample ID: PNMW19-EB
Date Collected: 09/12/18 13:35
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		09/18/18 15:00	10/02/18 21:19	1
Arsenic	ND		0.0050	0.00075	mg/L		09/18/18 15:00	10/02/18 21:19	1
Barium	ND		0.0050	0.0022	mg/L		09/18/18 15:00	10/02/18 21:19	1
Beryllium	ND		0.0010	0.00031	mg/L		09/18/18 15:00	10/02/18 21:19	1
Cadmium	ND		0.0010	0.00021	mg/L		09/18/18 15:00	10/02/18 21:19	1
Cobalt	ND		0.0010	0.00019	mg/L		09/18/18 15:00	10/02/18 21:19	1
Chromium	ND		0.0020	0.00098	mg/L		09/18/18 15:00	10/02/18 21:19	1
Molybdenum	ND		0.010	0.0011	mg/L		09/18/18 15:00	10/02/18 21:19	1
Lead	ND		0.0010	0.00045	mg/L		09/18/18 15:00	10/02/18 21:19	1
Selenium	ND		0.0050	0.00089	mg/L		09/18/18 15:00	10/02/18 21:19	1
Thallium	ND		0.0010	0.00020	mg/L		09/18/18 15:00	10/02/18 21:19	1
Lithium	ND		0.0080	0.0017	mg/L		09/18/18 15:00	10/02/18 21:19	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: PNMW-17
Date Collected: 09/11/18 18:20
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		09/28/18 11:50	09/28/18 17:40	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: PNMW-18
Date Collected: 09/12/18 17:20
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		09/28/18 11:50	09/28/18 17:43	1

Client Sample ID: PNMW-19
Date Collected: 09/12/18 12:20
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.000027**	**J**	0.00020	0.000027	mg/L		09/28/18 11:50	09/28/18 17:45	1

Client Sample ID: PNMW-20
Date Collected: 09/11/18 16:15
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		09/28/18 11:50	09/28/18 17:47	1

Client Sample ID: PNMW19-DUP
Date Collected: 09/12/18 12:20
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		09/28/18 11:50	09/28/18 17:49	1

Client Sample ID: PNMW19-EB
Date Collected: 09/12/18 13:35
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		09/28/18 11:50	09/28/18 17:52	1

General Chemistry

Client Sample ID: PNMW-17
Date Collected: 09/11/18 18:20
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-1
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			09/14/18 19:53	1
Temperature	**21.1**	**HF**	1.0	1.0	Degrees C			09/14/18 19:53	1
Chloride	**320**		60	5.1	mg/L			10/01/18 15:35	20
Fluoride	**0.23**	**J**	0.50	0.060	mg/L			10/02/18 18:58	1
Sulfate	**570**	**B**	100	4.6	mg/L			10/01/18 15:35	20
Total Dissolved Solids (TDS)	**1400**		20	9.4	mg/L			09/17/18 17:03	1
Total Suspended Solids	**3.6**	**J**	4.0	1.1	mg/L			09/17/18 13:54	1

Client Sample ID: PNMW-18
Date Collected: 09/12/18 17:20
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-2
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			09/14/18 19:44	1
Temperature	**21.8**	**HF**	1.0	1.0	Degrees C			09/14/18 19:44	1
Chloride	**300**		60	5.1	mg/L			10/01/18 16:50	20
Fluoride	**0.31**	**J**	0.50	0.060	mg/L			10/02/18 19:13	1
Sulfate	**860**	**B**	100	4.6	mg/L			10/01/18 16:50	20
Total Dissolved Solids (TDS)	**1400**		20	9.4	mg/L			09/17/18 17:03	1
Total Suspended Solids	**33**		4.0	1.1	mg/L			09/17/18 13:54	1

Client Sample Results

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

TestAmerica Job ID: 280-114277-1

Client Sample ID: PNMW-19
Date Collected: 09/12/18 12:20
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-3
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			09/14/18 19:57	1
Temperature	20.9	HF	1.0	1.0	Degrees C			09/14/18 19:57	1
Chloride	44		3.0	0.25	mg/L			10/01/18 17:08	1
Fluoride	0.26	J	0.50	0.060	mg/L			10/02/18 19:59	1
Sulfate	100	B	5.0	0.23	mg/L			10/01/18 17:08	1
Total Dissolved Solids (TDS)	470		10	4.7	mg/L			09/17/18 17:03	1
Total Suspended Solids	2.4	J	4.0	1.1	mg/L			09/17/18 13:54	1

Client Sample ID: PNMW-20
Date Collected: 09/11/18 16:15
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-4
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			09/14/18 19:48	1
Temperature	21.4	HF	1.0	1.0	Degrees C			09/14/18 19:48	1
Chloride	610		15	1.3	mg/L			10/01/18 18:23	5
Fluoride	0.11	J	0.50	0.060	mg/L			10/02/18 20:15	1
Sulfate	5100	B	500	23	mg/L			10/01/18 18:42	100
Total Dissolved Solids (TDS)	8200		100	47	mg/L			09/17/18 17:03	1
Total Suspended Solids	9.6		4.0	1.1	mg/L			09/17/18 13:54	1

Client Sample ID: PNMW19-DUP
Date Collected: 09/12/18 12:20
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-5
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			09/14/18 18:59	1
Temperature	20.8	HF	1.0	1.0	Degrees C			09/14/18 18:59	1
Chloride	45		3.0	0.25	mg/L			10/01/18 19:01	1
Fluoride	0.27	J	0.50	0.060	mg/L			10/02/18 20:30	1
Sulfate	100	B	5.0	0.23	mg/L			10/01/18 19:01	1
Total Dissolved Solids (TDS)	500		10	4.7	mg/L			09/17/18 17:03	1
Total Suspended Solids	2.8	J	4.0	1.1	mg/L			09/17/18 13:54	1

Client Sample ID: PNMW19-EB
Date Collected: 09/12/18 13:35
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	5.5	HF	0.1	0.1	SU			09/21/18 13:08	1
Temperature	19.5	HF	1.0	1.0	Degrees C			09/21/18 13:08	1
Chloride	1.3	J	3.0	0.25	mg/L			10/01/18 19:19	1
Fluoride	ND		0.50	0.060	mg/L			10/02/18 20:45	1
Sulfate	2.1	J B	5.0	0.23	mg/L			10/01/18 19:19	1
Total Dissolved Solids (TDS)	ND		100	47	mg/L			09/17/18 17:03	1
Total Suspended Solids	ND		4.0	1.1	mg/L			09/17/18 13:54	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: PNMW-17
Date Collected: 09/11/18 18:20
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.171**		0.0932	0.0944	1.00	0.111	pCi/L	09/18/18 09:12	10/10/18 05:53	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.0*		*40 - 110*	*09/18/18 09:12*	*10/10/18 05:53*	*1*

Client Sample ID: PNMW-18
Date Collected: 09/12/18 17:20
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0901	U	0.101	0.102	1.00	0.133	pCi/L	09/18/18 09:12	10/10/18 05:54	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.7*		*40 - 110*	*09/18/18 09:12*	*10/10/18 05:54*	*1*

Client Sample ID: PNMW-19
Date Collected: 09/12/18 12:20
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.306**		0.121	0.124	1.00	0.135	pCi/L	09/18/18 09:12	10/10/18 05:54	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*100*		*40 - 110*	*09/18/18 09:12*	*10/10/18 05:54*	*1*

Client Sample ID: PNMW-20
Date Collected: 09/11/18 16:15
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.130**		0.0928	0.0935	1.00	0.115	pCi/L	09/18/18 09:12	10/10/18 05:54	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*90.0*		*40 - 110*	*09/18/18 09:12*	*10/10/18 05:54*	*1*

Client Sample ID: PNMW19-DUP
Date Collected: 09/12/18 12:20
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.284**		0.101	0.104	1.00	0.110	pCi/L	09/18/18 09:12	10/10/18 05:54	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*09/18/18 09:12*	*10/10/18 05:54*	*1*

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: PNMW19-EB
Date Collected: 09/12/18 13:35
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0279	U	0.0741	0.0741	1.00	0.105	pCi/L	09/18/18 09:12	10/10/18 05:54	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*91.7*		*40 - 110*	*09/18/18 09:12*	*10/10/18 05:54*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: PNMW-17
Date Collected: 09/11/18 18:20
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.397	U	0.270	0.273	1.00	0.419	pCi/L	09/18/18 11:08	09/25/18 17:02	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.0*		*40 - 110*	*09/18/18 11:08*	*09/25/18 17:02*	*1*
Y Carrier	*81.5*		*40 - 110*	*09/18/18 11:08*	*09/25/18 17:02*	*1*

Client Sample ID: PNMW-18
Date Collected: 09/12/18 17:20
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.292	U	0.274	0.275	1.00	0.441	pCi/L	09/18/18 11:08	09/25/18 17:02	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.7*		*40 - 110*	*09/18/18 11:08*	*09/25/18 17:02*	*1*
Y Carrier	*87.5*		*40 - 110*	*09/18/18 11:08*	*09/25/18 17:02*	*1*

Client Sample ID: PNMW-19
Date Collected: 09/12/18 12:20
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.566**		0.294	0.298	1.00	0.429	pCi/L	09/18/18 11:08	09/25/18 17:02	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*100*		*40 - 110*	*09/18/18 11:08*	*09/25/18 17:02*	*1*
Y Carrier	*88.6*		*40 - 110*	*09/18/18 11:08*	*09/25/18 17:02*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: PNMW-20
Date Collected: 09/11/18 16:15
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.277	U	0.237	0.238	1.00	0.376	pCi/L	09/18/18 11:08	09/25/18 17:03	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*90.0*		*40 - 110*	*09/18/18 11:08*	*09/25/18 17:03*	*1*
Y Carrier	*87.5*		*40 - 110*	*09/18/18 11:08*	*09/25/18 17:03*	*1*

Client Sample ID: PNMW19-DUP
Date Collected: 09/12/18 12:20
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.145	U	0.207	0.207	1.00	0.346	pCi/L	09/18/18 11:08	09/25/18 17:03	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*09/18/18 11:08*	*09/25/18 17:03*	*1*
Y Carrier	*90.5*		*40 - 110*	*09/18/18 11:08*	*09/25/18 17:03*	*1*

Client Sample ID: PNMW19-EB
Date Collected: 09/12/18 13:35
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0860	U	0.183	0.183	1.00	0.351	pCi/L	09/18/18 11:08	09/25/18 17:03	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*91.7*		*40 - 110*	*09/18/18 11:08*	*09/25/18 17:03*	*1*
Y Carrier	*90.5*		*40 - 110*	*09/18/18 11:08*	*09/25/18 17:03*	*1*

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

Client Sample ID: PNMW-17
Date Collected: 09/11/18 18:20
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.568**		0.286	0.289	5.00	0.419	pCi/L		10/18/18 09:37	1

Client Sample ID: PNMW-18
Date Collected: 09/12/18 17:20
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.382	U	0.292	0.293	5.00	0.441	pCi/L		10/18/18 09:37	1

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

Client Sample ID: PNMW-19
Date Collected: 09/12/18 12:20
Date Received: 09/13/18 13:30
Lab Sample ID: 280-114277-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.872		0.318	0.323	5.00	0.429	pCi/L		10/18/18 09:37	1

Client Sample ID: PNMW-20
Date Collected: 09/11/18 16:15
Date Received: 09/13/18 13:30
Lab Sample ID: 280-114277-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.407		0.255	0.256	5.00	0.376	pCi/L		10/18/18 09:37	1

Client Sample ID: PNMW19-DUP
Date Collected: 09/12/18 12:20
Date Received: 09/13/18 13:30
Lab Sample ID: 280-114277-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.429		0.230	0.232	5.00	0.346	pCi/L		10/18/18 09:37	1

Client Sample ID: PNMW19-EB
Date Collected: 09/12/18 13:35
Date Received: 09/13/18 13:30
Lab Sample ID: 280-114277-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	-0.114	U	0.197	0.197	5.00	0.351	pCi/L		10/18/18 09:37	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-345984/1-A
Matrix: Water
Analysis Batch: 346249

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 345984

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		09/18/18 15:00	09/19/18 10:36	1
Calcium	ND		5.0	0.31	mg/L		09/18/18 15:00	09/19/18 10:36	1

Lab Sample ID: LCS 240-345984/2-A
Matrix: Water
Analysis Batch: 346249

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 345984

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.03		mg/L		103	80 - 120
Calcium	50.0	49.2		mg/L		98	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-345984/1-A
Matrix: Water
Analysis Batch: 348338

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 345984

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		09/18/18 15:00	10/02/18 20:31	1
Arsenic	ND		0.0050	0.00075	mg/L		09/18/18 15:00	10/02/18 20:31	1
Barium	ND		0.0050	0.0022	mg/L		09/18/18 15:00	10/02/18 20:31	1
Beryllium	ND		0.0010	0.00031	mg/L		09/18/18 15:00	10/02/18 20:31	1
Cadmium	ND		0.0010	0.00021	mg/L		09/18/18 15:00	10/02/18 20:31	1
Cobalt	ND		0.0010	0.00019	mg/L		09/18/18 15:00	10/02/18 20:31	1
Chromium	ND		0.0020	0.00098	mg/L		09/18/18 15:00	10/02/18 20:31	1
Molybdenum	ND		0.010	0.0011	mg/L		09/18/18 15:00	10/02/18 20:31	1
Lead	ND		0.0010	0.00045	mg/L		09/18/18 15:00	10/02/18 20:31	1
Selenium	ND		0.0050	0.00089	mg/L		09/18/18 15:00	10/02/18 20:31	1
Thallium	ND		0.0010	0.00020	mg/L		09/18/18 15:00	10/02/18 20:31	1
Lithium	ND		0.0080	0.0017	mg/L		09/18/18 15:00	10/02/18 20:31	1

Lab Sample ID: LCS 240-345984/3-A
Matrix: Water
Analysis Batch: 348338

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 345984

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0967		mg/L		97	80 - 120
Arsenic	1.00	0.978		mg/L		98	80 - 120
Barium	1.00	1.03		mg/L		103	80 - 120
Beryllium	1.00	1.02		mg/L		102	80 - 120
Cadmium	1.00	1.03		mg/L		103	80 - 120
Cobalt	1.00	0.932		mg/L		93	80 - 120
Chromium	1.00	0.995		mg/L		99	80 - 120
Molybdenum	0.100	0.0934		mg/L		93	80 - 120
Lead	1.00	1.02		mg/L		102	80 - 120
Selenium	1.00	1.00		mg/L		100	80 - 120
Thallium	0.250	0.249		mg/L		100	80 - 120
Lithium	0.100	0.0981		mg/L		98	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-431332/1-A
Matrix: Water
Analysis Batch: 431527

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 431332

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		09/28/18 11:50	09/28/18 16:56	1

Lab Sample ID: LCS 280-431332/2-A
Matrix: Water
Analysis Batch: 431527

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 431332

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00500	0.00447		mg/L		89	84 - 120

Lab Sample ID: LCSD 280-431332/3-A
Matrix: Water
Analysis Batch: 431527

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 431332

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.00500	0.00471		mg/L		94	84 - 120	5	15

Method: 9040B - pH

Lab Sample ID: LCS 280-430546/4
Matrix: Water
Analysis Batch: 430546

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 280-431512/6
Matrix: Water
Analysis Batch: 431512

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			09/30/18 14:08	1
Sulfate	0.237	J	5.0	0.23	mg/L			09/30/18 14:08	1

Lab Sample ID: LCS 280-431512/4
Matrix: Water
Analysis Batch: 431512

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

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

Lab Sample ID: LCSD 280-431512/5
Matrix: Water
Analysis Batch: 431512

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	95.4		mg/L		95	90 - 110	8	10

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

Lab Sample ID: LCSD 280-431512/5
Matrix: Water
Analysis Batch: 431512

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
Sulfate			100	94.1		mg/L		94	90 - 110	8	10

Lab Sample ID: MRL 280-431512/3
Matrix: Water
Analysis Batch: 431512

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	2.38	J	mg/L		95	50 - 150		
Sulfate			2.50	2.50	J	mg/L		100	50 - 150		

Lab Sample ID: 280-114277-3 MS
Matrix: Water
Analysis Batch: 431512

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		
Chloride	44		25.0	72.0		mg/L		112	80 - 120		
Sulfate	100	B	25.0	127	4	mg/L		101	80 - 120		

Lab Sample ID: 280-114277-3 MSD
Matrix: Water
Analysis Batch: 431512

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
Chloride	44		25.0	72.5		mg/L		114	80 - 120	1	20
Sulfate	100	B	25.0	127	4	mg/L		102	80 - 120	0	20

Lab Sample ID: 280-114277-3 DU
Matrix: Water
Analysis Batch: 431512

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

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Chloride	44			44.7		mg/L				1	15
Sulfate	100	B		101		mg/L				0.9	15

Lab Sample ID: MB 280-431750/6
Matrix: Water
Analysis Batch: 431750

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			10/02/18 11:50	1
Fluoride	ND		0.50	0.060	mg/L			10/02/18 11:50	1
Sulfate	ND		5.0	0.23	mg/L			10/02/18 11:50	1

Lab Sample ID: LCS 280-431750/4
Matrix: Water
Analysis Batch: 431750

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride			100	99.2		mg/L		99	90 - 110		
Fluoride			5.00	4.90		mg/L		98	90 - 110		

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

Lab Sample ID: LCS 280-431750/4
Matrix: Water
Analysis Batch: 431750

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

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

Lab Sample ID: LCSD 280-431750/5
Matrix: Water
Analysis Batch: 431750

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	99.1		mg/L		99	90 - 110	0	10
Fluoride			5.00	4.90		mg/L		98	90 - 110	0	10
Sulfate			100	101		mg/L		101	90 - 110	0	10

Lab Sample ID: MRL 280-431750/3
Matrix: Water
Analysis Batch: 431750

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	2.53	J	mg/L		101	50 - 150		
Fluoride			0.200	0.199	J	mg/L		99	50 - 150		
Sulfate			2.50	2.93	J	mg/L		117	50 - 150		

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

Lab Sample ID: MB 280-429911/1
Matrix: Water
Analysis Batch: 429911

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			09/17/18 17:03	1

Lab Sample ID: LCS 280-429911/2
Matrix: Water
Analysis Batch: 429911

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	468		mg/L		94	86 - 110		

Lab Sample ID: 280-114277-4 DU
Matrix: Water
Analysis Batch: 429911

Client Sample ID: PNMW-20
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids (TDS)	8200			8360		mg/L				2	10

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

Lab Sample ID: MB 280-429891/1
Matrix: Water
Analysis Batch: 429891

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			09/17/18 13:54	1

Lab Sample ID: LCS 280-429891/2
Matrix: Water
Analysis Batch: 429891

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	92.4		mg/L		92	86 - 114

Lab Sample ID: LCSD 280-429891/24
Matrix: Water
Analysis Batch: 429891

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	93.2		mg/L		93	86 - 114	1	20

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-389955/23-A
Matrix: Water
Analysis Batch: 394286

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389955

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.03933	U	0.0641	0.0642	1.00	0.0812	pCi/L	09/18/18 09:12	10/11/18 15:19	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*98.2*		*40 - 110*	*09/18/18 09:12*	*10/11/18 15:19*	*1*

Lab Sample ID: LCS 160-389955/1-A
Matrix: Water
Analysis Batch: 394207

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389955

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.4	10.83		1.05	1.00	0.100	pCi/L	95	68 - 137

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*96.5*		*40 - 110*

Lab Sample ID: LCSD 160-389955/2-A
Matrix: Water
Analysis Batch: 394207

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 389955

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	11.4	10.52		1.01	1.00	0.0967	pCi/L	93	68 - 137	0.15	1

Method: 9315 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCSD 160-389955/2-A
Matrix: Water
Analysis Batch: 394207

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 389955

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

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-389982/23-A
Matrix: Water
Analysis Batch: 391147

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389982

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.05189	U	0.182	0.182	1.00	0.322	pCi/L	09/18/18 11:08	09/25/18 17:03	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	98.2		40 - 110	09/18/18 11:08	09/25/18 17:03	1
Y Carrier	84.5		40 - 110	09/18/18 11:08	09/25/18 17:03	1

Lab Sample ID: LCS 160-389982/1-A
Matrix: Water
Analysis Batch: 391147

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389982

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			11.0	11.12		1.24	1.00	0.373	pCi/L	101	56 - 140		

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	96.5		40 - 110
Y Carrier	92.0		40 - 110

Lab Sample ID: LCSD 160-389982/2-A
Matrix: Water
Analysis Batch: 391147

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 389982

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			11.0	11.05		1.22	1.00	0.332	pCi/L	101	56 - 140	0.03	1

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Ba Carrier	103		40 - 110
Y Carrier	91.2		40 - 110

Metals

Prep Batch: 345984

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114277-1	PNMW-17	Total Recoverable	Water	3005A	
280-114277-2	PNMW-18	Total Recoverable	Water	3005A	
280-114277-3	PNMW-19	Total Recoverable	Water	3005A	
280-114277-4	PNMW-20	Total Recoverable	Water	3005A	
280-114277-5	PNMW19-DUP	Total Recoverable	Water	3005A	
280-114277-6	PNMW19-EB	Total Recoverable	Water	3005A	
MB 240-345984/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-345984/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-345984/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 346249

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114277-1	PNMW-17	Total Recoverable	Water	6010C	345984
280-114277-2	PNMW-18	Total Recoverable	Water	6010C	345984
280-114277-3	PNMW-19	Total Recoverable	Water	6010C	345984
280-114277-4	PNMW-20	Total Recoverable	Water	6010C	345984
280-114277-5	PNMW19-DUP	Total Recoverable	Water	6010C	345984
280-114277-6	PNMW19-EB	Total Recoverable	Water	6010C	345984
MB 240-345984/1-A	Method Blank	Total Recoverable	Water	6010C	345984
LCS 240-345984/2-A	Lab Control Sample	Total Recoverable	Water	6010C	345984

Analysis Batch: 348338

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114277-1	PNMW-17	Total Recoverable	Water	6020A	345984
280-114277-2	PNMW-18	Total Recoverable	Water	6020A	345984
280-114277-3	PNMW-19	Total Recoverable	Water	6020A	345984
280-114277-4	PNMW-20	Total Recoverable	Water	6020A	345984
280-114277-5	PNMW19-DUP	Total Recoverable	Water	6020A	345984
280-114277-6	PNMW19-EB	Total Recoverable	Water	6020A	345984
MB 240-345984/1-A	Method Blank	Total Recoverable	Water	6020A	345984
LCS 240-345984/3-A	Lab Control Sample	Total Recoverable	Water	6020A	345984

Prep Batch: 431332

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114277-1	PNMW-17	Total/NA	Water	7470A	
280-114277-2	PNMW-18	Total/NA	Water	7470A	
280-114277-3	PNMW-19	Total/NA	Water	7470A	
280-114277-4	PNMW-20	Total/NA	Water	7470A	
280-114277-5	PNMW19-DUP	Total/NA	Water	7470A	
280-114277-6	PNMW19-EB	Total/NA	Water	7470A	
MB 280-431332/1-A	Method Blank	Total/NA	Water	7470A	
LCS 280-431332/2-A	Lab Control Sample	Total/NA	Water	7470A	
LCSD 280-431332/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	

Analysis Batch: 431527

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114277-1	PNMW-17	Total/NA	Water	7470A	431332
280-114277-2	PNMW-18	Total/NA	Water	7470A	431332
280-114277-3	PNMW-19	Total/NA	Water	7470A	431332
280-114277-4	PNMW-20	Total/NA	Water	7470A	431332
280-114277-5	PNMW19-DUP	Total/NA	Water	7470A	431332

Metals (Continued)

Analysis Batch: 431527 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114277-6	PNMW19-EB	Total/NA	Water	7470A	431332
MB 280-431332/1-A	Method Blank	Total/NA	Water	7470A	431332
LCS 280-431332/2-A	Lab Control Sample	Total/NA	Water	7470A	431332
LCSD 280-431332/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	431332

General Chemistry

Analysis Batch: 429847

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114277-1	PNMW-17	Total/NA	Water	9040B	
280-114277-2	PNMW-18	Total/NA	Water	9040B	
280-114277-3	PNMW-19	Total/NA	Water	9040B	
280-114277-4	PNMW-20	Total/NA	Water	9040B	
280-114277-5	PNMW19-DUP	Total/NA	Water	9040B	
LCS 280-429847/29	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 429891

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114277-1	PNMW-17	Total/NA	Water	SM 2540D	
280-114277-2	PNMW-18	Total/NA	Water	SM 2540D	
280-114277-3	PNMW-19	Total/NA	Water	SM 2540D	
280-114277-4	PNMW-20	Total/NA	Water	SM 2540D	
280-114277-5	PNMW19-DUP	Total/NA	Water	SM 2540D	
280-114277-6	PNMW19-EB	Total/NA	Water	SM 2540D	
MB 280-429891/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-429891/2	Lab Control Sample	Total/NA	Water	SM 2540D	
LCSD 280-429891/24	Lab Control Sample Dup	Total/NA	Water	SM 2540D	

Analysis Batch: 429911

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114277-1	PNMW-17	Total/NA	Water	SM 2540C	
280-114277-2	PNMW-18	Total/NA	Water	SM 2540C	
280-114277-3	PNMW-19	Total/NA	Water	SM 2540C	
280-114277-4	PNMW-20	Total/NA	Water	SM 2540C	
280-114277-5	PNMW19-DUP	Total/NA	Water	SM 2540C	
280-114277-6	PNMW19-EB	Total/NA	Water	SM 2540C	
MB 280-429911/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-429911/2	Lab Control Sample	Total/NA	Water	SM 2540C	
280-114277-4 DU	PNMW-20	Total/NA	Water	SM 2540C	

Analysis Batch: 430546

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114277-6	PNMW19-EB	Total/NA	Water	9040B	
LCS 280-430546/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 431512

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114277-1	PNMW-17	Total/NA	Water	9056A	
280-114277-2	PNMW-18	Total/NA	Water	9056A	
280-114277-3	PNMW-19	Total/NA	Water	9056A	

General Chemistry (Continued)

Analysis Batch: 431512 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114277-4	PNMW-20	Total/NA	Water	9056A	
280-114277-4	PNMW-20	Total/NA	Water	9056A	
280-114277-5	PNMW19-DUP	Total/NA	Water	9056A	
280-114277-6	PNMW19-EB	Total/NA	Water	9056A	
MB 280-431512/6	Method Blank	Total/NA	Water	9056A	
LCS 280-431512/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-431512/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-431512/3	Lab Control Sample	Total/NA	Water	9056A	
280-114277-3 MS	PNMW-19	Total/NA	Water	9056A	
280-114277-3 MSD	PNMW-19	Total/NA	Water	9056A	
280-114277-3 DU	PNMW-19	Total/NA	Water	9056A	

Analysis Batch: 431750

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114277-1	PNMW-17	Total/NA	Water	9056A	
280-114277-2	PNMW-18	Total/NA	Water	9056A	
280-114277-3	PNMW-19	Total/NA	Water	9056A	
280-114277-4	PNMW-20	Total/NA	Water	9056A	
280-114277-5	PNMW19-DUP	Total/NA	Water	9056A	
280-114277-6	PNMW19-EB	Total/NA	Water	9056A	
MB 280-431750/6	Method Blank	Total/NA	Water	9056A	
LCS 280-431750/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-431750/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-431750/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 389955

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114277-1	PNMW-17	Total/NA	Water	PrecSep-21	
280-114277-2	PNMW-18	Total/NA	Water	PrecSep-21	
280-114277-3	PNMW-19	Total/NA	Water	PrecSep-21	
280-114277-4	PNMW-20	Total/NA	Water	PrecSep-21	
280-114277-5	PNMW19-DUP	Total/NA	Water	PrecSep-21	
280-114277-6	PNMW19-EB	Total/NA	Water	PrecSep-21	
MB 160-389955/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-389955/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-389955/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 389982

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114277-1	PNMW-17	Total/NA	Water	PrecSep_0	
280-114277-2	PNMW-18	Total/NA	Water	PrecSep_0	
280-114277-3	PNMW-19	Total/NA	Water	PrecSep_0	
280-114277-4	PNMW-20	Total/NA	Water	PrecSep_0	
280-114277-5	PNMW19-DUP	Total/NA	Water	PrecSep_0	
280-114277-6	PNMW19-EB	Total/NA	Water	PrecSep_0	
MB 160-389982/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-389982/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-389982/2-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: 280-114277-1

Client Sample ID: PNMW-17

Date Collected: 09/11/18 18:20
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-1

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	345984	09/18/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			346249	09/19/18 11:57	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	345984	09/18/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			348338	10/02/18 21:08	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	431332	09/28/18 11:50	THP	TAL DEN
Total/NA	Analysis	7470A		1			431527	09/28/18 17:40	THP	TAL DEN
Total/NA	Analysis	9040B		1			429847	09/14/18 19:53	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	431750	10/02/18 18:58	A1D	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	431512	10/01/18 15:35	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	429911	09/17/18 17:03	ARM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	429891	09/17/18 13:54	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.14 mL	1.0 g	389955	09/18/18 09:12	JLC	TAL SL
Total/NA	Analysis	9315		1			394245	10/10/18 05:53	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.14 mL	1.0 g	389982	09/18/18 11:08	JLC	TAL SL
Total/NA	Analysis	9320		1			391147	09/25/18 17:02	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			395716	10/18/18 09:37	ALS	TAL SL

Client Sample ID: PNMW-18

Date Collected: 09/12/18 17:20
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-2

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	345984	09/18/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			346249	09/19/18 12:02	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	345984	09/18/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			348338	10/02/18 21:10	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	431332	09/28/18 11:50	THP	TAL DEN
Total/NA	Analysis	7470A		1			431527	09/28/18 17:43	THP	TAL DEN
Total/NA	Analysis	9040B		1			429847	09/14/18 19:44	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	431750	10/02/18 19:13	A1D	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	431512	10/01/18 16:50	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	429911	09/17/18 17:03	ARM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	429891	09/17/18 13:54	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			750.27 mL	1.0 g	389955	09/18/18 09:12	JLC	TAL SL
Total/NA	Analysis	9315		1			394245	10/10/18 05:54	CDR	TAL SL
Total/NA	Prep	PrecSep_0			750.27 mL	1.0 g	389982	09/18/18 11:08	JLC	TAL SL
Total/NA	Analysis	9320		1			391147	09/25/18 17:02	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			395716	10/18/18 09:37	ALS	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-114277-1

Client Sample ID: PNMW-19

Date Collected: 09/12/18 12:20
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-3

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	345984	09/18/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			346249	09/19/18 12:06	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	345984	09/18/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			348338	10/02/18 21:12	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	431332	09/28/18 11:50	THP	TAL DEN
Total/NA	Analysis	7470A		1			431527	09/28/18 17:45	THP	TAL DEN
Total/NA	Analysis	9040B		1			429847	09/14/18 19:57	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	431750	10/02/18 19:59	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	431512	10/01/18 17:08	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	429911	09/17/18 17:03	ARM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	429891	09/17/18 13:54	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			750.29 mL	1.0 g	389955	09/18/18 09:12	JLC	TAL SL
Total/NA	Analysis	9315		1			394245	10/10/18 05:54	CDR	TAL SL
Total/NA	Prep	PrecSep_0			750.29 mL	1.0 g	389982	09/18/18 11:08	JLC	TAL SL
Total/NA	Analysis	9320		1			391147	09/25/18 17:02	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			395716	10/18/18 09:37	ALS	TAL SL

Client Sample ID: PNMW-20

Date Collected: 09/11/18 16:15
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-4

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	345984	09/18/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			346249	09/19/18 12:11	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	345984	09/18/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			348338	10/02/18 21:14	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	431332	09/28/18 11:50	THP	TAL DEN
Total/NA	Analysis	7470A		1			431527	09/28/18 17:47	THP	TAL DEN
Total/NA	Analysis	9040B		1			429847	09/14/18 19:48	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	431750	10/02/18 20:15	A1D	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	431512	10/01/18 18:23	ARM	TAL DEN
Total/NA	Analysis	9056A		100	5 mL	5 mL	431512	10/01/18 18:42	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	429911	09/17/18 17:03	ARM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	429891	09/17/18 13:54	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			999.97 mL	1.0 g	389955	09/18/18 09:12	JLC	TAL SL
Total/NA	Analysis	9315		1			394245	10/10/18 05:54	CDR	TAL SL
Total/NA	Prep	PrecSep_0			999.97 mL	1.0 g	389982	09/18/18 11:08	JLC	TAL SL
Total/NA	Analysis	9320		1			391147	09/25/18 17:03	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			395716	10/18/18 09:37	ALS	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-114277-1

Client Sample ID: PNMW19-DUP

Date Collected: 09/12/18 12:20
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-5

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	345984	09/18/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			346249	09/19/18 12:15	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	345984	09/18/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			348338	10/02/18 21:17	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	431332	09/28/18 11:50	THP	TAL DEN
Total/NA	Analysis	7470A		1			431527	09/28/18 17:49	THP	TAL DEN
Total/NA	Analysis	9040B		1			429847	09/14/18 18:59	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	431750	10/02/18 20:30	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	431512	10/01/18 19:01	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	429911	09/17/18 17:03	ARM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	429891	09/17/18 13:54	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.27 mL	1.0 g	389955	09/18/18 09:12	JLC	TAL SL
Total/NA	Analysis	9315		1			394245	10/10/18 05:54	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.27 mL	1.0 g	389982	09/18/18 11:08	JLC	TAL SL
Total/NA	Analysis	9320		1			391147	09/25/18 17:03	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			395716	10/18/18 09:37	ALS	TAL SL

Client Sample ID: PNMW19-EB

Date Collected: 09/12/18 13:35
Date Received: 09/13/18 13:30

Lab Sample ID: 280-114277-6

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	345984	09/18/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			346249	09/19/18 12:20	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	345984	09/18/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			348338	10/02/18 21:19	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	431332	09/28/18 11:50	THP	TAL DEN
Total/NA	Analysis	7470A		1			431527	09/28/18 17:52	THP	TAL DEN
Total/NA	Analysis	9040B		1			430546	09/21/18 13:08	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	431750	10/02/18 20:45	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	431512	10/01/18 19:19	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	429911	09/17/18 17:03	ARM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	429891	09/17/18 13:54	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.26 mL	1.0 g	389955	09/18/18 09:12	JLC	TAL SL
Total/NA	Analysis	9315		1	1.0 mL	1.0 mL	394245	10/10/18 05:54	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.26 mL	1.0 g	389982	09/18/18 11:08	JLC	TAL SL
Total/NA	Analysis	9320		1			391147	09/25/18 17:03	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			395716	10/18/18 09:37	ALS	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: 280-114277-1

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 ELAP		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
7470A	7470A	Water	Mercury
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	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18 *
Minnesota	NELAP	5	039-999-348	12-31-18 *
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	T104704517-17-9	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18 *

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 ELAP		L2305	04-06-19
Arizona	State Program	9	AZ0813	12-08-18 *
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	11-30-18
Iowa	State Program	7	373	12-01-18 *
Kansas	NELAP	7	E-10236	10-31-18 *
Kentucky (DW)	State Program	4	90125	12-31-18
Louisiana	NELAP	6	04080	06-30-19

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

Accreditation/Certification Summary

Client: HDR Inc
TestAmerica Job ID: 280-114277-1
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	LA180017	12-31-18
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-18 *
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	10-31-18 *

* 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

denver boulder courier

TestAmerica Laboratories, Inc.

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

Client Contact	Project Manager: Molly Reeves	Site Contact: Kaitlin Fishburn	Date: 9-12-18	COC No:
HDR Inc	Tel/Fax: 907-644-2078	Lab Contact:	Carrier: hand deliver	____ 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	9/11	1820	g	w	7	N		X	X	X	X	X	X	
PNMW-18	9/12	1720	g	w	7	N		X	X	X	X	X	X	
PNMW-19	9/12	1220	g	w	7	N		X	X	X	X	X	X	
PNMW-20	9/11	1615	g	w	7	N		X	X	X	X	X	X	
PNMW19-DUP	9/12	1220	g	w	7	N		X	X	X	X	X	X	
PNMW19-EB	9/12	1315	g	w	7	N		X	X	X	X	X	X	

280-114277 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: 1.2, 2.5, 1.9 Corr'd: 4.7, 2.8, 2.4 | Therm ID No.: #8

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kaitlin Fishburn	HDR	8/13/18	Denver/Boulder Courier	→	8/13/18
Relinquished by:	Company:	Date/Time:	Received by: Amanda Rae	Company: TAKEN	Date/Time: 9/13/18 1330
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

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: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-454655.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-114277-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 10/9/2018			
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:								
PNMW-17 (280-114277-1)	9/11/18	18:20 Mountain		Water			X	X	X	2	
PNMW-18 (280-114277-2)	9/12/18	17:20 Mountain		Water			X	X	X	2	
PNMW-19 (280-114277-3)	9/12/18	12:20 Mountain		Water			X	X	X	2	
PNMW-20 (280-114277-4)	9/11/18	16:15 Mountain		Water			X	X	X	2	
PNMW19-DUP (280-114277-5)	9/12/18	12:20 Mountain		Water			X	X	X	2	
PNMW19-EB (280-114277-6)	9/12/18	13:35 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: Laura Castro	Date/Time: 9-14-18 1310	Company TALDen	Received by: Michael Heeren	Date/Time: 9.15.18 0845	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: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks

Ver: 09/20/2016

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

19.0/C19.9

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 280-454656.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-114277-1
Address: 4101 Shuffel Street NW,	Due Date Requested: 10/5/2018			
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:

S52

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)	6010C/3005A (MOD) Boron	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
PNMW-17 (280-114277-1)	9/11/18	18:20 Mountain		Water			X	X	1	Use Collision Cell
PNMW-18 (280-114277-2)	9/12/18	17:20 Mountain		Water			X	X	1	Use Collision Cell
PNMW-19 (280-114277-3)	9/12/18	12:20 Mountain		Water			X	X	1	Use Collision Cell
PNMW-20 (280-114277-4)	9/11/18	16:15 Mountain		Water			X	X	1	Use Collision Cell
PNMW19-DUP (280-114277-5)	9/12/18	12:20 Mountain		Water			X	X	1	Use Collision Cell
PNMW19-EB (280-114277-6)	9/12/18	13:35 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
Dana Castro	9-14-18 1300	TALDen		9/15/18 945	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: 09/20/2016

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

Client TA Denver Site Name _____ Cooler unpacked by:

Cooler Received on 9/15/18 Opened on 9/17/18

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 **+0.9** °C) Observed Cooler Temp. 19.0 °C Corrected Cooler Temp. 19.9 °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# **HC849161**
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: 280-114277-1

Login Number: 114277
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?	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: 280-114277-1

Login Number: 114277
List Number: 2
Creator: Hellm, Michael

List Source: TestAmerica St. Louis
List Creation: 09/15/18 11:30 AM

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	1.9, 1.5
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: 280-114277-1

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)
280-114277-1	PNMW-17	92.0
280-114277-2	PNMW-18	94.7
280-114277-3	PNMW-19	100
280-114277-4	PNMW-20	90.0
280-114277-5	PNMW19-DUP	101
280-114277-6	PNMW19-EB	91.7
LCS 160-389955/1-A	Lab Control Sample	96.5
LCSD 160-389955/2-A	Lab Control Sample Dup	103
MB 160-389955/23-A	Method Blank	98.2

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)
280-114277-1	PNMW-17	92.0	81.5
280-114277-2	PNMW-18	94.7	87.5
280-114277-3	PNMW-19	100	88.6
280-114277-4	PNMW-20	90.0	87.5
280-114277-5	PNMW19-DUP	101	90.5
280-114277-6	PNMW19-EB	91.7	90.5
LCS 160-389982/1-A	Lab Control Sample	96.5	92.0
LCSD 160-389982/2-A	Lab Control Sample Dup	103	91.2
MB 160-389982/23-A	Method Blank	98.2	84.5

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: 280-115334-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

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

Attn: Molly Reeves

Elizabeth M. Hoerchler

Authorized for release by:
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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
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-115334-1

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.
*	LCS or LCSD is outside acceptance limits.

General Chemistry

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
H	Sample was prepped or analyzed beyond the specified holding time
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.
*	LCS or LCSD is outside acceptance limits.
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.

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: 280-115334-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Pawnee

Report Number: 280-115334-1

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 10/10/2018; the samples arrived in good condition, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 0.9º C, 1.0º C, 1.4º C and 2.5º C.

TOTAL RECOVERABLE METALS

Samples PNMW-17 (280-115334-1), PNMW-18 (280-115334-2), PNMW-19 (280-115334-3), PNMW-20 (280-115334-4), PNMW-17 DUP (280-115334-5) and PNMW-17 EB (280-115334-6) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 10/15/2018 and 10/17/2018 and analyzed on 10/16/2018 and 10/18/2018.

Calcium failed the recovery criteria low for the MS of sample 280-115507-1 in batch 240-350777.

Calcium failed the recovery criteria low for the MSD of sample 280-115507-1 in batch 240-350777.

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

TOTAL RECOVERABLE METALS (ICPMS)

Samples PNMW-17 (280-115334-1), PNMW-18 (280-115334-2), PNMW-19 (280-115334-3), PNMW-20 (280-115334-4), PNMW-17 DUP (280-115334-5) and PNMW-17 EB (280-115334-6) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 10/15/2018 and 10/17/2018 and analyzed on 10/17/2018, 10/18/2018 and 10/19/2018.

The laboratory control sample (LCS) for preparation batch 240-350481 and analytical batch 240-351121 recovered outside control limits for the following analytes: Beryllium. The analyte was biased high in the LCS and was not detected in the associated samples; therefore, the data have been reported.

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

TOTAL MERCURY

Samples PNMW-17 (280-115334-1), PNMW-18 (280-115334-2), PNMW-19 (280-115334-3), PNMW-20 (280-115334-4), PNMW-17 DUP (280-115334-5) and PNMW-17 EB (280-115334-6) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared and analyzed on 10/16/2018.

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

Job ID: 280-115334-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

TOTAL DISSOLVED SOLIDS

Samples PNMW-17 (280-115334-1), PNMW-18 (280-115334-2), PNMW-19 (280-115334-3), PNMW-20 (280-115334-4), PNMW-17 DUP (280-115334-5) and PNMW-17 EB (280-115334-6) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 10/13/2018.

Constant weight was not achieved after 4 drying cycles for the following sample: PNMW-17 DUP (280-115334-5) PNMW-17 DUP (280-115334-5).

Total Dissolved Solids (TDS) was detected in method blank MB 280-433306/1 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.

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 (280-115334-1), PNMW-18 (280-115334-2), PNMW-19 (280-115334-3), PNMW-20 (280-115334-4), PNMW-17 DUP (280-115334-5) and PNMW-17 EB (280-115334-6) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 10/11/2018 and 10/16/2018.

The laboratory control sample (LCS) for analytical batch 280-433020 recovered outside control limits for TSS. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Reanalysis of the following samples were performed outside of the analytical holding time due to failed LCS : PNMW-17 (280-115334-1) and PNMW-17 DUP (280-115334-5).

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

CORROSIVITY (PH)

Samples PNMW-17 (280-115334-1), PNMW-18 (280-115334-2), PNMW-19 (280-115334-3), PNMW-20 (280-115334-4), PNMW-17 DUP (280-115334-5) and PNMW-17 EB (280-115334-6) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 10/16/2018.

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

ANIONS (28 DAYS)

Samples PNMW-17 (280-115334-1), PNMW-18 (280-115334-2), PNMW-19 (280-115334-3), PNMW-20 (280-115334-4), PNMW-17 DUP (280-115334-5) and PNMW-17 EB (280-115334-6) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 10/22/2018 and 10/23/2018.

The following sample was analyzed at a dilution in anion batch 280-434305 due to the Matrix Conductivity Threshold (MCT) of the instrument: PNMW-20 (280-115334-4). The reporting limits have been adjusted accordingly.

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

RADIUM-226 (GFPC)

Samples PNMW-17 (280-115334-1), PNMW-18 (280-115334-2), PNMW-19 (280-115334-3), PNMW-20 (280-115334-4), PNMW-17 DUP (280-115334-5) and PNMW-17 EB (280-115334-6) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 10/15/2018 and analyzed on 11/06/2018.

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples in batch 160-395167: PNMW-17 (280-115334-1), PNMW-18 (280-115334-2), PNMW-19 (280-115334-3), PNMW-20 (280-115334-4), PNMW-17 DUP (280-115334-5) and PNMW-17 EB (280-115334-6). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Job ID: 280-115334-1 (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-228

Samples PNMW-17 (280-115334-1), PNMW-18 (280-115334-2), PNMW-19 (280-115334-3), PNMW-20 (280-115334-4), PNMW-17 DUP (280-115334-5) and PNMW-17 EB (280-115334-6) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 10/15/2018 and analyzed on 10/31/2018.

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples in batch 160-395282: PNMW-17 (280-115334-1), PNMW-18 (280-115334-2), PNMW-19 (280-115334-3), PNMW-20 (280-115334-4), PNMW-17 DUP (280-115334-5) and PNMW-17 EB (280-115334-6). 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)

Samples PNMW-17 (280-115334-1), PNMW-18 (280-115334-2), PNMW-19 (280-115334-3), PNMW-20 (280-115334-4), PNMW-17 DUP (280-115334-5) and PNMW-17 EB (280-115334-6) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 11/08/2018.

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: 280-115334-1

Client Sample ID: PNMW-17 — Lab Sample ID: 280-115334-1

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	250		5.0	0.31	mg/L	1		6010C	Total Recoverable
Barium	0.078		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.00067	J	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Cobalt	0.00027	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0045		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0064	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.018		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.039		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	23.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	310		15	1.3	mg/L	5		9056A	Total/NA
Fluoride	0.20	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	590		25	1.2	mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	1400	B	10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	4.0	H	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-18 — Lab Sample ID: 280-115334-2

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	260		5.0	0.31	mg/L	1		6010C	Total Recoverable
Barium	0.059		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cobalt	0.00050	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0025		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0035	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.00050	J	0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.0027	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	23.5	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	340		30	2.5	mg/L	10		9056A	Total/NA
Fluoride	0.26	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1200		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	2500	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

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: 280-115334-1

Client Sample ID: PNMW-19 — Lab Sample ID: 280-115334-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.062	J	0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	110		5.0	0.31	mg/L	1		6010C	Total Recoverable
Barium	0.27		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Chromium	0.0013	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	0.0022	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.028		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	24.2	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	46		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.26	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	110		5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	500	B	10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	2.4	J *	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-20 — Lab Sample ID: 280-115334-4

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
Calcium	480		5.0	0.31	mg/L	1		6010C	Total Recoverable
Arsenic	0.00084	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.018		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cobalt	0.00027	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
Selenium	0.0067		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.063		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	24.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	500		15	1.3	mg/L	5		9056A	Total/NA
Sulfate	5000		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	8600	B	100	47	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	9.2		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-17 DUP — Lab Sample ID: 280-115334-5

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	270		5.0	0.31	mg/L	1		6010C	Total Recoverable

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Client Sample ID: PNMW-17 DUP (Continued)

Lab Sample ID: 280-115334-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.080		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Chromium	0.0045		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0071	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.017		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.037		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	23.9	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	310		15	1.3	mg/L	5		9056A	Total/NA
Fluoride	0.20	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	590		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	3.6	J H	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-17 EB

Lab Sample ID: 280-115334-6

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
pH adj. to 25 deg C	6.5	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	23.9	HF	1.0	1.0	Degrees C	1		9040B	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: 280-115334-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL DEN
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 DEN
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: 280-115334-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-115334-1	PNMW-17	Water	10/08/18 18:50	10/10/18 14:30
280-115334-2	PNMW-18	Water	10/08/18 14:15	10/10/18 14:30
280-115334-3	PNMW-19	Water	10/08/18 16:45	10/10/18 14:30
280-115334-4	PNMW-20	Water	10/09/18 11:30	10/10/18 14:30
280-115334-5	PNMW-17 DUP	Water	10/08/18 18:50	10/10/18 14:30
280-115334-6	PNMW-17 EB	Water	10/09/18 10:00	10/10/18 14:30

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

Client Sample ID: PNMW-17
Date Collected: 10/08/18 18:50
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.30		0.10	0.023	mg/L		10/15/18 14:00	10/18/18 04:56	1
Calcium	250		5.0	0.31	mg/L		10/15/18 14:00	10/16/18 12:06	1

Client Sample ID: PNMW-18
Date Collected: 10/08/18 14:15
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.23		0.10	0.023	mg/L		10/15/18 14:00	10/18/18 05:01	1
Calcium	260		5.0	0.31	mg/L		10/15/18 14:00	10/16/18 12:11	1

Client Sample ID: PNMW-19
Date Collected: 10/08/18 16:45
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.062	J	0.10	0.023	mg/L		10/17/18 14:00	10/18/18 13:37	1
Calcium	110		5.0	0.31	mg/L		10/17/18 14:00	10/18/18 13:37	1

Client Sample ID: PNMW-20
Date Collected: 10/09/18 11:30
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1.8		0.10	0.023	mg/L		10/17/18 14:00	10/18/18 13:41	1
Calcium	480		5.0	0.31	mg/L		10/17/18 14:00	10/18/18 13:41	1

Client Sample ID: PNMW-17 DUP
Date Collected: 10/08/18 18:50
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.30		0.10	0.023	mg/L		10/17/18 14:00	10/18/18 13:45	1
Calcium	270		5.0	0.31	mg/L		10/17/18 14:00	10/18/18 13:45	1

Client Sample ID: PNMW-17 EB
Date Collected: 10/09/18 10:00
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.023	J	0.10	0.023	mg/L		10/17/18 14:00	10/18/18 13:50	1
Calcium	ND		5.0	0.31	mg/L		10/17/18 14:00	10/18/18 13:50	1

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

Client Sample ID: PNMW-17
Date Collected: 10/08/18 18:50
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/15/18 14:00	10/17/18 19:38	1
Arsenic	ND		0.0050	0.00075	mg/L		10/15/18 14:00	10/17/18 19:38	1
Barium	0.078		0.0050	0.0022	mg/L		10/15/18 14:00	10/17/18 19:38	1
Beryllium	0.00067	J	0.0010	0.00031	mg/L		10/15/18 14:00	10/17/18 19:38	1
Cadmium	ND		0.0010	0.00021	mg/L		10/15/18 14:00	10/17/18 19:38	1
Cobalt	0.00027	J	0.0010	0.00019	mg/L		10/15/18 14:00	10/17/18 19:38	1
Chromium	0.0045		0.0020	0.00098	mg/L		10/15/18 14:00	10/18/18 20:38	1

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

Client Sample ID: PNMW-17
Date Collected: 10/08/18 18:50
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	**0.0064**	**J**	0.010	0.0011	mg/L		10/15/18 14:00	10/17/18 19:38	1
Lead	ND		0.0010	0.00045	mg/L		10/15/18 14:00	10/17/18 19:38	1
Selenium	**0.018**		0.0050	0.00089	mg/L		10/15/18 14:00	10/17/18 19:38	1
Thallium	ND		0.0010	0.00020	mg/L		10/15/18 14:00	10/17/18 19:38	1
Lithium	**0.039**		0.0080	0.0017	mg/L		10/15/18 14:00	10/17/18 19:38	1

Client Sample ID: PNMW-18
Date Collected: 10/08/18 14:15
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/15/18 14:00	10/17/18 19:40	1
Arsenic	ND		0.0050	0.00075	mg/L		10/15/18 14:00	10/17/18 19:40	1
Barium	**0.059**		0.0050	0.0022	mg/L		10/15/18 14:00	10/17/18 19:40	1
Beryllium	ND		0.0010	0.00031	mg/L		10/15/18 14:00	10/17/18 19:40	1
Cadmium	ND		0.0010	0.00021	mg/L		10/15/18 14:00	10/17/18 19:40	1
Cobalt	**0.00050**	**J**	0.0010	0.00019	mg/L		10/15/18 14:00	10/17/18 19:40	1
Chromium	**0.0025**		0.0020	0.00098	mg/L		10/15/18 14:00	10/18/18 20:41	1
Molybdenum	**0.0035**	**J**	0.010	0.0011	mg/L		10/15/18 14:00	10/17/18 19:40	1
Lead	**0.00050**	**J**	0.0010	0.00045	mg/L		10/15/18 14:00	10/17/18 19:40	1
Selenium	**0.0027**	**J**	0.0050	0.00089	mg/L		10/15/18 14:00	10/17/18 19:40	1
Thallium	ND		0.0010	0.00020	mg/L		10/15/18 14:00	10/17/18 19:40	1
Lithium	**0.034**		0.0080	0.0017	mg/L		10/15/18 14:00	10/17/18 19:40	1

Client Sample ID: PNMW-19
Date Collected: 10/08/18 16:45
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/17/18 14:00	10/19/18 17:08	1
Arsenic	ND		0.0050	0.00075	mg/L		10/17/18 14:00	10/19/18 17:08	1
Barium	**0.27**		0.0050	0.0022	mg/L		10/17/18 14:00	10/19/18 17:08	1
Beryllium	ND	*	0.0010	0.00031	mg/L		10/17/18 14:00	10/19/18 17:08	1
Cadmium	ND		0.0010	0.00021	mg/L		10/17/18 14:00	10/19/18 17:08	1
Cobalt	ND		0.0010	0.00019	mg/L		10/17/18 14:00	10/19/18 17:08	1
Chromium	**0.0013**	**J**	0.0020	0.00098	mg/L		10/17/18 14:00	10/19/18 17:08	1
Molybdenum	**0.0037**	**J**	0.010	0.0011	mg/L		10/17/18 14:00	10/19/18 17:08	1
Lead	ND		0.0010	0.00045	mg/L		10/17/18 14:00	10/19/18 17:08	1
Selenium	**0.0022**	**J**	0.0050	0.00089	mg/L		10/17/18 14:00	10/19/18 17:08	1
Thallium	ND		0.0010	0.00020	mg/L		10/17/18 14:00	10/19/18 17:08	1
Lithium	**0.028**		0.0080	0.0017	mg/L		10/17/18 14:00	10/19/18 17:08	1

Client Sample ID: PNMW-20
Date Collected: 10/09/18 11:30
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/17/18 14:00	10/19/18 17:11	1
Arsenic	**0.00084**	**J**	0.0050	0.00075	mg/L		10/17/18 14:00	10/19/18 17:11	1
Barium	**0.018**		0.0050	0.0022	mg/L		10/17/18 14:00	10/19/18 17:11	1
Beryllium	ND	*	0.0010	0.00031	mg/L		10/17/18 14:00	10/19/18 17:11	1
Cadmium	ND		0.0010	0.00021	mg/L		10/17/18 14:00	10/19/18 17:11	1
Cobalt	**0.00027**	**J**	0.0010	0.00019	mg/L		10/17/18 14:00	10/19/18 17:11	1

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

Client Sample ID: PNMW-20
Date Collected: 10/09/18 11:30
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**0.0014**	**J**	0.0020	0.00098	mg/L		10/17/18 14:00	10/19/18 17:11	1
Molybdenum	ND		0.010	0.0011	mg/L		10/17/18 14:00	10/19/18 17:11	1
Lead	ND		0.0010	0.00045	mg/L		10/17/18 14:00	10/19/18 17:11	1
Selenium	**0.0067**		0.0050	0.00089	mg/L		10/17/18 14:00	10/19/18 17:11	1
Thallium	ND		0.0010	0.00020	mg/L		10/17/18 14:00	10/19/18 17:11	1
Lithium	**0.063**		0.0080	0.0017	mg/L		10/17/18 14:00	10/19/18 17:11	1

Client Sample ID: PNMW-17 DUP
Date Collected: 10/08/18 18:50
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/17/18 14:00	10/19/18 17:13	1
Arsenic	ND		0.0050	0.00075	mg/L		10/17/18 14:00	10/19/18 17:13	1
Barium	**0.080**		0.0050	0.0022	mg/L		10/17/18 14:00	10/19/18 17:13	1
Beryllium	ND	*	0.0010	0.00031	mg/L		10/17/18 14:00	10/19/18 17:13	1
Cadmium	ND		0.0010	0.00021	mg/L		10/17/18 14:00	10/19/18 17:13	1
Cobalt	ND		0.0010	0.00019	mg/L		10/17/18 14:00	10/19/18 17:13	1
Chromium	**0.0045**		0.0020	0.00098	mg/L		10/17/18 14:00	10/19/18 17:13	1
Molybdenum	**0.0071**	**J**	0.010	0.0011	mg/L		10/17/18 14:00	10/19/18 17:13	1
Lead	ND		0.0010	0.00045	mg/L		10/17/18 14:00	10/19/18 17:13	1
Selenium	**0.017**		0.0050	0.00089	mg/L		10/17/18 14:00	10/19/18 17:13	1
Thallium	ND		0.0010	0.00020	mg/L		10/17/18 14:00	10/19/18 17:13	1
Lithium	**0.037**		0.0080	0.0017	mg/L		10/17/18 14:00	10/19/18 17:13	1

Client Sample ID: PNMW-17 EB
Date Collected: 10/09/18 10:00
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/17/18 14:00	10/19/18 17:15	1
Arsenic	ND		0.0050	0.00075	mg/L		10/17/18 14:00	10/19/18 17:15	1
Barium	ND		0.0050	0.0022	mg/L		10/17/18 14:00	10/19/18 17:15	1
Beryllium	ND	*	0.0010	0.00031	mg/L		10/17/18 14:00	10/19/18 17:15	1
Cadmium	ND		0.0010	0.00021	mg/L		10/17/18 14:00	10/19/18 17:15	1
Cobalt	ND		0.0010	0.00019	mg/L		10/17/18 14:00	10/19/18 17:15	1
Chromium	ND		0.0020	0.00098	mg/L		10/17/18 14:00	10/19/18 17:15	1
Molybdenum	ND		0.010	0.0011	mg/L		10/17/18 14:00	10/19/18 17:15	1
Lead	ND		0.0010	0.00045	mg/L		10/17/18 14:00	10/19/18 17:15	1
Selenium	ND		0.0050	0.00089	mg/L		10/17/18 14:00	10/19/18 17:15	1
Thallium	ND		0.0010	0.00020	mg/L		10/17/18 14:00	10/19/18 17:15	1
Lithium	ND		0.0080	0.0017	mg/L		10/17/18 14:00	10/19/18 17:15	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: PNMW-17
Date Collected: 10/08/18 18:50
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		10/16/18 11:15	10/16/18 17:45	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: PNMW-18
Date Collected: 10/08/18 14:15
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		10/16/18 11:15	10/16/18 17:47	1

Client Sample ID: PNMW-19
Date Collected: 10/08/18 16:45
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		10/16/18 11:15	10/16/18 17:49	1

Client Sample ID: PNMW-20
Date Collected: 10/09/18 11:30
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		10/16/18 11:15	10/16/18 17:51	1

Client Sample ID: PNMW-17 DUP
Date Collected: 10/08/18 18:50
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		10/16/18 11:15	10/16/18 17:53	1

Client Sample ID: PNMW-17 EB
Date Collected: 10/09/18 10:00
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		10/16/18 11:15	10/16/18 17:56	1

General Chemistry

Client Sample ID: PNMW-17
Date Collected: 10/08/18 18:50
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-1
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			10/16/18 19:27	1
Temperature	23.6	HF	1.0	1.0	Degrees C			10/16/18 19:27	1
Chloride	310		15	1.3	mg/L			10/22/18 03:07	5
Fluoride	0.20	J	0.50	0.060	mg/L			10/22/18 02:48	1
Sulfate	590		25	1.2	mg/L			10/22/18 03:07	5
Total Dissolved Solids (TDS)	1400	B	10	4.7	mg/L			10/13/18 14:12	1
Total Suspended Solids	4.0	H	4.0	1.1	mg/L			10/16/18 13:05	1

Client Sample ID: PNMW-18
Date Collected: 10/08/18 14:15
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-2
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			10/16/18 19:31	1
Temperature	23.5	HF	1.0	1.0	Degrees C			10/16/18 19:31	1
Chloride	340		30	2.5	mg/L			10/22/18 03:44	10
Fluoride	0.26	J	0.50	0.060	mg/L			10/22/18 03:25	1
Sulfate	1200		50	2.3	mg/L			10/22/18 03:44	10
Total Dissolved Solids (TDS)	2500	B	20	9.4	mg/L			10/13/18 14:12	1
Total Suspended Solids	2.0	J *	4.0	1.1	mg/L			10/11/18 17:39	1

Client Sample Results

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

TestAmerica Job ID: 280-115334-1

Client Sample ID: PNMW-19
Date Collected: 10/08/18 16:45
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-3
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			10/16/18 19:46	1
Temperature	24.2	HF	1.0	1.0	Degrees C			10/16/18 19:46	1
Chloride	46		3.0	0.25	mg/L			10/22/18 04:03	1
Fluoride	0.26	J	0.50	0.060	mg/L			10/22/18 04:03	1
Sulfate	110		5.0	0.23	mg/L			10/22/18 04:03	1
Total Dissolved Solids (TDS)	500	B	10	4.7	mg/L			10/13/18 14:12	1
Total Suspended Solids	2.4	J *	4.0	1.1	mg/L			10/11/18 17:39	1

Client Sample ID: PNMW-20
Date Collected: 10/09/18 11:30
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-4
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			10/16/18 19:51	1
Temperature	24.0	HF	1.0	1.0	Degrees C			10/16/18 19:51	1
Chloride	500		15	1.3	mg/L			10/22/18 05:55	5
Fluoride	ND		2.5	0.30	mg/L			10/22/18 05:55	5
Sulfate	5000		250	12	mg/L			10/23/18 23:03	50
Total Dissolved Solids (TDS)	8600	B	100	47	mg/L			10/13/18 14:12	1
Total Suspended Solids	9.2		4.0	1.1	mg/L			10/16/18 13:05	1

Client Sample ID: PNMW-17 DUP
Date Collected: 10/08/18 18:50
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-5
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			10/16/18 19:55	1
Temperature	23.9	HF	1.0	1.0	Degrees C			10/16/18 19:55	1
Chloride	310		15	1.3	mg/L			10/22/18 06:51	5
Fluoride	0.20	J	0.50	0.060	mg/L			10/22/18 06:33	1
Sulfate	590		25	1.2	mg/L			10/22/18 06:51	5
Total Dissolved Solids (TDS)	1400	B	20	9.4	mg/L			10/13/18 14:12	1
Total Suspended Solids	3.6	J H	4.0	1.1	mg/L			10/16/18 13:05	1

Client Sample ID: PNMW-17 EB
Date Collected: 10/09/18 10:00
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	6.5	HF	0.1	0.1	SU			10/16/18 19:59	1
Temperature	23.9	HF	1.0	1.0	Degrees C			10/16/18 19:59	1
Chloride	ND		3.0	0.25	mg/L			10/22/18 07:10	1
Fluoride	ND		0.50	0.060	mg/L			10/22/18 07:10	1
Sulfate	ND		5.0	0.23	mg/L			10/22/18 07:10	1
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			10/13/18 14:12	1
Total Suspended Solids	ND	*	4.0	1.1	mg/L			10/11/18 17:39	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: PNMW-17
Date Collected: 10/08/18 18:50
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.485		0.139	0.146	1.00	0.103	pCi/L	10/15/18 09:41	11/06/18 14:20	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	90.3		40 - 110	10/15/18 09:41	11/06/18 14:20	1

Client Sample ID: PNMW-18
Date Collected: 10/08/18 14:15
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.398		0.133	0.137	1.00	0.116	pCi/L	10/15/18 09:41	11/06/18 14:20	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110	10/15/18 09:41	11/06/18 14:20	1

Client Sample ID: PNMW-19
Date Collected: 10/08/18 16:45
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.441		0.125	0.131	1.00	0.101	pCi/L	10/15/18 09:41	11/06/18 14:20	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110	10/15/18 09:41	11/06/18 14:20	1

Client Sample ID: PNMW-20
Date Collected: 10/09/18 11:30
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.322		0.108	0.112	1.00	0.0917	pCi/L	10/15/18 09:41	11/06/18 14:20	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	102		40 - 110	10/15/18 09:41	11/06/18 14:20	1

Client Sample ID: PNMW-17 DUP
Date Collected: 10/08/18 18:50
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.329		0.113	0.117	1.00	0.109	pCi/L	10/15/18 09:41	11/06/18 14:20	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110	10/15/18 09:41	11/06/18 14:20	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: PNMW-17 EB
Date Collected: 10/09/18 10:00
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.143**		0.0876	0.0886	1.00	0.118	pCi/L	10/15/18 09:41	11/06/18 14:20	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*106*		*40 - 110*	*10/15/18 09:41*	*11/06/18 14:20*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: PNMW-17
Date Collected: 10/08/18 18:50
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.337	U	0.269	0.271	1.00	0.426	pCi/L	10/15/18 13:37	10/31/18 10:11	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*90.3*		*40 - 110*	*10/15/18 13:37*	*10/31/18 10:11*	*1*
Y Carrier	*81.5*		*40 - 110*	*10/15/18 13:37*	*10/31/18 10:11*	*1*

Client Sample ID: PNMW-18
Date Collected: 10/08/18 14:15
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.299	U	0.259	0.260	1.00	0.413	pCi/L	10/15/18 13:37	10/31/18 10:11	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*10/15/18 13:37*	*10/31/18 10:11*	*1*
Y Carrier	*72.1*		*40 - 110*	*10/15/18 13:37*	*10/31/18 10:11*	*1*

Client Sample ID: PNMW-19
Date Collected: 10/08/18 16:45
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.439**		0.264	0.267	1.00	0.403	pCi/L	10/15/18 13:37	10/31/18 10:12	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*10/15/18 13:37*	*10/31/18 10:12*	*1*
Y Carrier	*81.1*		*40 - 110*	*10/15/18 13:37*	*10/31/18 10:12*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: PNMW-20
Date Collected: 10/09/18 11:30
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.450**		0.252	0.255	1.00	0.378	pCi/L	10/15/18 13:37	10/31/18 10:12	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*102*		*40 - 110*	*10/15/18 13:37*	*10/31/18 10:12*	*1*
Y Carrier	*79.6*		*40 - 110*	*10/15/18 13:37*	*10/31/18 10:12*	*1*

Client Sample ID: PNMW-17 DUP
Date Collected: 10/08/18 18:50
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.438	U	0.287	0.290	1.00	0.443	pCi/L	10/15/18 13:37	10/31/18 10:12	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*10/15/18 13:37*	*10/31/18 10:12*	*1*
Y Carrier	*71.8*		*40 - 110*	*10/15/18 13:37*	*10/31/18 10:12*	*1*

Client Sample ID: PNMW-17 EB
Date Collected: 10/09/18 10:00
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.354**		0.229	0.231	1.00	0.349	pCi/L	10/15/18 13:37	10/31/18 10:12	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*106*		*40 - 110*	*10/15/18 13:37*	*10/31/18 10:12*	*1*
Y Carrier	*75.9*		*40 - 110*	*10/15/18 13:37*	*10/31/18 10:12*	*1*

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

Client Sample ID: PNMW-17
Date Collected: 10/08/18 18:50
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.822**		0.303	0.308	5.00	0.426	pCi/L		11/08/18 16:41	1

Client Sample ID: PNMW-18
Date Collected: 10/08/18 14:15
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.697**		0.291	0.294	5.00	0.413	pCi/L		11/08/18 16:41	1

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

Client Sample ID: PNMW-19
Date Collected: 10/08/18 16:45
Date Received: 10/10/18 14:30
Lab Sample ID: 280-115334-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.879		0.292	0.297	5.00	0.403	pCi/L		11/08/18 16:41	1

Client Sample ID: PNMW-20
Date Collected: 10/09/18 11:30
Date Received: 10/10/18 14:30
Lab Sample ID: 280-115334-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.772		0.274	0.279	5.00	0.378	pCi/L		11/08/18 16:41	1

Client Sample ID: PNMW-17 DUP
Date Collected: 10/08/18 18:50
Date Received: 10/10/18 14:30
Lab Sample ID: 280-115334-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.767		0.308	0.313	5.00	0.443	pCi/L		11/08/18 16:41	1

Client Sample ID: PNMW-17 EB
Date Collected: 10/09/18 10:00
Date Received: 10/10/18 14:30
Lab Sample ID: 280-115334-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.497		0.245	0.247	5.00	0.349	pCi/L		11/08/18 16:41	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-350172/1-A
Matrix: Water
Analysis Batch: 350296

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 350172

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		10/15/18 14:00	10/16/18 13:22	1
Calcium	ND		5.0	0.31	mg/L		10/15/18 14:00	10/16/18 13:22	1

Lab Sample ID: LCS 240-350172/2-A
Matrix: Water
Analysis Batch: 350296

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 350172

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	0.959		mg/L		96	80 - 120
Calcium	50.0	44.2		mg/L		88	80 - 120

Lab Sample ID: MB 240-350481/1-A
Matrix: Water
Analysis Batch: 350777

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 350481

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		10/17/18 14:00	10/18/18 10:27	1
Calcium	ND		5.0	0.31	mg/L		10/17/18 14:00	10/18/18 10:27	1

Lab Sample ID: LCS 240-350481/2-A
Matrix: Water
Analysis Batch: 350777

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 350481

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.02		mg/L		102	80 - 120
Calcium	50.0	49.1		mg/L		98	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-350172/1-A
Matrix: Water
Analysis Batch: 350736

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 350172

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/15/18 14:00	10/17/18 19:34	1
Arsenic	ND		0.0050	0.00075	mg/L		10/15/18 14:00	10/17/18 19:34	1
Barium	ND		0.0050	0.0022	mg/L		10/15/18 14:00	10/17/18 19:34	1
Beryllium	ND		0.0010	0.00031	mg/L		10/15/18 14:00	10/17/18 19:34	1
Cadmium	ND		0.0010	0.00021	mg/L		10/15/18 14:00	10/17/18 19:34	1
Cobalt	ND		0.0010	0.00019	mg/L		10/15/18 14:00	10/17/18 19:34	1
Molybdenum	ND		0.010	0.0011	mg/L		10/15/18 14:00	10/17/18 19:34	1
Lead	ND		0.0010	0.00045	mg/L		10/15/18 14:00	10/17/18 19:34	1
Selenium	ND		0.0050	0.00089	mg/L		10/15/18 14:00	10/17/18 19:34	1
Thallium	ND		0.0010	0.00020	mg/L		10/15/18 14:00	10/17/18 19:34	1
Lithium	ND		0.0080	0.0017	mg/L		10/15/18 14:00	10/17/18 19:34	1

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

Lab Sample ID: MB 240-350172/1-A
Matrix: Water
Analysis Batch: 350851

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 350172

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	ND		0.0020	0.00098	mg/L		10/15/18 14:00	10/18/18 20:34	1

Lab Sample ID: LCS 240-350172/25-A
Matrix: Water
Analysis Batch: 350736

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 350172

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0955		mg/L		96	80 - 120
Arsenic	1.00	0.988		mg/L		99	80 - 120
Barium	1.00	1.01		mg/L		101	80 - 120
Beryllium	1.00	0.985		mg/L		98	80 - 120
Cadmium	1.00	1.02		mg/L		102	80 - 120
Cobalt	1.00	0.948		mg/L		95	80 - 120
Molybdenum	0.100	0.0938		mg/L		94	80 - 120
Lead	1.00	1.04		mg/L		104	80 - 120
Selenium	1.00	0.923		mg/L		92	80 - 120
Thallium	0.250	0.256		mg/L		102	80 - 120
Lithium	0.100	0.0931		mg/L		93	80 - 120

Lab Sample ID: LCS 240-350172/25-A
Matrix: Water
Analysis Batch: 350851

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 350172

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium	1.00	0.951		mg/L		95	80 - 120

Lab Sample ID: 280-115334-2 MS
Matrix: Water
Analysis Batch: 350736

Client Sample ID: PNMW-18
Prep Type: Total Recoverable
Prep Batch: 350172

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	ND		0.100	0.0873		mg/L		87	75 - 125
Arsenic	ND		1.00	0.966		mg/L		97	75 - 125
Barium	0.059		1.00	0.988		mg/L		93	75 - 125
Beryllium	ND		1.00	0.969		mg/L		97	75 - 125
Cadmium	ND		1.00	0.914		mg/L		91	75 - 125
Cobalt	0.00050	J	1.00	0.878		mg/L		88	75 - 125
Molybdenum	0.0035	J	0.100	0.0922		mg/L		89	75 - 125
Lead	0.00050	J	1.00	0.901		mg/L		90	75 - 125
Selenium	0.0027	J	1.00	0.871		mg/L		87	75 - 125
Thallium	ND		0.250	0.221		mg/L		88	75 - 125
Lithium	0.034		0.100	0.132		mg/L		98	75 - 125

Lab Sample ID: 280-115334-2 MS
Matrix: Water
Analysis Batch: 350851

Client Sample ID: PNMW-18
Prep Type: Total Recoverable
Prep Batch: 350172

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium	0.0025		1.00	0.844		mg/L		84	75 - 125

Lab Sample ID: 280-115334-2 MSD
Matrix: Water
Analysis Batch: 350736

Client Sample ID: PNMW-18
Prep Type: Total Recoverable
Prep Batch: 350172

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	ND		0.100	0.0860		mg/L		86	75 - 125	1	20
Arsenic	ND		1.00	0.962		mg/L		96	75 - 125	0	20
Barium	0.059		1.00	0.970		mg/L		91	75 - 125	2	20
Beryllium	ND		1.00	0.966		mg/L		97	75 - 125	0	20
Cadmium	ND		1.00	0.890		mg/L		89	75 - 125	3	20
Cobalt	0.00050	J	1.00	0.859		mg/L		86	75 - 125	2	20
Molybdenum	0.0035	J	0.100	0.0914		mg/L		88	75 - 125	1	20
Lead	0.00050	J	1.00	0.887		mg/L		89	75 - 125	2	20
Selenium	0.0027	J	1.00	0.878		mg/L		87	75 - 125	1	20
Thallium	ND		0.250	0.217		mg/L		87	75 - 125	2	20
Lithium	0.034		0.100	0.130		mg/L		96	75 - 125	1	20

Lab Sample ID: 280-115334-2 MSD
Matrix: Water
Analysis Batch: 350851

Client Sample ID: PNMW-18
Prep Type: Total Recoverable
Prep Batch: 350172

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium	0.0025		1.00	0.872		mg/L		87	75 - 125	3	20

Lab Sample ID: MB 240-350481/1-A
Matrix: Water
Analysis Batch: 351121

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 350481

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/17/18 14:00	10/19/18 16:27	1
Arsenic	ND		0.0050	0.00075	mg/L		10/17/18 14:00	10/19/18 16:27	1
Barium	ND		0.0050	0.0022	mg/L		10/17/18 14:00	10/19/18 16:27	1
Beryllium	ND		0.0010	0.00031	mg/L		10/17/18 14:00	10/19/18 16:27	1
Cadmium	ND		0.0010	0.00021	mg/L		10/17/18 14:00	10/19/18 16:27	1
Cobalt	ND		0.0010	0.00019	mg/L		10/17/18 14:00	10/19/18 16:27	1
Chromium	ND		0.0020	0.00098	mg/L		10/17/18 14:00	10/19/18 16:27	1
Molybdenum	ND		0.010	0.0011	mg/L		10/17/18 14:00	10/19/18 16:27	1
Lead	ND		0.0010	0.00045	mg/L		10/17/18 14:00	10/19/18 16:27	1
Selenium	ND		0.0050	0.00089	mg/L		10/17/18 14:00	10/19/18 16:27	1
Thallium	ND		0.0010	0.00020	mg/L		10/17/18 14:00	10/19/18 16:27	1
Lithium	ND		0.0080	0.0017	mg/L		10/17/18 14:00	10/19/18 16:27	1

Lab Sample ID: LCS 240-350481/3-A
Matrix: Water
Analysis Batch: 351121

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 350481

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0980		mg/L		98	80 - 120
Arsenic	1.00	0.862		mg/L		86	80 - 120
Barium	1.00	1.01		mg/L		101	80 - 120
Beryllium	1.00	1.22	*	mg/L		122	80 - 120
Cadmium	1.00	0.980		mg/L		98	80 - 120
Cobalt	1.00	0.910		mg/L		91	80 - 120
Chromium	1.00	0.963		mg/L		96	80 - 120
Molybdenum	0.100	0.0969		mg/L		97	80 - 120
Lead	1.00	0.993		mg/L		99	80 - 120

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

Lab Sample ID: LCS 240-350481/3-A
Matrix: Water
Analysis Batch: 351121

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 350481

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Selenium	1.00	0.889		mg/L		89	80 - 120
Thallium	0.250	0.245		mg/L		98	80 - 120
Lithium	0.100	0.109		mg/L		109	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-433538/1-A
Matrix: Water
Analysis Batch: 433723

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 433538

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		10/16/18 11:15	10/16/18 17:02	1

Lab Sample ID: LCS 280-433538/2-A
Matrix: Water
Analysis Batch: 433723

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 433538

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00500	0.00498		mg/L		100	84 - 120

Lab Sample ID: LCSD 280-433538/3-A
Matrix: Water
Analysis Batch: 433723

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 433538

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.00500	0.00499		mg/L		100	84 - 120	0	15

Method: 9040B - pH

Lab Sample ID: LCS 280-433764/54
Matrix: Water
Analysis Batch: 433764

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 280-434305/6
Matrix: Water
Analysis Batch: 434305

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			10/21/18 09:16	1
Fluoride	ND		0.50	0.060	mg/L			10/21/18 09:16	1
Sulfate	ND		5.0	0.23	mg/L			10/21/18 09:16	1

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

Lab Sample ID: LCS 280-434305/4
Matrix: Water
Analysis Batch: 434305

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	99.1		mg/L		99	90 - 110
Fluoride	5.00	5.07		mg/L		101	90 - 110
Sulfate	100	103		mg/L		103	90 - 110

Lab Sample ID: LCSD 280-434305/5
Matrix: Water
Analysis Batch: 434305

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	99.0		mg/L		99	90 - 110	0	10
Fluoride	5.00	5.10		mg/L		102	90 - 110	0	10
Sulfate	100	103		mg/L		103	90 - 110	0	10

Lab Sample ID: MRL 280-434305/3
Matrix: Water
Analysis Batch: 434305

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	2.66	J	mg/L		106	50 - 150
Fluoride	0.200	0.193	J	mg/L		97	50 - 150
Sulfate	2.50	2.76	J	mg/L		110	50 - 150

Lab Sample ID: 280-115334-3 MS
Matrix: Water
Analysis Batch: 434305

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
Chloride	46		25.0	72.8		mg/L		107	80 - 120
Fluoride	0.26	J	5.00	5.30		mg/L		101	80 - 120
Sulfate	110		25.0	136	4	mg/L		102	80 - 120

Lab Sample ID: 280-115334-3 MSD
Matrix: Water
Analysis Batch: 434305

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
Chloride	46		25.0	72.8		mg/L		107	80 - 120	0	20
Fluoride	0.26	J	5.00	5.32		mg/L		101	80 - 120	0	20
Sulfate	110		25.0	136	4	mg/L		103	80 - 120	0	20

Lab Sample ID: 280-115334-3 DU
Matrix: Water
Analysis Batch: 434305

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

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Chloride	46		45.9		mg/L		0.2	15
Fluoride	0.26	J	0.257	J	mg/L		2	15
Sulfate	110		110		mg/L		0.09	15

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

Lab Sample ID: MB 280-434562/6
Matrix: Water
Analysis Batch: 434562

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			10/23/18 14:25	1
Fluoride	ND		0.50	0.060	mg/L			10/23/18 14:25	1
Sulfate	ND		5.0	0.23	mg/L			10/23/18 14:25	1

Lab Sample ID: LCS 280-434562/4
Matrix: Water
Analysis Batch: 434562

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	101		mg/L		101	90 - 110
Fluoride	5.00	5.19		mg/L		104	90 - 110
Sulfate	100	101		mg/L		101	90 - 110

Lab Sample ID: LCSD 280-434562/5
Matrix: Water
Analysis Batch: 434562

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	101		mg/L		101	90 - 110	0	10
Fluoride	5.00	5.18		mg/L		104	90 - 110	0	10
Sulfate	100	101		mg/L		101	90 - 110	0	10

Lab Sample ID: MRL 280-434562/3
Matrix: Water
Analysis Batch: 434562

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	2.61	J	mg/L		104	50 - 150
Fluoride	0.200	0.206	J	mg/L		103	50 - 150
Sulfate	2.50	2.59	J	mg/L		104	50 - 150

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

Lab Sample ID: MB 280-433306/1
Matrix: Water
Analysis Batch: 433306

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)	6.00	J	10	4.7	mg/L			10/13/18 14:12	1

Lab Sample ID: LCS 280-433306/2
Matrix: Water
Analysis Batch: 433306

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	86 - 110

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

Lab Sample ID: MB 280-433020/1
Matrix: Water
Analysis Batch: 433020

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			10/11/18 17:39	1

Lab Sample ID: LCS 280-433020/2
Matrix: Water
Analysis Batch: 433020

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	40.0	48.4	*	mg/L		121	86 - 114

Lab Sample ID: MB 280-433624/1
Matrix: Water
Analysis Batch: 433624

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			10/16/18 13:05	1

Lab Sample ID: LCS 280-433624/2
Matrix: Water
Analysis Batch: 433624

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	105		mg/L		105	86 - 114

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-395167/19-A
Matrix: Water
Analysis Batch: 399568

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 395167

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1291		0.0866	0.0874	1.00	0.118	pCi/L	10/15/18 09:41	11/06/18 14:17	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*107*		*40 - 110*	*10/15/18 09:41*	*11/06/18 14:17*	*1*

Lab Sample ID: LCS 160-395167/1-A
Matrix: Water
Analysis Batch: 399569

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 395167

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.4	11.29		1.20	1.00	0.0805	pCi/L	99	68 - 137

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*88.2*		*40 - 110*

Method: 9315 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCSD 160-395167/2-A
Matrix: Water
Analysis Batch: 399569

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 395167

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.4	11.02		1.16	1.00	0.110	pCi/L	97	68 - 137	0.12	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*98.2*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-395282/19-A
Matrix: Water
Analysis Batch: 398413

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 395282

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.008077	U	0.173	0.173	1.00	0.313	pCi/L	10/15/18 13:37	10/31/18 10:13	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*107*		*40 - 110*	*10/15/18 13:37*	*10/31/18 10:13*	*1*
Y Carrier	*81.5*		*40 - 110*	*10/15/18 13:37*	*10/31/18 10:13*	*1*

Lab Sample ID: LCS 160-395282/1-A
Matrix: Water
Analysis Batch: 398413

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 395282

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.26	8.991		1.09	1.00	0.434	pCi/L	97	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*88.2*		*40 - 110*
Y Carrier	*81.1*		*40 - 110*

Lab Sample ID: LCSD 160-395282/2-A
Matrix: Water
Analysis Batch: 398413

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 395282

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			9.26	8.590		1.05	1.00	0.445	pCi/L	93	56 - 140	0.19	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*98.2*		*40 - 110*
Y Carrier	*73.3*		*40 - 110*

Metals

Prep Batch: 350172

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-1	PNMW-17	Total Recoverable	Water	3005A	
280-115334-2	PNMW-18	Total Recoverable	Water	3005A	
MB 240-350172/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-350172/25-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-350172/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
280-115334-2 MS	PNMW-18	Total Recoverable	Water	3005A	
280-115334-2 MSD	PNMW-18	Total Recoverable	Water	3005A	

Analysis Batch: 350296

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-1	PNMW-17	Total Recoverable	Water	6010C	350172
280-115334-2	PNMW-18	Total Recoverable	Water	6010C	350172
MB 240-350172/1-A	Method Blank	Total Recoverable	Water	6010C	350172
LCS 240-350172/2-A	Lab Control Sample	Total Recoverable	Water	6010C	350172

Prep Batch: 350481

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-3	PNMW-19	Total Recoverable	Water	3005A	
280-115334-4	PNMW-20	Total Recoverable	Water	3005A	
280-115334-5	PNMW-17 DUP	Total Recoverable	Water	3005A	
280-115334-6	PNMW-17 EB	Total Recoverable	Water	3005A	
MB 240-350481/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-350481/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-350481/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 350595

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-1	PNMW-17	Total Recoverable	Water	6010C	350172
280-115334-2	PNMW-18	Total Recoverable	Water	6010C	350172

Analysis Batch: 350736

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-1	PNMW-17	Total Recoverable	Water	6020A	350172
280-115334-2	PNMW-18	Total Recoverable	Water	6020A	350172
MB 240-350172/1-A	Method Blank	Total Recoverable	Water	6020A	350172
LCS 240-350172/25-A	Lab Control Sample	Total Recoverable	Water	6020A	350172
280-115334-2 MS	PNMW-18	Total Recoverable	Water	6020A	350172
280-115334-2 MSD	PNMW-18	Total Recoverable	Water	6020A	350172

Analysis Batch: 350777

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-3	PNMW-19	Total Recoverable	Water	6010C	350481
280-115334-4	PNMW-20	Total Recoverable	Water	6010C	350481
280-115334-5	PNMW-17 DUP	Total Recoverable	Water	6010C	350481
280-115334-6	PNMW-17 EB	Total Recoverable	Water	6010C	350481
MB 240-350481/1-A	Method Blank	Total Recoverable	Water	6010C	350481
LCS 240-350481/2-A	Lab Control Sample	Total Recoverable	Water	6010C	350481

Analysis Batch: 350851

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-1	PNMW-17	Total Recoverable	Water	6020A	350172

Metals (Continued)

Analysis Batch: 350851 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-2	PNMW-18	Total Recoverable	Water	6020A	350172
MB 240-350172/1-A	Method Blank	Total Recoverable	Water	6020A	350172
LCS 240-350172/25-A	Lab Control Sample	Total Recoverable	Water	6020A	350172
280-115334-2 MS	PNMW-18	Total Recoverable	Water	6020A	350172
280-115334-2 MSD	PNMW-18	Total Recoverable	Water	6020A	350172

Analysis Batch: 351121

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-3	PNMW-19	Total Recoverable	Water	6020A	350481
280-115334-4	PNMW-20	Total Recoverable	Water	6020A	350481
280-115334-5	PNMW-17 DUP	Total Recoverable	Water	6020A	350481
280-115334-6	PNMW-17 EB	Total Recoverable	Water	6020A	350481
MB 240-350481/1-A	Method Blank	Total Recoverable	Water	6020A	350481
LCS 240-350481/3-A	Lab Control Sample	Total Recoverable	Water	6020A	350481

Prep Batch: 433538

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-1	PNMW-17	Total/NA	Water	7470A	
280-115334-2	PNMW-18	Total/NA	Water	7470A	
280-115334-3	PNMW-19	Total/NA	Water	7470A	
280-115334-4	PNMW-20	Total/NA	Water	7470A	
280-115334-5	PNMW-17 DUP	Total/NA	Water	7470A	
280-115334-6	PNMW-17 EB	Total/NA	Water	7470A	
MB 280-433538/1-A	Method Blank	Total/NA	Water	7470A	
LCS 280-433538/2-A	Lab Control Sample	Total/NA	Water	7470A	
LCSD 280-433538/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	

Analysis Batch: 433723

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-1	PNMW-17	Total/NA	Water	7470A	433538
280-115334-2	PNMW-18	Total/NA	Water	7470A	433538
280-115334-3	PNMW-19	Total/NA	Water	7470A	433538
280-115334-4	PNMW-20	Total/NA	Water	7470A	433538
280-115334-5	PNMW-17 DUP	Total/NA	Water	7470A	433538
280-115334-6	PNMW-17 EB	Total/NA	Water	7470A	433538
MB 280-433538/1-A	Method Blank	Total/NA	Water	7470A	433538
LCS 280-433538/2-A	Lab Control Sample	Total/NA	Water	7470A	433538
LCSD 280-433538/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	433538

General Chemistry

Analysis Batch: 433020

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-2	PNMW-18	Total/NA	Water	SM 2540D	
280-115334-3	PNMW-19	Total/NA	Water	SM 2540D	
280-115334-6	PNMW-17 EB	Total/NA	Water	SM 2540D	
MB 280-433020/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-433020/2	Lab Control Sample	Total/NA	Water	SM 2540D	

General Chemistry (Continued)

Analysis Batch: 433306

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-1	PNMW-17	Total/NA	Water	SM 2540C	
280-115334-2	PNMW-18	Total/NA	Water	SM 2540C	
280-115334-3	PNMW-19	Total/NA	Water	SM 2540C	
280-115334-4	PNMW-20	Total/NA	Water	SM 2540C	
280-115334-5	PNMW-17 DUP	Total/NA	Water	SM 2540C	
280-115334-6	PNMW-17 EB	Total/NA	Water	SM 2540C	
MB 280-433306/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-433306/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 433624

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-1	PNMW-17	Total/NA	Water	SM 2540D	
280-115334-4	PNMW-20	Total/NA	Water	SM 2540D	
280-115334-5	PNMW-17 DUP	Total/NA	Water	SM 2540D	
MB 280-433624/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-433624/2	Lab Control Sample	Total/NA	Water	SM 2540D	

Analysis Batch: 433764

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-1	PNMW-17	Total/NA	Water	9040B	
280-115334-2	PNMW-18	Total/NA	Water	9040B	
280-115334-3	PNMW-19	Total/NA	Water	9040B	
280-115334-4	PNMW-20	Total/NA	Water	9040B	
280-115334-5	PNMW-17 DUP	Total/NA	Water	9040B	
280-115334-6	PNMW-17 EB	Total/NA	Water	9040B	
LCS 280-433764/54	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 434305

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-1	PNMW-17	Total/NA	Water	9056A	
280-115334-1	PNMW-17	Total/NA	Water	9056A	
280-115334-2	PNMW-18	Total/NA	Water	9056A	
280-115334-2	PNMW-18	Total/NA	Water	9056A	
280-115334-3	PNMW-19	Total/NA	Water	9056A	
280-115334-4	PNMW-20	Total/NA	Water	9056A	
280-115334-5	PNMW-17 DUP	Total/NA	Water	9056A	
280-115334-5	PNMW-17 DUP	Total/NA	Water	9056A	
280-115334-6	PNMW-17 EB	Total/NA	Water	9056A	
MB 280-434305/6	Method Blank	Total/NA	Water	9056A	
LCS 280-434305/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-434305/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-434305/3	Lab Control Sample	Total/NA	Water	9056A	
280-115334-3 MS	PNMW-19	Total/NA	Water	9056A	
280-115334-3 MSD	PNMW-19	Total/NA	Water	9056A	
280-115334-3 DU	PNMW-19	Total/NA	Water	9056A	

Analysis Batch: 434562

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-4	PNMW-20	Total/NA	Water	9056A	
MB 280-434562/6	Method Blank	Total/NA	Water	9056A	
LCS 280-434562/4	Lab Control Sample	Total/NA	Water	9056A	

General Chemistry (Continued)

Analysis Batch: 434562 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 280-434562/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-434562/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 395167

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-1	PNMW-17	Total/NA	Water	PrecSep-21	
280-115334-2	PNMW-18	Total/NA	Water	PrecSep-21	
280-115334-3	PNMW-19	Total/NA	Water	PrecSep-21	
280-115334-4	PNMW-20	Total/NA	Water	PrecSep-21	
280-115334-5	PNMW-17 DUP	Total/NA	Water	PrecSep-21	
280-115334-6	PNMW-17 EB	Total/NA	Water	PrecSep-21	
MB 160-395167/19-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-395167/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-395167/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 395282

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115334-1	PNMW-17	Total/NA	Water	PrecSep_0	
280-115334-2	PNMW-18	Total/NA	Water	PrecSep_0	
280-115334-3	PNMW-19	Total/NA	Water	PrecSep_0	
280-115334-4	PNMW-20	Total/NA	Water	PrecSep_0	
280-115334-5	PNMW-17 DUP	Total/NA	Water	PrecSep_0	
280-115334-6	PNMW-17 EB	Total/NA	Water	PrecSep_0	
MB 160-395282/19-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-395282/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-395282/2-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: 280-115334-1

Client Sample ID: PNMW-17

Date Collected: 10/08/18 18:50
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-1

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	350172	10/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			350296	10/16/18 12:06	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350172	10/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			350595	10/18/18 04:56	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350172	10/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			350736	10/17/18 19:38	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350172	10/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			350851	10/18/18 20:38	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	433538	10/16/18 11:15	THP	TAL DEN
Total/NA	Analysis	7470A		1			433723	10/16/18 17:45	THP	TAL DEN
Total/NA	Analysis	9040B		1			433764	10/16/18 19:27	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	434305	10/22/18 02:48	ARM	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	434305	10/22/18 03:07	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	433306	10/13/18 14:12	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	433624	10/16/18 13:05	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			999.97 mL	1.0 g	395167	10/15/18 09:41	JLC	TAL SL
Total/NA	Analysis	9315		1			399569	11/06/18 14:20	CDR	TAL SL
Total/NA	Prep	PrecSep_0			999.97 mL	1.0 g	395282	10/15/18 13:37	JLC	TAL SL
Total/NA	Analysis	9320		1			398413	10/31/18 10:11	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			400041	11/08/18 16:41	RTM	TAL SL

Client Sample ID: PNMW-18

Date Collected: 10/08/18 14:15
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-2

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	350172	10/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			350296	10/16/18 12:11	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350172	10/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			350595	10/18/18 05:01	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350172	10/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			350736	10/17/18 19:40	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350172	10/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			350851	10/18/18 20:41	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	433538	10/16/18 11:15	THP	TAL DEN
Total/NA	Analysis	7470A		1			433723	10/16/18 17:47	THP	TAL DEN
Total/NA	Analysis	9040B		1			433764	10/16/18 19:31	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	434305	10/22/18 03:25	ARM	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	434305	10/22/18 03:44	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	433306	10/13/18 14:12	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	433020	10/11/18 17:39	VB	TAL DEN
Total/NA	Prep	PrecSep-21			999.65 mL	1.0 g	395167	10/15/18 09:41	JLC	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-115334-1

Client Sample ID: PNMW-18

Date Collected: 10/08/18 14:15
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9315		1			399569	11/06/18 14:20	CDR	TAL SL
Total/NA	Prep	PrecSep_0			999.65 mL	1.0 g	395282	10/15/18 13:37	JLC	TAL SL
Total/NA	Analysis	9320		1			398413	10/31/18 10:11	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			400041	11/08/18 16:41	RTM	TAL SL

Client Sample ID: PNMW-19

Date Collected: 10/08/18 16:45
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-3

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	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			350777	10/18/18 13:37	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			351121	10/19/18 17:08	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	433538	10/16/18 11:15	THP	TAL DEN
Total/NA	Analysis	7470A		1			433723	10/16/18 17:49	THP	TAL DEN
Total/NA	Analysis	9040B		1			433764	10/16/18 19:46	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	434305	10/22/18 04:03	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	433306	10/13/18 14:12	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	433020	10/11/18 17:39	VB	TAL DEN
Total/NA	Prep	PrecSep-21			999.97 mL	1.0 g	395167	10/15/18 09:41	JLC	TAL SL
Total/NA	Analysis	9315		1			399569	11/06/18 14:20	CDR	TAL SL
Total/NA	Prep	PrecSep_0			999.97 mL	1.0 g	395282	10/15/18 13:37	JLC	TAL SL
Total/NA	Analysis	9320		1			398413	10/31/18 10:12	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			400041	11/08/18 16:41	RTM	TAL SL

Client Sample ID: PNMW-20

Date Collected: 10/09/18 11:30
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-4

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	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			350777	10/18/18 13:41	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			351121	10/19/18 17:11	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	433538	10/16/18 11:15	THP	TAL DEN
Total/NA	Analysis	7470A		1			433723	10/16/18 17:51	THP	TAL DEN
Total/NA	Analysis	9040B		1			433764	10/16/18 19:51	SGB	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	434305	10/22/18 05:55	ARM	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	434562	10/23/18 23:03	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	433306	10/13/18 14:12	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	433624	10/16/18 13:05	JAP	TAL DEN

Lab Chronicle

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

TestAmerica Job ID: 280-115334-1

Client Sample ID: PNMW-20

Date Collected: 10/09/18 11:30
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-4

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			999.96 mL	1.0 g	395167	10/15/18 09:41	JLC	TAL SL
Total/NA	Analysis	9315		1			399569	11/06/18 14:20	CDR	TAL SL
Total/NA	Prep	PrecSep_0			999.96 mL	1.0 g	395282	10/15/18 13:37	JLC	TAL SL
Total/NA	Analysis	9320		1			398413	10/31/18 10:12	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			400041	11/08/18 16:41	RTM	TAL SL

Client Sample ID: PNMW-17 DUP

Date Collected: 10/08/18 18:50
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-5

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	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			350777	10/18/18 13:45	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			351121	10/19/18 17:13	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	433538	10/16/18 11:15	THP	TAL DEN
Total/NA	Analysis	7470A		1			433723	10/16/18 17:53	THP	TAL DEN
Total/NA	Analysis	9040B		1			433764	10/16/18 19:55	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	434305	10/22/18 06:33	ARM	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	434305	10/22/18 06:51	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	433306	10/13/18 14:12	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	433624	10/16/18 13:05	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.29 mL	1.0 g	395167	10/15/18 09:41	JLC	TAL SL
Total/NA	Analysis	9315		1			399569	11/06/18 14:20	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.29 mL	1.0 g	395282	10/15/18 13:37	JLC	TAL SL
Total/NA	Analysis	9320		1			398413	10/31/18 10:12	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			400041	11/08/18 16:41	RTM	TAL SL

Client Sample ID: PNMW-17 EB

Date Collected: 10/09/18 10:00
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-6

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	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			350777	10/18/18 13:50	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			351121	10/19/18 17:15	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	433538	10/16/18 11:15	THP	TAL DEN
Total/NA	Analysis	7470A		1			433723	10/16/18 17:56	THP	TAL DEN
Total/NA	Analysis	9040B		1			433764	10/16/18 19:59	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	434305	10/22/18 07:10	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	433306	10/13/18 14:12	VB	TAL DEN

Lab Chronicle

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

TestAmerica Job ID: 280-115334-1

Client Sample ID: PNMW-17 EB

Date Collected: 10/09/18 10:00
Date Received: 10/10/18 14:30

Lab Sample ID: 280-115334-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	433020	10/11/18 17:39	VB	TAL DEN
Total/NA	Prep	PrecSep-21			999.85 mL	1.0 g	395167	10/15/18 09:41	JLC	TAL SL
Total/NA	Analysis	9315		1			399569	11/06/18 14:20	CDR	TAL SL
Total/NA	Prep	PrecSep_0			999.85 mL	1.0 g	395282	10/15/18 13:37	JLC	TAL SL
Total/NA	Analysis	9320		1			398413	10/31/18 10:12	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			400041	11/08/18 16:41	RTM	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: 280-115334-1

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 ELAP		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
7470A	7470A	Water	Mercury
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	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18 *
Minnesota	NELAP	5	039-999-348	12-31-18 *
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	T104704517-17-9	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18 *

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 ELAP		L2305	04-06-19
Arizona	State Program	9	AZ0813	12-08-18 *
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	11-30-18 *
Iowa	State Program	7	373	12-01-18 *
Kansas	NELAP	7	E-10236	10-31-18 *
Kentucky (DW)	State Program	4	90125	12-31-18
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: 280-115334-1

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	LA180017	12-31-18 *
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-18 *
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:	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 INACTIVE POND	☐ 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	10-8-18	1850	G	W	9	N	N	X	X	X	X	X	X	
PNMW-18	10-8-18	1415	G	W	9	N	N	X	X	X	X	X	X	
PNMW-19	10-8-18	1645	G	W	9	N	N	X	X	X	X	X	X	
PNMW-20	10-9-18	1130	G	W	9	N	N	X	X	X	X	X	X	
PNMW17 DUP	10-8-18	1850	G	W	9	N	N	X	X	X	X	X	X	
PNMW17 EB	10-9-18	1000	G	W	9	N	N	X	X	X	X	X	X	

280-115334 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

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:

0-7, 0.3, 0.2, 1.8 / 1.4, 1.0, 0.9, 2-5 9

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
K. Fishburn	HDR	10-10-18	Den Boulder Courier		
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
				TA-Den	10-16-18 1430
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

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	Sampler:	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-80090-26203.1
Client Contact: Anna Lundin	Phone:	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 EAST LF	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:

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)	App IV Total Metals	9315_Ra226, 9320_Ra228	Fluoride	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	D	N		App IV Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Tl
PNMW-17	10-8-18	1850	G	Water	N	N	X	X	X		
~~PNMW-18~~ PNMW-21	10-9-18	1810	G	Water	N	N	X	X	X		
~~PNMW-19~~ PNMW-22	10-9-18	1540	G	Water	N	N	X	X	X		
~~PNMW-20~~ PNMW-23	10-9-18	~~1320~~	G	Water	N	N	X	X	X		time: 1340
DUP PNMW17DUP	10-8-18	1850	G	Water	N	N	X	X	X		
PNMW17EB	10-9-18	1000	G	W	N	N	X	X	X		

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
K. Ashburn	10.10.18	HDR	Den-Golden Courier		
Relinquished by:	Date/Time:	Company	Received by: Reed	Date/Time: 10-10-18 1930	Company TA-Den
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

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: 280-457879.1
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 #: 280-115334-2
Address: 13715 Rider Trail North, ,	Due Date Requested: 11/7/2018			
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-17 (280-115334-1)	10/8/18	18:50 Mountain		Water			X	X	X	2	
PNMW-17 DUP (280-115334-5)	10/8/18	18:50 Mountain		Water			X	X	X	2	
PNMW-17 EB (280-115334-6)	10/9/18	10:00 Mountain		Water			X	X	X	2	
PNMW-21 (280-115334-7)	10/9/18	18:10 Mountain		Water			X	X	X	1	
PNMW-22 (280-115334-8)	10/9/18	15:40 Mountain		Water			X	X	X	1	
PNMW-23 (280-115334-9)	10/9/18	13:40 Mountain		Water			X	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:

	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	10-11-2018 1608	TAL Den		10/12/18 0850	TAL 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: 09/20/2016

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: 280-457879.1
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 #: 280-115334-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 11/7/2018			
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 (280-115334-1)	10/8/18	18:50 Mountain		Water			X	X	X	2	analyze once but report twice, once for job series -1 and once for job series -2
PNMW-18 (280-115334-2)	10/8/18	14:15 Mountain		Water			X	X	X	2	
PNMW-19 (280-115334-3)	10/8/18	16:45 Mountain		Water			X	X	X	2	
PNMW-20 (280-115334-4)	10/9/18	11:30 Mountain		Water			X	X	X	2	
PNMW-17 DUP (280-115334-5)	10/8/18	18:50 Mountain		Water			X	X	X	2	
PNMW-17 EB (280-115334-6)	10/9/18	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 *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: 10/12/2018 1608	Company: [illegible]	Received by: Stacie Dupart	Date/Time: 10/12/18 0850	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: 09/20/2016

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: 280-457879.1
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 #: 280-115334-2
Address: 13715 Rider Trail North, ,	Due Date Requested: 11/7/2018			
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-17 (280-115334-1)	10/8/18	18:50 Mountain		Water			X	X	X	2	
PNMW-17 DUP (280-115334-5)	10/8/18	18:50 Mountain		Water			X	X	X	2	
PNMW-17 EB (280-115334-6)	10/9/18	10:00 Mountain		Water			X	X	X	2	
PNMW-21 (280-115334-7)	10/9/18	18:10 Mountain		Water			X	X	X	1	
PNMW-22 (280-115334-8)	10/9/18	15:40 Mountain		Water			X	X	X	1	
PNMW-23 (280-115334-9)	10/9/18	13:40 Mountain		Water			X	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
[signature]	10-11-2018 1608	TAL Pen	[signature]	10/12/18 0850	TAL 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: 09/20/2016

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: 280-457879.1
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 #: 280-115334-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 11/7/2018			
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 (280-115334-1)	10/8/18	18:50 Mountain		Water			X	X	X	2	analyze once but report twice, once for job series -1 and once for job series -2
PNMW-18 (280-115334-2)	10/8/18	14:15 Mountain		Water			X	X	X	2	
PNMW-19 (280-115334-3)	10/8/18	16:45 Mountain		Water			X	X	X	2	
PNMW-20 (280-115334-4)	10/9/18	11:30 Mountain		Water			X	X	X	2	
PNMW-17 DUP (280-115334-5)	10/8/18	18:50 Mountain		Water			X	X	X	2	
PNMW-17 EB (280-115334-6)	10/9/18	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 *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: 10/12/18 1608	Company: [illegible]	Received by: Stacie Dupart	Date/Time: 10/12/18 0850	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: 09/20/2016

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: 280-457879.1
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 #: 280-115334-2
Address: 13715 Rider Trail North, ,	Due Date Requested: 11/7/2018			
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-17 (280-115334-1)	10/8/18	18:50 Mountain		Water			X	X	X	3	
PNMW-17 DUP (280-115334-6)	10/8/18	18:50 Mountain		Water			X	X	X	3	
PNMW-17 EB (280-115334-5)	10/9/18	10:00 Mountain		Water			X	X	X	3	
PNMW-21 (280-115334-7)	10/9/18	18:10 Mountain		Water			X	X	X	1	
PNMW-22 (280-115334-8)	10/9/18	15:40 Mountain		Water			X	X	X	1	
PNMW-23 (280-115334-9)	10/9/18	13:40 Mountain		Water			X	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:

	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	10/15/18 1530			10/16/18 0945	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:

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: 280-457880.1
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 #: 280-115334-2
Address: 4101 Shuffel Street NW,	Due Date Requested: 10/30/2018			
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	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:

S4

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)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
PNMW-17 (280-115334-1)	10/8/18	18:50 Mountain		Water			X	1	Use Collision Cell
PNMW-17 DUP (280-115334-5)	10/8/18	18:50 Mountain		Water			X	1	Use Collision Cell
PNMW-17 EB (280-115334-6)	10/9/18	10:00 Mountain		Water			X	1	Use Collision Cell
PNMW-21 (280-115334-7)	10/9/18	18:10 Mountain		Water			X	1	Use Collision Cell
PNMW-22 (280-115334-8)	10/9/18	15:40 Mountain		Water			X	1	Use Collision Cell
PNMW-23 (280-115334-9)	10/9/18	13:40 Mountain		Water			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: [signature]	Date/Time: 10/11/2018 1752	Company: JAL Den	Received by: [signature]	Date/Time: 10/12/18 930	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: 09/20/2016

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

Client TA Denver Site Name _____ Cooler unpacked by: SRC
Cooler Received on 10/12/18 Opened on 10/12/18
FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

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

TestAmerica Cooler # 179 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 +0.9 °C) Observed Cooler Temp. 10.6 °C Corrected Cooler Temp. 11.5 °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# **HC849161**
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): _____

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: 280-457880.1
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 #: 280-115334-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 10/30/2018			
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:

S4

Special Instructions/Note:

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 (MOD) Boron + Calcium	6020A/3005A (MOD) 12 Total Metals (w/collision cell)	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
PNMW-17 (280-115334-1)	10/8/18	18:50 Mountain		Water			X	X	1	, Use Collision Cell, analyze once but report twice, once for job series -1 and once for
PNMW-18 (280-115334-2)	10/8/18	14:15 Mountain		Water			X	X	1	Use Collision Cell
PNMW-19 (280-115334-3)	10/8/18	16:45 Mountain		Water			X	X	1	Use Collision Cell
PNMW-20 (280-115334-4)	10/9/18	11:30 Mountain		Water			X	X	1	Use Collision Cell
PNMW-17 DUP (280-115334-5)	10/8/18	18:50 Mountain		Water			X	X	1	, Use Collision Cell
PNMW-17 EB (280-115334-6)	10/9/18	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: 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
	10/9/2018 1752	TAL DEN		10/12/18 930	
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

11/14/2018

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

Client TA Denver Site Name _____ Cooler unpacked by: SC
Cooler Received on 10/12/18 Opened on 10/12/18
FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

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

TestAmerica Cooler # 17 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 +0.9 °C) Observed Cooler Temp. 10.6 °C Corrected Cooler Temp. 11.5 °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# **HC849161**
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): _____

0.6/1.5

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

Chain of Custody Record

TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-458463.1
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 #: 280-115334-2
Address: 4101 Shuffel Street NW,	Due Date Requested: 10/30/2018			
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) 12 Total Metals (w/collision cell)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						S13
PNMW-21 (280-115334-7)	10/9/18	18:10 Mountain		Water			X	1	Use Collision Cell
PNMW-22 (280-115334-8)	10/9/18	15:40 Mountain		Water			X	1	Use Collision Cell
PNMW-23 (280-115334-9)	10/9/18	13:40 Mountain		Water			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
	10-16-18 1530	TAL Den		10/17/18 930	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: 09/20/2016

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

Client TA Denver Site Name _____ Cooler unpacked by:

Cooler Received on 10/17/18 Opened on 10/17/18

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

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

TestAmerica Cooler # 1A 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 +0.9 °C) Observed Cooler Temp. 0.6 °C Corrected Cooler Temp. 1.5 °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# **HC849161**
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: 280-115334-1

Login Number: 115334
List Number: 1
Creator: Pottruff, Reed W

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: 280-115334-1

Login Number: 115334
List Number: 2
Creator: Dupart, Lacee S

List Source: TestAmerica St. Louis
List Creation: 10/12/18 12:49 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	2.9
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").	True	
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: 280-115334-1

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)
280-115334-1	PNMW-17	90.3
280-115334-2	PNMW-18	101
280-115334-3	PNMW-19	101
280-115334-4	PNMW-20	102
280-115334-5	PNMW-17 DUP	101
280-115334-6	PNMW-17 EB	106
LCS 160-395167/1-A	Lab Control Sample	88.2
LCSD 160-395167/2-A	Lab Control Sample Dup	98.2
MB 160-395167/19-A	Method Blank	107

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)
280-115334-1	PNMW-17	90.3	81.5
280-115334-2	PNMW-18	101	72.1
280-115334-3	PNMW-19	101	81.1
280-115334-4	PNMW-20	102	79.6
280-115334-5	PNMW-17 DUP	101	71.8
280-115334-6	PNMW-17 EB	106	75.9
LCS 160-395282/1-A	Lab Control Sample	88.2	81.1
LCSD 160-395282/2-A	Lab Control Sample Dup	98.2	73.3
MB 160-395282/19-A	Method Blank	107	81.5

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: 280-116633-1
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:
12/11/2018 10:46:39 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: 280-116633-1

Qualifiers

Metals

Qualifier	Qualifier Description
^	ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits.
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.

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: 280-116633-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Pawnee

Report Number: 280-116633-1

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 11/6/2018 4:07 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 3.2º C and 4.0º C.

TOTAL RECOVERABLE METALS

Samples PNMW-17 (280-116633-1), PNMW-18 (280-116633-2), PNMW-19 (280-116633-3), PNMW-20 (280-116633-4), PNMW-20 DUP (280-116633-5) and PNMW-19 EB (280-116633-6) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 11/12/2018 and analyzed on 11/13/2018.

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 (280-116633-1), PNMW-18 (280-116633-2), PNMW-19 (280-116633-3), PNMW-20 (280-116633-4), PNMW-20 DUP (280-116633-5) and PNMW-19 EB (280-116633-6) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 11/12/2018 and analyzed on 11/13/2018.

The continuing calibration verification (CCV) associated with batch 240-355328 recovered above the upper control limit for Beryllium. The samples associated with this CCV were below the requested reporting limit for the affected analyte; therefore, the data have been reported. The following samples are impacted: PNMW-17 (280-116633-1), PNMW-18 (280-116633-2), PNMW-19 (280-116633-3), PNMW-20 (280-116633-4), PNMW-20 DUP (280-116633-5) and PNMW-19 EB (280-116633-6).

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

TOTAL MERCURY

Samples PNMW-17 (280-116633-1), PNMW-18 (280-116633-2), PNMW-19 (280-116633-3), PNMW-20 (280-116633-4), PNMW-20 DUP (280-116633-5) and PNMW-19 EB (280-116633-6) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared and analyzed on 11/16/2018.

Mercury was detected in method blank MB 280-437886/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. 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.

Job ID: 280-116633-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

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

TOTAL DISSOLVED SOLIDS
Samples PNMW-17 (280-116633-1), PNMW-18 (280-116633-2), PNMW-19 (280-116633-3), PNMW-20 (280-116633-4), PNMW-20 DUP (280-116633-5) and PNMW-19 EB (280-116633-6) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 11/08/2018.

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

TOTAL SUSPENDED SOLIDS
Samples PNMW-17 (280-116633-1), PNMW-18 (280-116633-2), PNMW-19 (280-116633-3), PNMW-20 (280-116633-4), PNMW-20 DUP (280-116633-5) and PNMW-19 EB (280-116633-6) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 11/09/2018.

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

CORROSIVITY (PH)
Samples PNMW-17 (280-116633-1), PNMW-18 (280-116633-2), PNMW-19 (280-116633-3), PNMW-20 (280-116633-4), PNMW-20 DUP (280-116633-5) and PNMW-19 EB (280-116633-6) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 11/21/2018 and 11/23/2018.

The following sample did not converge to constant pH within 0.05 units after 3 measurements: (280-116651-A-7). The same behavior was observed in the sample duplicate.

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

ANIONS (28 DAYS)
Samples PNMW-17 (280-116633-1), PNMW-18 (280-116633-2), PNMW-19 (280-116633-3), PNMW-20 (280-116633-4), PNMW-20 DUP (280-116633-5) and PNMW-19 EB (280-116633-6) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 11/23/2018 and 11/24/2018.

Samples PNMW-17 (280-116633-1)[10X], PNMW-18 (280-116633-2)[10X], PNMW-20 (280-116633-4)[2X], PNMW-20 (280-116633-4)[50X], PNMW-20 DUP (280-116633-5)[2X] and PNMW-20 DUP (280-116633-5)[50X] 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 (280-116633-1), PNMW-18 (280-116633-2), PNMW-19 (280-116633-3), PNMW-20 (280-116633-4), PNMW-20 DUP (280-116633-5) and PNMW-19 EB (280-116633-6) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 11/09/2018 and analyzed on 12/03/2018.

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

RADIUM-228
Samples PNMW-17 (280-116633-1), PNMW-18 (280-116633-2), PNMW-19 (280-116633-3), PNMW-20 (280-116633-4), PNMW-20 DUP (280-116633-5) and PNMW-19 EB (280-116633-6) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 11/09/2018 and analyzed on 12/03/2018.

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-17 (280-116633-1), PNMW-18 (280-116633-2), PNMW-19 (280-116633-3), PNMW-20 (280-116633-4), PNMW-20 DUP (280-116633-5) and PNMW-19 EB (280-116633-6) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 12/11/2018.

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: 280-116633-1

Client Sample ID: PNMW-17 — Lab Sample ID: 280-116633-1

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
Barium	0.070		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	200		1.0	0.58	mg/L	1		6020A	Total Recoverable
Chromium	0.0032		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Selenium	0.014		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.034		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Mercury	0.000032	J B	0.00020	0.000027	mg/L	1		7470A	Total/NA
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	270		30	2.5	mg/L	10		9056A	Total/NA
Fluoride	0.24	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	510		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	1300		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	47		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-18 — Lab Sample ID: 280-116633-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.21		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.054		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	250		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.00025	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0010	J	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0011	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0034	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.033		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Mercury	0.000063	J B	0.00020	0.000027	mg/L	1		7470A	Total/NA
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.5	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	350		30	2.5	mg/L	10		9056A	Total/NA
Fluoride	0.29	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1200		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	2500		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

Client Sample ID: PNMW-19 — Lab Sample ID: 280-116633-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.26		0.0050	0.0022	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: 280-116633-1

Client Sample ID: PNMW-19 (Continued) — Lab Sample ID: 280-116633-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	91		1.0	0.58	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0012	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0022	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.026		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Mercury	0.000067	J B	0.00020	0.000027	mg/L	1		7470A	Total/NA
pH adj. to 25 deg C	7.9	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	42		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.29	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	100		5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	480		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

Client Sample ID: PNMW-20 — Lab Sample ID: 280-116633-4

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	0.0012	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.019		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	440		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.00026	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
Lead	0.00046	J	0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.0083		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.070		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Mercury	0.000070	J B	0.00020	0.000027	mg/L	1		7470A	Total/NA
pH adj. to 25 deg C	7.8	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	520		150	13	mg/L	50		9056A	Total/NA
Fluoride	0.28	J	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	4900		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	8200		100	47	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	13		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-20 DUP — Lab Sample ID: 280-116633-5

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
Arsenic	0.0011	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: PNMW-20 DUP (Continued)

Lab Sample ID: 280-116633-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.018		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	440		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.00024	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Selenium	0.0074		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.070		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Mercury	0.000063	J B	0.00020	0.000027	mg/L	1		7470A	Total/NA
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	550		150	13	mg/L	50		9056A	Total/NA
Fluoride	0.28	J	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	4700		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	8200		100	47	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	2.4	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-19 EB

Lab Sample ID: 280-116633-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Mercury	0.000060	J B	0.00020	0.000027	mg/L	1		7470A	Total/NA
pH adj. to 25 deg C	6.5	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.8	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Fluoride	0.079	J	0.50	0.060	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	8.0	J	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: 280-116633-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL DEN
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 DEN
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: 280-116633-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-116633-1	PNMW-17	Water	11/06/18 13:50	11/06/18 16:07
280-116633-2	PNMW-18	Water	11/06/18 11:55	11/06/18 16:07
280-116633-3	PNMW-19	Water	11/05/18 16:35	11/06/18 16:07
280-116633-4	PNMW-20	Water	11/05/18 13:25	11/06/18 16:07
280-116633-5	PNMW-20 DUP	Water	11/05/18 13:55	11/06/18 16:07
280-116633-6	PNMW-19 EB	Water	11/05/18 17:05	11/06/18 16:07

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

Client Sample ID: PNMW-17
Date Collected: 11/06/18 13:50
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.16**		0.10	0.023	mg/L		11/12/18 14:00	11/13/18 14:26	1

Client Sample ID: PNMW-18
Date Collected: 11/06/18 11:55
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.21**		0.10	0.023	mg/L		11/12/18 14:00	11/13/18 14:30	1

Client Sample ID: PNMW-19
Date Collected: 11/05/18 16:35
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		11/12/18 14:00	11/13/18 14:35	1

Client Sample ID: PNMW-20
Date Collected: 11/05/18 13:25
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**1.8**		0.10	0.023	mg/L		11/12/18 14:00	11/13/18 14:40	1

Client Sample ID: PNMW-20 DUP
Date Collected: 11/05/18 13:55
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**1.9**		0.10	0.023	mg/L		11/12/18 14:00	11/13/18 14:45	1

Client Sample ID: PNMW-19 EB
Date Collected: 11/05/18 17:05
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		11/12/18 14:00	11/13/18 14:50	1

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

Client Sample ID: PNMW-17
Date Collected: 11/06/18 13:50
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		11/12/18 14:00	11/13/18 20:11	1
Arsenic	ND		0.0050	0.00075	mg/L		11/12/18 14:00	11/13/18 20:11	1
Barium	**0.070**		0.0050	0.0022	mg/L		11/12/18 14:00	11/13/18 20:11	1
Beryllium	ND	^	0.0010	0.00031	mg/L		11/12/18 14:00	11/13/18 20:11	1
Calcium	**200**		1.0	0.58	mg/L		11/12/18 14:00	11/13/18 20:11	1
Cadmium	ND		0.0010	0.00021	mg/L		11/12/18 14:00	11/13/18 20:11	1
Cobalt	ND		0.0010	0.00019	mg/L		11/12/18 14:00	11/13/18 20:11	1
Chromium	**0.0032**		0.0020	0.00098	mg/L		11/12/18 14:00	11/13/18 20:11	1
Molybdenum	ND		0.010	0.0011	mg/L		11/12/18 14:00	11/13/18 20:11	1
Lead	ND		0.0010	0.00045	mg/L		11/12/18 14:00	11/13/18 20:11	1
Selenium	**0.014**		0.0050	0.00089	mg/L		11/12/18 14:00	11/13/18 20:11	1
Thallium	ND		0.0010	0.00020	mg/L		11/12/18 14:00	11/13/18 20:11	1
Lithium	**0.034**		0.0080	0.0017	mg/L		11/12/18 14:00	11/13/18 20:11	1

Client Sample ID: PNMW-18
Date Collected: 11/06/18 11:55
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		11/12/18 14:00	11/13/18 20:13	1
Arsenic	ND		0.0050	0.00075	mg/L		11/12/18 14:00	11/13/18 20:13	1
Barium	**0.054**		0.0050	0.0022	mg/L		11/12/18 14:00	11/13/18 20:13	1
Beryllium	ND	^	0.0010	0.00031	mg/L		11/12/18 14:00	11/13/18 20:13	1
Calcium	**250**		1.0	0.58	mg/L		11/12/18 14:00	11/13/18 20:13	1
Cadmium	ND		0.0010	0.00021	mg/L		11/12/18 14:00	11/13/18 20:13	1
Cobalt	**0.00025**	**J**	0.0010	0.00019	mg/L		11/12/18 14:00	11/13/18 20:13	1
Chromium	**0.0010**	**J**	0.0020	0.00098	mg/L		11/12/18 14:00	11/13/18 20:13	1
Molybdenum	**0.0011**	**J**	0.010	0.0011	mg/L		11/12/18 14:00	11/13/18 20:13	1
Lead	ND		0.0010	0.00045	mg/L		11/12/18 14:00	11/13/18 20:13	1
Selenium	**0.0034**	**J**	0.0050	0.00089	mg/L		11/12/18 14:00	11/13/18 20:13	1
Thallium	ND		0.0010	0.00020	mg/L		11/12/18 14:00	11/13/18 20:13	1
Lithium	**0.033**		0.0080	0.0017	mg/L		11/12/18 14:00	11/13/18 20:13	1

Client Sample ID: PNMW-19
Date Collected: 11/05/18 16:35
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		11/12/18 14:00	11/13/18 20:16	1
Arsenic	ND		0.0050	0.00075	mg/L		11/12/18 14:00	11/13/18 20:16	1
Barium	**0.26**		0.0050	0.0022	mg/L		11/12/18 14:00	11/13/18 20:16	1
Beryllium	ND	^	0.0010	0.00031	mg/L		11/12/18 14:00	11/13/18 20:16	1
Calcium	**91**		1.0	0.58	mg/L		11/12/18 14:00	11/13/18 20:16	1
Cadmium	ND		0.0010	0.00021	mg/L		11/12/18 14:00	11/13/18 20:16	1
Cobalt	ND		0.0010	0.00019	mg/L		11/12/18 14:00	11/13/18 20:16	1
Chromium	ND		0.0020	0.00098	mg/L		11/12/18 14:00	11/13/18 20:16	1
Molybdenum	**0.0012**	**J**	0.010	0.0011	mg/L		11/12/18 14:00	11/13/18 20:16	1
Lead	ND		0.0010	0.00045	mg/L		11/12/18 14:00	11/13/18 20:16	1
Selenium	**0.0022**	**J**	0.0050	0.00089	mg/L		11/12/18 14:00	11/13/18 20:16	1
Thallium	ND		0.0010	0.00020	mg/L		11/12/18 14:00	11/13/18 20:16	1
Lithium	**0.026**		0.0080	0.0017	mg/L		11/12/18 14:00	11/13/18 20:16	1

Client Sample ID: PNMW-20
Date Collected: 11/05/18 13:25
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		11/12/18 14:00	11/13/18 20:18	1
Arsenic	**0.0012**	**J**	0.0050	0.00075	mg/L		11/12/18 14:00	11/13/18 20:18	1
Barium	**0.019**		0.0050	0.0022	mg/L		11/12/18 14:00	11/13/18 20:18	1
Beryllium	ND	^	0.0010	0.00031	mg/L		11/12/18 14:00	11/13/18 20:18	1
Calcium	**440**		1.0	0.58	mg/L		11/12/18 14:00	11/13/18 20:18	1
Cadmium	ND		0.0010	0.00021	mg/L		11/12/18 14:00	11/13/18 20:18	1
Cobalt	**0.00026**	**J**	0.0010	0.00019	mg/L		11/12/18 14:00	11/13/18 20:18	1
Chromium	**0.0012**	**J**	0.0020	0.00098	mg/L		11/12/18 14:00	11/13/18 20:18	1
Molybdenum	ND		0.010	0.0011	mg/L		11/12/18 14:00	11/13/18 20:18	1
Lead	**0.00046**	**J**	0.0010	0.00045	mg/L		11/12/18 14:00	11/13/18 20:18	1
Selenium	**0.0083**		0.0050	0.00089	mg/L		11/12/18 14:00	11/13/18 20:18	1
Thallium	ND		0.0010	0.00020	mg/L		11/12/18 14:00	11/13/18 20:18	1
Lithium	**0.070**		0.0080	0.0017	mg/L		11/12/18 14:00	11/13/18 20:18	1

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

Client Sample ID: PNMW-20 DUP
Date Collected: 11/05/18 13:55
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		11/12/18 14:00	11/13/18 20:20	1
Arsenic	**0.0011**	**J**	0.0050	0.00075	mg/L		11/12/18 14:00	11/13/18 20:20	1
Barium	**0.018**		0.0050	0.0022	mg/L		11/12/18 14:00	11/13/18 20:20	1
Beryllium	ND	^	0.0010	0.00031	mg/L		11/12/18 14:00	11/13/18 20:20	1
Calcium	**440**		1.0	0.58	mg/L		11/12/18 14:00	11/13/18 20:20	1
Cadmium	ND		0.0010	0.00021	mg/L		11/12/18 14:00	11/13/18 20:20	1
Cobalt	**0.00024**	**J**	0.0010	0.00019	mg/L		11/12/18 14:00	11/13/18 20:20	1
Chromium	ND		0.0020	0.00098	mg/L		11/12/18 14:00	11/13/18 20:20	1
Molybdenum	ND		0.010	0.0011	mg/L		11/12/18 14:00	11/13/18 20:20	1
Lead	ND		0.0010	0.00045	mg/L		11/12/18 14:00	11/13/18 20:20	1
Selenium	**0.0074**		0.0050	0.00089	mg/L		11/12/18 14:00	11/13/18 20:20	1
Thallium	ND		0.0010	0.00020	mg/L		11/12/18 14:00	11/13/18 20:20	1
Lithium	**0.070**		0.0080	0.0017	mg/L		11/12/18 14:00	11/13/18 20:20	1

Client Sample ID: PNMW-19 EB
Date Collected: 11/05/18 17:05
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		11/12/18 14:00	11/13/18 20:22	1
Arsenic	ND		0.0050	0.00075	mg/L		11/12/18 14:00	11/13/18 20:22	1
Barium	ND		0.0050	0.0022	mg/L		11/12/18 14:00	11/13/18 20:22	1
Beryllium	ND	^	0.0010	0.00031	mg/L		11/12/18 14:00	11/13/18 20:22	1
Calcium	ND		1.0	0.58	mg/L		11/12/18 14:00	11/13/18 20:22	1
Cadmium	ND		0.0010	0.00021	mg/L		11/12/18 14:00	11/13/18 20:22	1
Cobalt	ND		0.0010	0.00019	mg/L		11/12/18 14:00	11/13/18 20:22	1
Chromium	ND		0.0020	0.00098	mg/L		11/12/18 14:00	11/13/18 20:22	1
Molybdenum	ND		0.010	0.0011	mg/L		11/12/18 14:00	11/13/18 20:22	1
Lead	ND		0.0010	0.00045	mg/L		11/12/18 14:00	11/13/18 20:22	1
Selenium	ND		0.0050	0.00089	mg/L		11/12/18 14:00	11/13/18 20:22	1
Thallium	ND		0.0010	0.00020	mg/L		11/12/18 14:00	11/13/18 20:22	1
Lithium	ND		0.0080	0.0017	mg/L		11/12/18 14:00	11/13/18 20:22	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: PNMW-17
Date Collected: 11/06/18 13:50
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.000032**	**J B**	0.00020	0.000027	mg/L		11/16/18 12:45	11/16/18 21:57	1

Client Sample ID: PNMW-18
Date Collected: 11/06/18 11:55
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.000063**	**J B**	0.00020	0.000027	mg/L		11/16/18 12:45	11/16/18 22:08	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: PNMW-19
Date Collected: 11/05/18 16:35
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000067	J B	0.00020	0.000027	mg/L		11/16/18 12:45	11/16/18 22:11	1

Client Sample ID: PNMW-20
Date Collected: 11/05/18 13:25
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000070	J B	0.00020	0.000027	mg/L		11/16/18 12:45	11/16/18 22:13	1

Client Sample ID: PNMW-20 DUP
Date Collected: 11/05/18 13:55
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000063	J B	0.00020	0.000027	mg/L		11/16/18 12:45	11/16/18 22:15	1

Client Sample ID: PNMW-19 EB
Date Collected: 11/05/18 17:05
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000060	J B	0.00020	0.000027	mg/L		11/16/18 12:45	11/16/18 22:17	1

General Chemistry

Client Sample ID: PNMW-17
Date Collected: 11/06/18 13:50
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-1
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			11/21/18 11:18	1
Temperature	21.2	HF	1.0	1.0	Degrees C			11/21/18 11:18	1
Chloride	270		30	2.5	mg/L			11/24/18 00:09	10
Fluoride	0.24	J	0.50	0.060	mg/L			11/23/18 23:51	1
Sulfate	510		50	2.3	mg/L			11/24/18 00:09	10
Total Dissolved Solids (TDS)	1300		20	9.4	mg/L			11/08/18 13:43	1
Total Suspended Solids	47		4.0	1.1	mg/L			11/09/18 09:34	1

Client Sample ID: PNMW-18
Date Collected: 11/06/18 11:55
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-2
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			11/21/18 11:23	1
Temperature	21.5	HF	1.0	1.0	Degrees C			11/21/18 11:23	1
Chloride	350		30	2.5	mg/L			11/24/18 00:44	10
Fluoride	0.29	J	0.50	0.060	mg/L			11/24/18 00:26	1
Sulfate	1200		50	2.3	mg/L			11/24/18 00:44	10
Total Dissolved Solids (TDS)	2500		20	9.4	mg/L			11/08/18 13:43	1
Total Suspended Solids	16		4.0	1.1	mg/L			11/09/18 09:34	1

Client Sample ID: PNMW-19
Date Collected: 11/05/18 16:35
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-3
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			11/21/18 11:28	1

General Chemistry (Continued)

Client Sample ID: PNMW-19
Date Collected: 11/05/18 16:35
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Temperature	22.0	HF	1.0	1.0	Degrees C			11/21/18 11:28	1
Chloride	42		3.0	0.25	mg/L			11/24/18 01:01	1
Fluoride	0.29	J	0.50	0.060	mg/L			11/24/18 01:01	1
Sulfate	100		5.0	0.23	mg/L			11/24/18 01:01	1
Total Dissolved Solids (TDS)	480		10	4.7	mg/L			11/08/18 13:43	1
Total Suspended Solids	1.6	J	4.0	1.1	mg/L			11/09/18 09:34	1

Client Sample ID: PNMW-20
Date Collected: 11/05/18 13:25
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-4
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			11/21/18 11:32	1
Temperature	22.5	HF	1.0	1.0	Degrees C			11/21/18 11:32	1
Chloride	520		150	13	mg/L			11/24/18 01:53	50
Fluoride	0.28	J	1.0	0.12	mg/L			11/24/18 01:36	2
Sulfate	4900		250	12	mg/L			11/24/18 01:53	50
Total Dissolved Solids (TDS)	8200		100	47	mg/L			11/08/18 13:43	1
Total Suspended Solids	13		4.0	1.1	mg/L			11/09/18 09:34	1

Client Sample ID: PNMW-20 DUP
Date Collected: 11/05/18 13:55
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-5
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			11/21/18 11:37	1
Temperature	22.4	HF	1.0	1.0	Degrees C			11/21/18 11:37	1
Chloride	550		150	13	mg/L			11/24/18 02:28	50
Fluoride	0.28	J	1.0	0.12	mg/L			11/24/18 02:11	2
Sulfate	4700		250	12	mg/L			11/24/18 02:28	50
Total Dissolved Solids (TDS)	8200		100	47	mg/L			11/08/18 13:43	1
Total Suspended Solids	2.4	J	4.0	1.1	mg/L			11/09/18 09:34	1

Client Sample ID: PNMW-19 EB
Date Collected: 11/05/18 17:05
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	6.5	HF	0.1	0.1	SU			11/23/18 14:47	1
Temperature	20.8	HF	1.0	1.0	Degrees C			11/23/18 14:47	1
Chloride	ND		3.0	0.25	mg/L			11/24/18 03:21	1
Fluoride	0.079	J	0.50	0.060	mg/L			11/24/18 03:21	1
Sulfate	ND		5.0	0.23	mg/L			11/24/18 03:21	1
Total Dissolved Solids (TDS)	8.0	J	10	4.7	mg/L			11/08/18 13:43	1
Total Suspended Solids	ND		4.0	1.1	mg/L			11/09/18 09:34	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: PNMW-17
Date Collected: 11/06/18 13:50
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.221	U	0.199	0.200	1.00	0.299	pCi/L	11/09/18 09:53	12/03/18 20:39	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.1*		*40 - 110*	*11/09/18 09:53*	*12/03/18 20:39*	*1*

Client Sample ID: PNMW-18
Date Collected: 11/06/18 11:55
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.288	U	0.218	0.220	1.00	0.300	pCi/L	11/09/18 09:53	12/03/18 20:39	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*72.9*		*40 - 110*	*11/09/18 09:53*	*12/03/18 20:39*	*1*

Client Sample ID: PNMW-19
Date Collected: 11/05/18 16:35
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.434**		0.223	0.226	1.00	0.246	pCi/L	11/09/18 09:53	12/03/18 20:40	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*81.1*		*40 - 110*	*11/09/18 09:53*	*12/03/18 20:40*	*1*

Client Sample ID: PNMW-20
Date Collected: 11/05/18 13:25
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0922	U	0.149	0.149	1.00	0.261	pCi/L	11/09/18 09:53	12/03/18 20:40	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*88.5*		*40 - 110*	*11/09/18 09:53*	*12/03/18 20:40*	*1*

Client Sample ID: PNMW-20 DUP
Date Collected: 11/05/18 13:55
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.109	U	0.158	0.158	1.00	0.270	pCi/L	11/09/18 09:53	12/03/18 20:41	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*86.7*		*40 - 110*	*11/09/18 09:53*	*12/03/18 20:41*	*1*

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: PNMW-19 EB
Date Collected: 11/05/18 17:05
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0905	U	0.0779	0.0783	1.00	0.250	pCi/L	11/09/18 09:53	12/03/18 20:41	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*88.5*		*40 - 110*	*11/09/18 09:53*	*12/03/18 20:41*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: PNMW-17
Date Collected: 11/06/18 13:50
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0740	U	0.252	0.252	1.00	0.439	pCi/L	11/09/18 11:43	12/03/18 11:25	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.1*		*40 - 110*	*11/09/18 11:43*	*12/03/18 11:25*	*1*
Y Carrier	*88.6*		*40 - 110*	*11/09/18 11:43*	*12/03/18 11:25*	*1*

Client Sample ID: PNMW-18
Date Collected: 11/06/18 11:55
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.205	U	0.300	0.301	1.00	0.503	pCi/L	11/09/18 11:43	12/03/18 11:25	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*72.9*		*40 - 110*	*11/09/18 11:43*	*12/03/18 11:25*	*1*
Y Carrier	*88.2*		*40 - 110*	*11/09/18 11:43*	*12/03/18 11:25*	*1*

Client Sample ID: PNMW-19
Date Collected: 11/05/18 16:35
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.159	U	0.249	0.249	1.00	0.419	pCi/L	11/09/18 11:43	12/03/18 11:26	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*81.1*		*40 - 110*	*11/09/18 11:43*	*12/03/18 11:26*	*1*
Y Carrier	*88.2*		*40 - 110*	*11/09/18 11:43*	*12/03/18 11:26*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: PNMW-20
Date Collected: 11/05/18 13:25
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.235	U	0.240	0.241	1.00	0.390	pCi/L	11/09/18 11:43	12/03/18 11:26	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*88.5*		*40 - 110*	*11/09/18 11:43*	*12/03/18 11:26*	*1*
Y Carrier	*86.7*		*40 - 110*	*11/09/18 11:43*	*12/03/18 11:26*	*1*

Client Sample ID: PNMW-20 DUP
Date Collected: 11/05/18 13:55
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.305	U	0.273	0.275	1.00	0.440	pCi/L	11/09/18 11:43	12/03/18 11:26	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*86.7*		*40 - 110*	*11/09/18 11:43*	*12/03/18 11:26*	*1*
Y Carrier	*85.6*		*40 - 110*	*11/09/18 11:43*	*12/03/18 11:26*	*1*

Client Sample ID: PNMW-19 EB
Date Collected: 11/05/18 17:05
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.254	U	0.228	0.229	1.00	0.365	pCi/L	11/09/18 11:43	12/03/18 11:26	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*88.5*		*40 - 110*	*11/09/18 11:43*	*12/03/18 11:26*	*1*
Y Carrier	*89.7*		*40 - 110*	*11/09/18 11:43*	*12/03/18 11:26*	*1*

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

Client Sample ID: PNMW-17
Date Collected: 11/06/18 13:50
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.295	U	0.321	0.322	5.00	0.439	pCi/L		12/11/18 09:56	1

Client Sample ID: PNMW-18
Date Collected: 11/06/18 11:55
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.493	U	0.371	0.373	5.00	0.503	pCi/L		12/11/18 09:56	1

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

Client Sample ID: PNMW-19
Date Collected: 11/05/18 16:35
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.592**		0.334	0.336	5.00	0.419	pCi/L		12/11/18 09:56	1

Client Sample ID: PNMW-20
Date Collected: 11/05/18 13:25
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.327	U	0.282	0.283	5.00	0.390	pCi/L		12/11/18 09:56	1

Client Sample ID: PNMW-20 DUP
Date Collected: 11/05/18 13:55
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.413	U	0.315	0.317	5.00	0.440	pCi/L		12/11/18 09:56	1

Client Sample ID: PNMW-19 EB
Date Collected: 11/05/18 17:05
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.164	U	0.241	0.242	5.00	0.365	pCi/L		12/11/18 09:56	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-354939/1-A
Matrix: Water
Analysis Batch: 355180

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 354939

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		11/12/18 14:00	11/13/18 12:40	1

Lab Sample ID: LCS 240-354939/2-A
Matrix: Water
Analysis Batch: 355180

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 354939

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.05		mg/L		105	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-354939/1-A
Matrix: Water
Analysis Batch: 355328

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 354939

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		11/12/18 14:00	11/13/18 19:20	1
Arsenic	ND		0.0050	0.00075	mg/L		11/12/18 14:00	11/13/18 19:20	1
Barium	ND		0.0050	0.0022	mg/L		11/12/18 14:00	11/13/18 19:20	1
Beryllium	ND	^	0.0010	0.00031	mg/L		11/12/18 14:00	11/13/18 19:20	1
Calcium	ND		1.0	0.58	mg/L		11/12/18 14:00	11/13/18 19:20	1
Cadmium	ND		0.0010	0.00021	mg/L		11/12/18 14:00	11/13/18 19:20	1
Cobalt	ND		0.0010	0.00019	mg/L		11/12/18 14:00	11/13/18 19:20	1
Chromium	ND		0.0020	0.00098	mg/L		11/12/18 14:00	11/13/18 19:20	1
Molybdenum	ND		0.010	0.0011	mg/L		11/12/18 14:00	11/13/18 19:20	1
Lead	ND		0.0010	0.00045	mg/L		11/12/18 14:00	11/13/18 19:20	1
Selenium	ND		0.0050	0.00089	mg/L		11/12/18 14:00	11/13/18 19:20	1
Thallium	ND		0.0010	0.00020	mg/L		11/12/18 14:00	11/13/18 19:20	1
Lithium	ND		0.0080	0.0017	mg/L		11/12/18 14:00	11/13/18 19:20	1

Lab Sample ID: LCS 240-354939/3-A
Matrix: Water
Analysis Batch: 355328

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 354939

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	0.958		mg/L		96	80 - 120
Barium	1.00	1.02		mg/L		102	80 - 120
Beryllium	1.00	1.07	^	mg/L		107	80 - 120
Calcium	10.0	9.68		mg/L		97	80 - 120
Cadmium	1.00	1.02		mg/L		102	80 - 120
Cobalt	1.00	0.990		mg/L		99	80 - 120
Chromium	1.00	1.02		mg/L		102	80 - 120
Molybdenum	0.100	0.102		mg/L		102	80 - 120
Lead	1.00	1.02		mg/L		102	80 - 120
Selenium	1.00	0.959		mg/L		96	80 - 120
Thallium	0.250	0.253		mg/L		101	80 - 120
Lithium	0.100	0.0966		mg/L		97	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-437886/1-A
Matrix: Water
Analysis Batch: 438129

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 437886

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0000317	J	0.00020	0.000027	mg/L		11/16/18 12:45	11/16/18 21:51	1

Lab Sample ID: LCS 280-437886/2-A
Matrix: Water
Analysis Batch: 438129

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 437886

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			0.00500	0.00554		mg/L		111	84 - 120		

Lab Sample ID: LCSD 280-437886/3-A
Matrix: Water
Analysis Batch: 438129

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 437886

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury			0.00500	0.00561		mg/L		112	84 - 120	1	15

Lab Sample ID: 280-116633-1 MS
Matrix: Water
Analysis Batch: 438129

Client Sample ID: PNMW-17
Prep Type: Total/NA
Prep Batch: 437886

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury	0.000032	J B	0.00500	0.00561		mg/L		112	75 - 125		

Lab Sample ID: 280-116633-1 MSD
Matrix: Water
Analysis Batch: 438129

Client Sample ID: PNMW-17
Prep Type: Total/NA
Prep Batch: 437886

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.000032	J B	0.00500	0.00559		mg/L		111	75 - 125	0	20

Method: 9040B - pH

Lab Sample ID: LCS 280-438453/4
Matrix: Water
Analysis Batch: 438453

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		

Lab Sample ID: LCS 280-438618/4
Matrix: Water
Analysis Batch: 438618

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 280-438579/6
Matrix: Water
Analysis Batch: 438579

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			11/23/18 12:18	1
Fluoride	ND		0.50	0.060	mg/L			11/23/18 12:18	1
Sulfate	ND		5.0	0.23	mg/L			11/23/18 12:18	1

Lab Sample ID: LCS 280-438579/4
Matrix: Water
Analysis Batch: 438579

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	98.1		mg/L		98	90 - 110
Fluoride	5.00	4.97		mg/L		99	90 - 110
Sulfate	100	101		mg/L		101	90 - 110

Lab Sample ID: LCSD 280-438579/5
Matrix: Water
Analysis Batch: 438579

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	0	10
Fluoride	5.00	4.96		mg/L		99	90 - 110	0	10
Sulfate	100	101		mg/L		101	90 - 110	0	10

Lab Sample ID: MRL 280-438579/3
Matrix: Water
Analysis Batch: 438579

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	2.41	J	mg/L		96	50 - 150
Fluoride	0.200	0.224	J	mg/L		112	50 - 150
Sulfate	2.50	2.39	J	mg/L		96	50 - 150

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

Lab Sample ID: MB 280-436870/1
Matrix: Water
Analysis Batch: 436870

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		4.0	1.9	mg/L			11/08/18 13:43	1

Lab Sample ID: LCS 280-436870/2
Matrix: Water
Analysis Batch: 436870

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)	200	199		mg/L		99	86 - 110

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

Lab Sample ID: MB 280-437013/1
Matrix: Water
Analysis Batch: 437013

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			11/09/18 09:34	1

Lab Sample ID: LCS 280-437013/2
Matrix: Water
Analysis Batch: 437013

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	87.2		mg/L		87	86 - 114

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-400076/23-A
Matrix: Water
Analysis Batch: 403832

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 400076

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.001905	U	0.120	0.120	1.00	0.255	pCi/L	11/09/18 09:53	12/03/18 20:41	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.4*		*40 - 110*	*11/09/18 09:53*	*12/03/18 20:41*	*1*

Lab Sample ID: LCS 160-400076/1-A
Matrix: Water
Analysis Batch: 403831

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 400076

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.4	11.36		1.43	1.00	0.306	pCi/L	100	68 - 137

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*88.2*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-400101/23-A
Matrix: Water
Analysis Batch: 403832

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 400101

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.2054	U	0.235	0.236	1.00	0.387	pCi/L	11/09/18 11:43	12/03/18 11:27	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.4*		*40 - 110*	*11/09/18 11:43*	*12/03/18 11:27*	*1*
Y Carrier	*88.2*		*40 - 110*	*11/09/18 11:43*	*12/03/18 11:27*	*1*

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

Lab Sample ID: LCS 160-400101/1-A
Matrix: Water
Analysis Batch: 403831

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 400101

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.16	9.006		1.07	1.00	0.403	pCi/L	98	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*88.2*		*40 - 110*
Y Carrier	*84.9*		*40 - 110*

Metals

Prep Batch: 354939

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116633-1	PNMW-17	Total Recoverable	Water	3005A	
280-116633-2	PNMW-18	Total Recoverable	Water	3005A	
280-116633-3	PNMW-19	Total Recoverable	Water	3005A	
280-116633-4	PNMW-20	Total Recoverable	Water	3005A	
280-116633-5	PNMW-20 DUP	Total Recoverable	Water	3005A	
280-116633-6	PNMW-19 EB	Total Recoverable	Water	3005A	
MB 240-354939/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-354939/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-354939/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 355180

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116633-1	PNMW-17	Total Recoverable	Water	6010C	354939
280-116633-2	PNMW-18	Total Recoverable	Water	6010C	354939
280-116633-3	PNMW-19	Total Recoverable	Water	6010C	354939
280-116633-4	PNMW-20	Total Recoverable	Water	6010C	354939
280-116633-5	PNMW-20 DUP	Total Recoverable	Water	6010C	354939
280-116633-6	PNMW-19 EB	Total Recoverable	Water	6010C	354939
MB 240-354939/1-A	Method Blank	Total Recoverable	Water	6010C	354939
LCS 240-354939/2-A	Lab Control Sample	Total Recoverable	Water	6010C	354939

Analysis Batch: 355328

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116633-1	PNMW-17	Total Recoverable	Water	6020A	354939
280-116633-2	PNMW-18	Total Recoverable	Water	6020A	354939
280-116633-3	PNMW-19	Total Recoverable	Water	6020A	354939
280-116633-4	PNMW-20	Total Recoverable	Water	6020A	354939
280-116633-5	PNMW-20 DUP	Total Recoverable	Water	6020A	354939
280-116633-6	PNMW-19 EB	Total Recoverable	Water	6020A	354939
MB 240-354939/1-A	Method Blank	Total Recoverable	Water	6020A	354939
LCS 240-354939/3-A	Lab Control Sample	Total Recoverable	Water	6020A	354939

Prep Batch: 437886

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116633-1	PNMW-17	Total/NA	Water	7470A	
280-116633-2	PNMW-18	Total/NA	Water	7470A	
280-116633-3	PNMW-19	Total/NA	Water	7470A	
280-116633-4	PNMW-20	Total/NA	Water	7470A	
280-116633-5	PNMW-20 DUP	Total/NA	Water	7470A	
280-116633-6	PNMW-19 EB	Total/NA	Water	7470A	
MB 280-437886/1-A	Method Blank	Total/NA	Water	7470A	
LCS 280-437886/2-A	Lab Control Sample	Total/NA	Water	7470A	
LCSD 280-437886/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	
280-116633-1 MS	PNMW-17	Total/NA	Water	7470A	
280-116633-1 MSD	PNMW-17	Total/NA	Water	7470A	

Analysis Batch: 438129

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116633-1	PNMW-17	Total/NA	Water	7470A	437886
280-116633-2	PNMW-18	Total/NA	Water	7470A	437886
280-116633-3	PNMW-19	Total/NA	Water	7470A	437886

Metals (Continued)

Analysis Batch: 438129 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116633-4	PNMW-20	Total/NA	Water	7470A	437886
280-116633-5	PNMW-20 DUP	Total/NA	Water	7470A	437886
280-116633-6	PNMW-19 EB	Total/NA	Water	7470A	437886
MB 280-437886/1-A	Method Blank	Total/NA	Water	7470A	437886
LCS 280-437886/2-A	Lab Control Sample	Total/NA	Water	7470A	437886
LCSD 280-437886/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	437886
280-116633-1 MS	PNMW-17	Total/NA	Water	7470A	437886
280-116633-1 MSD	PNMW-17	Total/NA	Water	7470A	437886

General Chemistry

Analysis Batch: 436870

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116633-1	PNMW-17	Total/NA	Water	SM 2540C	
280-116633-2	PNMW-18	Total/NA	Water	SM 2540C	
280-116633-3	PNMW-19	Total/NA	Water	SM 2540C	
280-116633-4	PNMW-20	Total/NA	Water	SM 2540C	
280-116633-5	PNMW-20 DUP	Total/NA	Water	SM 2540C	
280-116633-6	PNMW-19 EB	Total/NA	Water	SM 2540C	
MB 280-436870/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-436870/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 437013

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116633-1	PNMW-17	Total/NA	Water	SM 2540D	
280-116633-2	PNMW-18	Total/NA	Water	SM 2540D	
280-116633-3	PNMW-19	Total/NA	Water	SM 2540D	
280-116633-4	PNMW-20	Total/NA	Water	SM 2540D	
280-116633-5	PNMW-20 DUP	Total/NA	Water	SM 2540D	
280-116633-6	PNMW-19 EB	Total/NA	Water	SM 2540D	
MB 280-437013/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-437013/2	Lab Control Sample	Total/NA	Water	SM 2540D	

Analysis Batch: 438453

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116633-1	PNMW-17	Total/NA	Water	9040B	
280-116633-2	PNMW-18	Total/NA	Water	9040B	
280-116633-3	PNMW-19	Total/NA	Water	9040B	
280-116633-4	PNMW-20	Total/NA	Water	9040B	
280-116633-5	PNMW-20 DUP	Total/NA	Water	9040B	
LCS 280-438453/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 438579

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116633-1	PNMW-17	Total/NA	Water	9056A	
280-116633-1	PNMW-17	Total/NA	Water	9056A	
280-116633-2	PNMW-18	Total/NA	Water	9056A	
280-116633-2	PNMW-18	Total/NA	Water	9056A	
280-116633-3	PNMW-19	Total/NA	Water	9056A	
280-116633-4	PNMW-20	Total/NA	Water	9056A	

General Chemistry (Continued)

Analysis Batch: 438579 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116633-4	PNMW-20	Total/NA	Water	9056A	
280-116633-5	PNMW-20 DUP	Total/NA	Water	9056A	
280-116633-5	PNMW-20 DUP	Total/NA	Water	9056A	
280-116633-6	PNMW-19 EB	Total/NA	Water	9056A	
MB 280-438579/6	Method Blank	Total/NA	Water	9056A	
LCS 280-438579/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-438579/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-438579/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 438618

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116633-6	PNMW-19 EB	Total/NA	Water	9040B	
LCS 280-438618/4	Lab Control Sample	Total/NA	Water	9040B	

Rad

Prep Batch: 400076

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116633-1	PNMW-17	Total/NA	Water	PrecSep-21	
280-116633-2	PNMW-18	Total/NA	Water	PrecSep-21	
280-116633-3	PNMW-19	Total/NA	Water	PrecSep-21	
280-116633-4	PNMW-20	Total/NA	Water	PrecSep-21	
280-116633-5	PNMW-20 DUP	Total/NA	Water	PrecSep-21	
280-116633-6	PNMW-19 EB	Total/NA	Water	PrecSep-21	
MB 160-400076/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-400076/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 400101

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116633-1	PNMW-17	Total/NA	Water	PrecSep_0	
280-116633-2	PNMW-18	Total/NA	Water	PrecSep_0	
280-116633-3	PNMW-19	Total/NA	Water	PrecSep_0	
280-116633-4	PNMW-20	Total/NA	Water	PrecSep_0	
280-116633-5	PNMW-20 DUP	Total/NA	Water	PrecSep_0	
280-116633-6	PNMW-19 EB	Total/NA	Water	PrecSep_0	
MB 160-400101/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-400101/1-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: 280-116633-1

Client Sample ID: PNMW-17

Date Collected: 11/06/18 13:50
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-1

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	354939	11/12/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			355180	11/13/18 14:26	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	354939	11/12/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			355328	11/13/18 20:11	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	437886	11/16/18 12:45	THP	TAL DEN
Total/NA	Analysis	7470A		1			438129	11/16/18 21:57	CML	TAL DEN
Total/NA	Analysis	9040B		1			438453	11/21/18 11:18	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	438579	11/23/18 23:51	TLP	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	438579	11/24/18 00:09	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	436870	11/08/18 13:43	MJS	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	437013	11/09/18 09:34	MJS	TAL DEN
Total/NA	Prep	PrecSep-21			1000.68 mL	1.0 g	400076	11/09/18 09:53	JLC	TAL SL
Total/NA	Analysis	9315		1			403831	12/03/18 20:39	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.68 mL	1.0 g	400101	11/09/18 11:43	CMM	TAL SL
Total/NA	Analysis	9320		1			403831	12/03/18 11:25	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			404952	12/11/18 09:56	RTM	TAL SL

Client Sample ID: PNMW-18

Date Collected: 11/06/18 11:55
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-2

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	354939	11/12/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			355180	11/13/18 14:30	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	354939	11/12/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			355328	11/13/18 20:13	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	437886	11/16/18 12:45	THP	TAL DEN
Total/NA	Analysis	7470A		1			438129	11/16/18 22:08	CML	TAL DEN
Total/NA	Analysis	9040B		1			438453	11/21/18 11:23	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	438579	11/24/18 00:26	TLP	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	438579	11/24/18 00:44	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	436870	11/08/18 13:43	MJS	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	437013	11/09/18 09:34	MJS	TAL DEN
Total/NA	Prep	PrecSep-21			1000.03 mL	1.0 g	400076	11/09/18 09:53	JLC	TAL SL
Total/NA	Analysis	9315		1			403831	12/03/18 20:39	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.03 mL	1.0 g	400101	11/09/18 11:43	CMM	TAL SL
Total/NA	Analysis	9320		1			403831	12/03/18 11:25	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			404952	12/11/18 09:56	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-116633-1

Client Sample ID: PNMW-19

Date Collected: 11/05/18 16:35
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-3

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	354939	11/12/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			355180	11/13/18 14:35	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	354939	11/12/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			355328	11/13/18 20:16	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	437886	11/16/18 12:45	THP	TAL DEN
Total/NA	Analysis	7470A		1			438129	11/16/18 22:11	CML	TAL DEN
Total/NA	Analysis	9040B		1			438453	11/21/18 11:28	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	438579	11/24/18 01:01	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	436870	11/08/18 13:43	MJS	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	437013	11/09/18 09:34	MJS	TAL DEN
Total/NA	Prep	PrecSep-21			1000.51 mL	1.0 g	400076	11/09/18 09:53	JLC	TAL SL
Total/NA	Analysis	9315		1			403832	12/03/18 20:40	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.51 mL	1.0 g	400101	11/09/18 11:43	CMM	TAL SL
Total/NA	Analysis	9320		1			403831	12/03/18 11:26	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			404952	12/11/18 09:56	RTM	TAL SL

Client Sample ID: PNMW-20

Date Collected: 11/05/18 13:25
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-4

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	354939	11/12/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			355180	11/13/18 14:40	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	354939	11/12/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			355328	11/13/18 20:18	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	437886	11/16/18 12:45	THP	TAL DEN
Total/NA	Analysis	7470A		1			438129	11/16/18 22:13	CML	TAL DEN
Total/NA	Analysis	9040B		1			438453	11/21/18 11:32	SGB	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	438579	11/24/18 01:36	TLP	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	438579	11/24/18 01:53	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	436870	11/08/18 13:43	MJS	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	437013	11/09/18 09:34	MJS	TAL DEN
Total/NA	Prep	PrecSep-21			1000.07 mL	1.0 g	400076	11/09/18 09:53	JLC	TAL SL
Total/NA	Analysis	9315		1			403832	12/03/18 20:40	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.07 mL	1.0 g	400101	11/09/18 11:43	CMM	TAL SL
Total/NA	Analysis	9320		1			403831	12/03/18 11:26	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			404952	12/11/18 09:56	RTM	TAL SL

Client Sample ID: PNMW-20 DUP

Date Collected: 11/05/18 13:55
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-5

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	354939	11/12/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			355180	11/13/18 14:45	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	354939	11/12/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			355328	11/13/18 20:20	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	437886	11/16/18 12:45	THP	TAL DEN
Total/NA	Analysis	7470A		1			438129	11/16/18 22:15	CML	TAL DEN
Total/NA	Analysis	9040B		1			438453	11/21/18 11:37	SGB	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	438579	11/24/18 02:11	TLP	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	438579	11/24/18 02:28	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	436870	11/08/18 13:43	MJS	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	437013	11/09/18 09:34	MJS	TAL DEN
Total/NA	Prep	PrecSep-21			1000.02 mL	1.0 g	400076	11/09/18 09:53	JLC	TAL SL
Total/NA	Analysis	9315		1			403832	12/03/18 20:41	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.02 mL	1.0 g	400101	11/09/18 11:43	CMM	TAL SL
Total/NA	Analysis	9320		1			403831	12/03/18 11:26	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			404952	12/11/18 09:56	RTM	TAL SL

Client Sample ID: PNMW-19 EB

Date Collected: 11/05/18 17:05
Date Received: 11/06/18 16:07

Lab Sample ID: 280-116633-6

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	354939	11/12/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			355180	11/13/18 14:50	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	354939	11/12/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			355328	11/13/18 20:22	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	437886	11/16/18 12:45	THP	TAL DEN
Total/NA	Analysis	7470A		1			438129	11/16/18 22:17	CML	TAL DEN
Total/NA	Analysis	9040B		1			438618	11/23/18 14:47	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	438579	11/24/18 03:21	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	436870	11/08/18 13:43	MJS	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	437013	11/09/18 09:34	MJS	TAL DEN
Total/NA	Prep	PrecSep-21			999.76 mL	1.0 g	400076	11/09/18 09:53	JLC	TAL SL
Total/NA	Analysis	9315		1	1.0 mL	1.0 mL	403832	12/03/18 20:41	CDR	TAL SL
Total/NA	Prep	PrecSep_0			999.76 mL	1.0 g	400101	11/09/18 11:43	CMM	TAL SL
Total/NA	Analysis	9320		1	1.0 mL	1.0 mL	403831	12/03/18 11:26	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			404952	12/11/18 09:56	RTM	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: 280-116633-1

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 ELAP		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
7470A	7470A	Water	Mercury
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	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18 *
Minnesota	NELAP	5	039-999-348	12-31-18 *
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	01-12-19
West Virginia DEP	State Program	3	210	12-31-18 *

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 ELAP		L2305	04-06-19
Arizona	State Program	9	AZ0813	12-08-18 *
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	11-30-18 *
Iowa	State Program	7	373	12-01-18 *
Kansas	NELAP	7	E-10236	10-31-19
Kentucky (DW)	State Program	4	90125	12-31-18
Louisiana	NELAP	6	04080	06-30-19

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

Accreditation/Certification Summary

Client: HDR Inc
TestAmerica Job ID: 280-116633-1
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	LA180017	12-31-18 *
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
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler:	Lab PM: Bandy, Darlene F	Carrier Tracking No(s):	COC No: 280-81086-25608.1
Client Contact: Anna Lundin	Phone:	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)	2540C_Calcd - Total Dissolved Solids (TDS) N	6010C, 6020A, 7470A - Appendix IV (see note) D	9040B, 9056A_28D - pH, Fluoride, Sulfate, Chloride N	2540D - Total Suspended Solids N	9315_Ra226, 9320_Ra228 D	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	D	N	N	D		Ca, B, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Tl
PNMW-17	11-6-18	1350	G	Water	N		X	X	X	X	X		
PNMW-18	11-6-18	1155	G	Water	N		X	X	X	X	X		
PNMW-19	11-5-18	1635	G	Water	N		X	X	X	X	X		
PNMW-20	11-5-18	1325	G	Water	N		X	X	X	X	X		
DUP PNMW-20 DUP	11-5-18	1355	G	Water	N		X	X	X	X	X		
EB PNMW-19EB	11-5-18	1705	G	Water	N		X	X	X	X	X		

280-116633 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
1	K. Fishburn / HDR	11-6-18 1600	HDR		11.6.18 1600	TAL DEN
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: 3.3, 2.5, +0.7 *found by kts 11/6/18

Ver: 08/04/2016

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4955 Yarrow Street
Arvada, CO 80002
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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: 280-461610.1
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 #: 280-116633-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 12/5/2018			
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-17 (280-116633-1)	11/6/18	13:50 Mountain		Water			X	X	X	2	
PNMW-18 (280-116633-2)	11/6/18	11:55 Mountain		Water			X	X	X	2	
PNMW-19 (280-116633-3)	11/5/18	16:35 Mountain		Water			X	X	X	2	
PNMW-20 (280-116633-4)	11/5/18	13:25 Mountain		Water			X	X	X	2	
PNMW-20 DUP (280-116633-5)	11/5/18	13:55 Mountain		Water			X	X	X	2	
PNMW-19 EB (280-116633-6)	11/5/18	17:05 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:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		11-7-2018 1337	TAL Den	Michael Heeren	11/8/18 0940	TA SL
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: 09/20/2016

1.4/2.3

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: 280-461611.1
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 #: 280-116633-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 11/27/2018			
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	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:

S43

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	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
PNMW-17 (280-116633-1)	11/6/18	13:50 Mountain		Water			X	X	1	Use Collision Cell
PNMW-18 (280-116633-2)	11/6/18	11:55 Mountain		Water			X	X	1	Use Collision Cell
PNMW-19 (280-116633-3)	11/5/18	16:35 Mountain		Water			X	X	1	Use Collision Cell
PNMW-20 (280-116633-4)	11/5/18	13:25 Mountain		Water			X	X	1	Use Collision Cell
PNMW-20 DUP (280-116633-5)	11/5/18	13:55 Mountain		Water			X	X	1	Use Collision Cell
PNMW-19 EB (280-116633-6)	11/5/18	17:05 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
Dawn Costo	11-7-18 1450	TA Den		11/8/18 945	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:

Cooler Received on 11/8/18 Opened on 11/9/18

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

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

TestAmerica Cooler # 1A 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 +0.9 °C) Observed Cooler Temp. 1.4 °C Corrected Cooler Temp. 2.3 °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# HC850248
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): _____

WI-NC-099

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-116633-1

Login Number: 116633
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?	False	
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: 280-116633-1

Login Number: 116633
List Number: 2
Creator: Hellm, Michael

List Source: TestAmerica St. Louis
List Creation: 11/08/18 01:30 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	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
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-116633-1

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)
280-116633-1	PNMW-17	84.1
280-116633-2	PNMW-18	72.9
280-116633-3	PNMW-19	81.1
280-116633-4	PNMW-20	88.5
280-116633-5	PNMW-20 DUP	86.7
280-116633-6	PNMW-19 EB	88.5
LCS 160-400076/1-A	Lab Control Sample	88.2
MB 160-400076/23-A	Method Blank	94.4

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)
280-116633-1	PNMW-17	84.1	88.6
280-116633-2	PNMW-18	72.9	88.2
280-116633-3	PNMW-19	81.1	88.2
280-116633-4	PNMW-20	88.5	86.7
280-116633-5	PNMW-20 DUP	86.7	85.6
280-116633-6	PNMW-19 EB	88.5	89.7
LCS 160-400101/1-A	Lab Control Sample	88.2	84.9
MB 160-400101/23-A	Method Blank	94.4	88.2

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: 280-117422-1
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:
12/27/2018 3:57:10 PM
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

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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
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-117422-1

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.
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.
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.

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
X	Carrier is outside acceptance limits.

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: 280-117422-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Pawnee

Report Number: 280-117422-1

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 11/28/2018 at 3:20 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 2.4º C and 2.6º C.

No sampling time given on the container labels for one 250mL plastic bottle for sample ID PNMW-17. Time logged per the chain of custody.

TOTAL RECOVERABLE METALS

Samples PNMW-17 (280-117422-1), PNMW-18 (280-117422-2), PNMW-19 (280-117422-3), PNMW-20 (280-117422-4), PNMW-19-DUP (280-117422-5) and PNMW-19-EB (280-117422-6) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 12/03/2018 and analyzed on 12/04/2018.

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 (280-117422-1), PNMW-18 (280-117422-2), PNMW-19 (280-117422-3), PNMW-20 (280-117422-4), PNMW-19-DUP (280-117422-5) and PNMW-19-EB (280-117422-6) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 12/03/2018 and analyzed on 12/04/2018.

Calcium failed the recovery criteria low for the MS and MSD of sample PNMW-17 (280-117422-1) in batch 240-358337. 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 PNMW-17 (280-117422-1), PNMW-18 (280-117422-2), PNMW-19 (280-117422-3), PNMW-20 (280-117422-4), PNMW-19-DUP (280-117422-5) and PNMW-19-EB (280-117422-6) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared and analyzed on 12/03/2018.

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

TOTAL DISSOLVED SOLIDS

Samples PNMW-17 (280-117422-1), PNMW-18 (280-117422-2), PNMW-19 (280-117422-3), PNMW-20 (280-117422-4), PNMW-19-DUP

Job ID: 280-117422-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

(280-117422-5) and PNMW-19-EB (280-117422-6) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 11/30/2018 and 12/05/2018.

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

TOTAL SUSPENDED SOLIDS

Samples PNMW-17 (280-117422-1), PNMW-18 (280-117422-2), PNMW-19 (280-117422-3), PNMW-20 (280-117422-4), PNMW-19-DUP (280-117422-5) and PNMW-19-EB (280-117422-6) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 11/30/2018.

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

CORROSIVITY (PH)

Samples PNMW-17 (280-117422-1), PNMW-18 (280-117422-2), PNMW-19 (280-117422-3), PNMW-20 (280-117422-4), PNMW-19-DUP (280-117422-5) and PNMW-19-EB (280-117422-6) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 12/06/2018.

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

ANIONS (28 DAYS)

Samples PNMW-17 (280-117422-1), PNMW-18 (280-117422-2), PNMW-19 (280-117422-3), PNMW-20 (280-117422-4), PNMW-19-DUP (280-117422-5) and PNMW-19-EB (280-117422-6) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 12/07/2018, 12/11/2018 and 12/12/2018.

Chloride and Sulfate were detected in method blank MB 280-440143/6 at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have 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.

Sulfate was detected in method blank MB 280-440567/6 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.

Chloride was detected in method blank MB 280-440958/6 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.

Sulfate failed the recovery criteria high for the MS and MSD of sample 280-117394-1 in batch 280-440715. 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.

Samples PNMW-17 (280-117422-1)[10X], PNMW-18 (280-117422-2)[10X], PNMW-18 (280-117422-2)[2X], PNMW-20 (280-117422-4)[5X] and PNMW-20 (280-117422-4)[50X] required dilution prior to analysis to bring the concentration of target analytes within the calibration range. The reporting limits have been adjusted accordingly.

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

RADIUM-226 (GFPC)

Samples PNMW-17 (280-117422-1), PNMW-18 (280-117422-2), PNMW-19 (280-117422-3), PNMW-20 (280-117422-4), PNMW-19-DUP (280-117422-5) and PNMW-19-EB (280-117422-6) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 12/04/2018 and analyzed on 12/27/2018.

Radium-226 exceeded the RPD limit for the duplicate of sample 240-104999-1. Refer to the QC report for details.

The barium carrier recovery is above the 110% QC limit for the method blank (MB). The LCS spike recovery is within control limits, which demonstrates acceptable sample preparation and instrument performance. In addition, all samples associated to the method blank have

Job ID: 280-117422-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

recoveries below the upper control limit. As such, this was an apparent anomaly in the sample preparation, isolated to the method blank, which is not indicative of the entire batch.

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

RADIUM-228

Samples PNMW-17 (280-117422-1), PNMW-18 (280-117422-2), PNMW-19 (280-117422-3), PNMW-20 (280-117422-4), PNMW-19-DUP (280-117422-5) and PNMW-19-EB (280-117422-6) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 12/04/2018 and analyzed on 12/13/2018.

Radium-228 exceeded the RPD limit for the duplicate of sample 240-104999-1. Refer to the QC report for details.

The barium carrier recovery is above the 110% QC limit for the method blank (MB). The LCS spike recovery is within control limits, which demonstrates acceptable sample preparation and instrument performance. In addition, all samples associated to the method blank have recoveries below the upper control limit. As such, this was an apparent anomaly in the sample preparation, isolated to the method blank, which is not indicative of the entire batch.

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 (280-117422-1), PNMW-18 (280-117422-2), PNMW-19 (280-117422-3), PNMW-20 (280-117422-4), PNMW-19-DUP (280-117422-5) and PNMW-19-EB (280-117422-6) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 12/27/2018.

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: 280-117422-1

Client Sample ID: PNMW-17 — Lab Sample ID: 280-117422-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.25		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.080		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	270		1.0	0.58	mg/L	1		6020A	Total Recoverable
Chromium	0.0047		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Lead	0.00046	J	0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.018		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.039		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	22.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	260	B	30	2.5	mg/L	10		9056A	Total/NA
Fluoride	0.23	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	560	B	50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	1400		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: 280-117422-2

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
Arsenic	0.0010	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.055		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.00039	J	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Calcium	280		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cadmium	0.00034	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.00025	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
Molybdenum	0.0012	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0030	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.032		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	21.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	350		6.0	0.51	mg/L	2		9056A	Total/NA
Fluoride	0.23	J	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	1200		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	2400		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	93		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
Project/Site: Xcel Energy GW CCR Monitoring - Pawnee

TestAmerica Job ID: 280-117422-1

Client Sample ID: PNMW-19 — Lab Sample ID: 280-117422-3

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
Barium	0.24		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	86		1.0	0.58	mg/L	1		6020A	Total Recoverable
Chromium	0.0013	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	0.0024	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.025		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	21.7	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	30	B	3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.31	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	80	B	5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	420		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	4.4		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-20 — Lab Sample ID: 280-117422-4

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	0.00094	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.018		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	500		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	0.0027		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Selenium	0.0077		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.078		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	21.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	560	B	15	1.3	mg/L	5		9056A	Total/NA
Sulfate	5000	B	250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	8100		100	47	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	150		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-19-DUP — Lab Sample ID: 280-117422-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.035	J	0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.23		0.0050	0.0022	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: PNMW-19-DUP (Continued)

Lab Sample ID: 280-117422-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	82		1.0	0.58	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	0.0024	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.027		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	22.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	29	B	3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.32	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	75	B	5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	420		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	3.6	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PNMW-19-EB

Lab Sample ID: 280-117422-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
pH adj. to 25 deg C	6.5	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	0.68	J B	3.0	0.25	mg/L	1		9056A	Total/NA
Sulfate	0.66	J B	5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	7.0	J	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: 280-117422-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL DEN
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 DEN
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: 280-117422-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-117422-1	PNMW-17	Water	11/27/18 15:25	11/28/18 09:00
280-117422-2	PNMW-18	Water	11/27/18 13:45	11/28/18 09:00
280-117422-3	PNMW-19	Water	11/28/18 12:40	11/28/18 09:00
280-117422-4	PNMW-20	Water	11/27/18 10:55	11/28/18 09:00
280-117422-5	PNMW-19-DUP	Water	11/28/18 12:55	11/28/18 09:00
280-117422-6	PNMW-19-EB	Water	11/28/18 10:45	11/28/18 09:00

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

Client Sample ID: PNMW-17
Date Collected: 11/27/18 15:25
Date Received: 11/28/18 09:00
Lab Sample ID: 280-117422-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.25**		0.10	0.023	mg/L		12/03/18 14:00	12/04/18 11:56	1

Client Sample ID: PNMW-18
Date Collected: 11/27/18 13:45
Date Received: 11/28/18 09:00
Lab Sample ID: 280-117422-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.20**		0.10	0.023	mg/L		12/03/18 14:00	12/04/18 12:26	1

Client Sample ID: PNMW-19
Date Collected: 11/28/18 12:40
Date Received: 11/28/18 09:00
Lab Sample ID: 280-117422-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.033**	**J**	0.10	0.023	mg/L		12/03/18 14:00	12/04/18 12:31	1

Client Sample ID: PNMW-20
Date Collected: 11/27/18 10:55
Date Received: 11/28/18 09:00
Lab Sample ID: 280-117422-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**1.8**		0.10	0.023	mg/L		12/03/18 14:00	12/04/18 12:35	1

Client Sample ID: PNMW-19-DUP
Date Collected: 11/28/18 12:55
Date Received: 11/28/18 09:00
Lab Sample ID: 280-117422-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.035**	**J**	0.10	0.023	mg/L		12/03/18 14:00	12/04/18 12:40	1

Client Sample ID: PNMW-19-EB
Date Collected: 11/28/18 10:45
Date Received: 11/28/18 09:00
Lab Sample ID: 280-117422-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		12/03/18 14:00	12/04/18 12:44	1

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

Client Sample ID: PNMW-17
Date Collected: 11/27/18 15:25
Date Received: 11/28/18 09:00
Lab Sample ID: 280-117422-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		12/03/18 14:00	12/04/18 12:43	1
Arsenic	ND		0.0050	0.00075	mg/L		12/03/18 14:00	12/04/18 12:43	1
Barium	**0.080**		0.0050	0.0022	mg/L		12/03/18 14:00	12/04/18 12:43	1
Beryllium	ND		0.0010	0.00031	mg/L		12/03/18 14:00	12/04/18 12:43	1
Calcium	**270**		1.0	0.58	mg/L		12/03/18 14:00	12/04/18 12:43	1
Cadmium	ND		0.0010	0.00021	mg/L		12/03/18 14:00	12/04/18 12:43	1
Cobalt	ND		0.0010	0.00019	mg/L		12/03/18 14:00	12/04/18 12:43	1
Chromium	**0.0047**		0.0020	0.00098	mg/L		12/03/18 14:00	12/04/18 12:43	1
Molybdenum	ND		0.010	0.0011	mg/L		12/03/18 14:00	12/04/18 12:43	1
Lead	**0.00046**	**J**	0.0010	0.00045	mg/L		12/03/18 14:00	12/04/18 12:43	1
Selenium	**0.018**		0.0050	0.00089	mg/L		12/03/18 14:00	12/04/18 12:43	1
Thallium	ND		0.0010	0.00020	mg/L		12/03/18 14:00	12/04/18 12:43	1
Lithium	**0.039**		0.0080	0.0017	mg/L		12/03/18 14:00	12/04/18 12:43	1

Client Sample ID: PNMW-18
Date Collected: 11/27/18 13:45
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		12/03/18 14:00	12/04/18 13:06	1
Arsenic	**0.0010**	**J**	0.0050	0.00075	mg/L		12/03/18 14:00	12/04/18 13:06	1
Barium	**0.055**		0.0050	0.0022	mg/L		12/03/18 14:00	12/04/18 13:06	1
Beryllium	**0.00039**	**J**	0.0010	0.00031	mg/L		12/03/18 14:00	12/04/18 13:06	1
Calcium	**280**		1.0	0.58	mg/L		12/03/18 14:00	12/04/18 13:06	1
Cadmium	**0.00034**	**J**	0.0010	0.00021	mg/L		12/03/18 14:00	12/04/18 13:06	1
Cobalt	**0.00025**	**J**	0.0010	0.00019	mg/L		12/03/18 14:00	12/04/18 13:06	1
Chromium	**0.0013**	**J**	0.0020	0.00098	mg/L		12/03/18 14:00	12/04/18 13:06	1
Molybdenum	**0.0012**	**J**	0.010	0.0011	mg/L		12/03/18 14:00	12/04/18 13:06	1
Lead	ND		0.0010	0.00045	mg/L		12/03/18 14:00	12/04/18 13:06	1
Selenium	**0.0030**	**J**	0.0050	0.00089	mg/L		12/03/18 14:00	12/04/18 13:06	1
Thallium	ND		0.0010	0.00020	mg/L		12/03/18 14:00	12/04/18 13:06	1
Lithium	**0.032**		0.0080	0.0017	mg/L		12/03/18 14:00	12/04/18 13:06	1

Client Sample ID: PNMW-19
Date Collected: 11/28/18 12:40
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		12/03/18 14:00	12/04/18 13:10	1
Arsenic	ND		0.0050	0.00075	mg/L		12/03/18 14:00	12/04/18 13:10	1
Barium	**0.24**		0.0050	0.0022	mg/L		12/03/18 14:00	12/04/18 13:10	1
Beryllium	ND		0.0010	0.00031	mg/L		12/03/18 14:00	12/04/18 13:10	1
Calcium	**86**		1.0	0.58	mg/L		12/03/18 14:00	12/04/18 13:10	1
Cadmium	ND		0.0010	0.00021	mg/L		12/03/18 14:00	12/04/18 13:10	1
Cobalt	ND		0.0010	0.00019	mg/L		12/03/18 14:00	12/04/18 13:10	1
Chromium	**0.0013**	**J**	0.0020	0.00098	mg/L		12/03/18 14:00	12/04/18 13:10	1
Molybdenum	**0.0013**	**J**	0.010	0.0011	mg/L		12/03/18 14:00	12/04/18 13:10	1
Lead	ND		0.0010	0.00045	mg/L		12/03/18 14:00	12/04/18 13:10	1
Selenium	**0.0024**	**J**	0.0050	0.00089	mg/L		12/03/18 14:00	12/04/18 13:10	1
Thallium	ND		0.0010	0.00020	mg/L		12/03/18 14:00	12/04/18 13:10	1
Lithium	**0.025**		0.0080	0.0017	mg/L		12/03/18 14:00	12/04/18 13:10	1

Client Sample ID: PNMW-20
Date Collected: 11/27/18 10:55
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		12/03/18 14:00	12/04/18 13:15	1
Arsenic	**0.00094**	**J**	0.0050	0.00075	mg/L		12/03/18 14:00	12/04/18 13:15	1
Barium	**0.018**		0.0050	0.0022	mg/L		12/03/18 14:00	12/04/18 13:15	1
Beryllium	ND		0.0010	0.00031	mg/L		12/03/18 14:00	12/04/18 13:15	1
Calcium	**500**		1.0	0.58	mg/L		12/03/18 14:00	12/04/18 13:15	1
Cadmium	ND		0.0010	0.00021	mg/L		12/03/18 14:00	12/04/18 13:15	1
Cobalt	**0.00021**	**J**	0.0010	0.00019	mg/L		12/03/18 14:00	12/04/18 13:15	1
Chromium	**0.0027**		0.0020	0.00098	mg/L		12/03/18 14:00	12/04/18 13:15	1
Molybdenum	ND		0.010	0.0011	mg/L		12/03/18 14:00	12/04/18 13:15	1
Lead	ND		0.0010	0.00045	mg/L		12/03/18 14:00	12/04/18 13:15	1
Selenium	**0.0077**		0.0050	0.00089	mg/L		12/03/18 14:00	12/04/18 13:15	1
Thallium	ND		0.0010	0.00020	mg/L		12/03/18 14:00	12/04/18 13:15	1
Lithium	**0.078**		0.0080	0.0017	mg/L		12/03/18 14:00	12/04/18 13:15	1

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

Client Sample ID: PNMW-19-DUP
Date Collected: 11/28/18 12:55
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		12/03/18 14:00	12/04/18 13:29	1
Arsenic	ND		0.0050	0.00075	mg/L		12/03/18 14:00	12/04/18 13:29	1
Barium	**0.23**		0.0050	0.0022	mg/L		12/03/18 14:00	12/04/18 13:29	1
Beryllium	ND		0.0010	0.00031	mg/L		12/03/18 14:00	12/04/18 13:29	1
Calcium	**82**		1.0	0.58	mg/L		12/03/18 14:00	12/04/18 13:29	1
Cadmium	ND		0.0010	0.00021	mg/L		12/03/18 14:00	12/04/18 13:29	1
Cobalt	ND		0.0010	0.00019	mg/L		12/03/18 14:00	12/04/18 13:29	1
Chromium	**0.0012**	**J**	0.0020	0.00098	mg/L		12/03/18 14:00	12/04/18 13:29	1
Molybdenum	**0.0012**	**J**	0.010	0.0011	mg/L		12/03/18 14:00	12/04/18 13:29	1
Lead	ND		0.0010	0.00045	mg/L		12/03/18 14:00	12/04/18 13:29	1
Selenium	**0.0024**	**J**	0.0050	0.00089	mg/L		12/03/18 14:00	12/04/18 13:29	1
Thallium	ND		0.0010	0.00020	mg/L		12/03/18 14:00	12/04/18 13:29	1
Lithium	**0.027**		0.0080	0.0017	mg/L		12/03/18 14:00	12/04/18 15:14	1

Client Sample ID: PNMW-19-EB
Date Collected: 11/28/18 10:45
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		12/03/18 14:00	12/04/18 13:33	1
Arsenic	ND		0.0050	0.00075	mg/L		12/03/18 14:00	12/04/18 13:33	1
Barium	ND		0.0050	0.0022	mg/L		12/03/18 14:00	12/04/18 13:33	1
Beryllium	ND		0.0010	0.00031	mg/L		12/03/18 14:00	12/04/18 13:33	1
Calcium	ND		1.0	0.58	mg/L		12/03/18 14:00	12/04/18 13:33	1
Cadmium	ND		0.0010	0.00021	mg/L		12/03/18 14:00	12/04/18 13:33	1
Cobalt	ND		0.0010	0.00019	mg/L		12/03/18 14:00	12/04/18 13:33	1
Chromium	ND		0.0020	0.00098	mg/L		12/03/18 14:00	12/04/18 13:33	1
Molybdenum	ND		0.010	0.0011	mg/L		12/03/18 14:00	12/04/18 13:33	1
Lead	ND		0.0010	0.00045	mg/L		12/03/18 14:00	12/04/18 13:33	1
Selenium	ND		0.0050	0.00089	mg/L		12/03/18 14:00	12/04/18 13:33	1
Thallium	ND		0.0010	0.00020	mg/L		12/03/18 14:00	12/04/18 13:33	1
Lithium	ND		0.0080	0.0017	mg/L		12/03/18 14:00	12/04/18 15:19	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: PNMW-17
Date Collected: 11/27/18 15:25
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		12/03/18 09:06	12/03/18 16:27	1

Client Sample ID: PNMW-18
Date Collected: 11/27/18 13:45
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		12/03/18 09:06	12/03/18 16:29	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: PNMW-19
Date Collected: 11/28/18 12:40
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		12/03/18 09:06	12/03/18 16:35	1

Client Sample ID: PNMW-20
Date Collected: 11/27/18 10:55
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		12/03/18 09:06	12/03/18 16:38	1

Client Sample ID: PNMW-19-DUP
Date Collected: 11/28/18 12:55
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		12/03/18 09:06	12/03/18 16:40	1

Client Sample ID: PNMW-19-EB
Date Collected: 11/28/18 10:45
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		12/03/18 09:06	12/03/18 16:42	1

General Chemistry

Client Sample ID: PNMW-17
Date Collected: 11/27/18 15:25
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-1
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			12/06/18 21:27	1
Temperature	22.0	HF	1.0	1.0	Degrees C			12/06/18 21:27	1
Chloride	260	B	30	2.5	mg/L			12/07/18 02:07	10
Fluoride	0.23	J	0.50	0.060	mg/L			12/12/18 19:14	1
Sulfate	560	B	50	2.3	mg/L			12/07/18 02:07	10
Total Dissolved Solids (TDS)	1400		20	9.4	mg/L			11/30/18 07:55	1
Total Suspended Solids	2.0	J	4.0	1.1	mg/L			11/30/18 10:40	1

Client Sample ID: PNMW-18
Date Collected: 11/27/18 13:45
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-2
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			12/06/18 21:22	1
Temperature	21.6	HF	1.0	1.0	Degrees C			12/06/18 21:22	1
Chloride	350		6.0	0.51	mg/L			12/11/18 19:52	2
Fluoride	0.23	J	1.0	0.12	mg/L			12/11/18 19:52	2
Sulfate	1200		50	2.3	mg/L			12/12/18 20:24	10
Total Dissolved Solids (TDS)	2400		20	9.4	mg/L			11/30/18 07:55	1
Total Suspended Solids	93		4.0	1.1	mg/L			11/30/18 10:40	1

Client Sample ID: PNMW-19
Date Collected: 11/28/18 12:40
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-3
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			12/06/18 21:14	1

General Chemistry (Continued)

Client Sample ID: PNMW-19
Date Collected: 11/28/18 12:40
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Temperature	21.7	HF	1.0	1.0	Degrees C			12/06/18 21:14	1
Chloride	30	B	3.0	0.25	mg/L			12/07/18 03:13	1
Fluoride	0.31	J	0.50	0.060	mg/L			12/11/18 20:11	1
Sulfate	80	B	5.0	0.23	mg/L			12/07/18 03:13	1
Total Dissolved Solids (TDS)	420		10	4.7	mg/L			11/30/18 07:55	1
Total Suspended Solids	4.4		4.0	1.1	mg/L			11/30/18 10:40	1

Client Sample ID: PNMW-20
Date Collected: 11/27/18 10:55
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-4
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			12/06/18 21:18	1
Temperature	21.6	HF	1.0	1.0	Degrees C			12/06/18 21:18	1
Chloride	560	B	15	1.3	mg/L			12/07/18 03:29	5
Fluoride	ND		2.5	0.30	mg/L			12/11/18 20:29	5
Sulfate	5000	B	250	12	mg/L			12/07/18 03:45	50
Total Dissolved Solids (TDS)	8100		100	47	mg/L			11/30/18 07:55	1
Total Suspended Solids	150		4.0	1.1	mg/L			11/30/18 10:40	1

Client Sample ID: PNMW-19-DUP
Date Collected: 11/28/18 12:55
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-5
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			12/06/18 21:35	1
Temperature	22.0	HF	1.0	1.0	Degrees C			12/06/18 21:35	1
Chloride	29	B	3.0	0.25	mg/L			12/07/18 04:02	1
Fluoride	0.32	J	0.50	0.060	mg/L			12/11/18 20:48	1
Sulfate	75	B	5.0	0.23	mg/L			12/07/18 04:02	1
Total Dissolved Solids (TDS)	420		10	4.7	mg/L			11/30/18 07:55	1
Total Suspended Solids	3.6	J	4.0	1.1	mg/L			11/30/18 10:40	1

Client Sample ID: PNMW-19-EB
Date Collected: 11/28/18 10:45
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	6.5	HF	0.1	0.1	SU			12/06/18 21:31	1
Temperature	22.4	HF	1.0	1.0	Degrees C			12/06/18 21:31	1
Chloride	0.68	J B	3.0	0.25	mg/L			12/07/18 04:18	1
Fluoride	ND		0.50	0.060	mg/L			12/11/18 21:44	1
Sulfate	0.66	J B	5.0	0.23	mg/L			12/07/18 04:18	1
Total Dissolved Solids (TDS)	7.0	J	10	4.7	mg/L			12/05/18 09:32	1
Total Suspended Solids	ND		4.0	1.1	mg/L			11/30/18 10:40	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: PNMW-17
Date Collected: 11/27/18 15:25
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.192		0.0759	0.0779	1.00	0.0777	pCi/L	12/04/18 14:09	12/27/18 05:41	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*106*		*40 - 110*	*12/04/18 14:09*	*12/27/18 05:41*	*1*

Client Sample ID: PNMW-18
Date Collected: 11/27/18 13:45
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.125		0.0660	0.0670	1.00	0.0774	pCi/L	12/04/18 14:09	12/27/18 05:42	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*12/04/18 14:09*	*12/27/18 05:42*	*1*

Client Sample ID: PNMW-19
Date Collected: 11/28/18 12:40
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.180		0.0740	0.0757	1.00	0.0735	pCi/L	12/04/18 14:09	12/27/18 05:42	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*102*		*40 - 110*	*12/04/18 14:09*	*12/27/18 05:42*	*1*

Client Sample ID: PNMW-20
Date Collected: 11/27/18 10:55
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.136		0.0672	0.0683	1.00	0.0736	pCi/L	12/04/18 14:09	12/27/18 05:42	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.9*		*40 - 110*	*12/04/18 14:09*	*12/27/18 05:42*	*1*

Client Sample ID: PNMW-19-DUP
Date Collected: 11/28/18 12:55
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.122		0.0657	0.0666	1.00	0.0776	pCi/L	12/04/18 14:09	12/27/18 05:43	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.5*		*40 - 110*	*12/04/18 14:09*	*12/27/18 05:43*	*1*

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: PNMW-19-EB
Date Collected: 11/28/18 10:45
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0559	U	0.0536	0.0538	1.00	0.0818	pCi/L	12/04/18 14:09	12/27/18 05:44	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*108*		*40 - 110*	*12/04/18 14:09*	*12/27/18 05:44*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: PNMW-17
Date Collected: 11/27/18 15:25
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.398**		0.245	0.248	1.00	0.373	pCi/L	12/04/18 14:32	12/13/18 16:06	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*106*		*40 - 110*	*12/04/18 14:32*	*12/13/18 16:06*	*1*
Y Carrier	*81.1*		*40 - 110*	*12/04/18 14:32*	*12/13/18 16:06*	*1*

Client Sample ID: PNMW-18
Date Collected: 11/27/18 13:45
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.398**		0.227	0.230	1.00	0.337	pCi/L	12/04/18 14:32	12/13/18 16:06	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*12/04/18 14:32*	*12/13/18 16:06*	*1*
Y Carrier	*83.7*		*40 - 110*	*12/04/18 14:32*	*12/13/18 16:06*	*1*

Client Sample ID: PNMW-19
Date Collected: 11/28/18 12:40
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.274	U	0.237	0.238	1.00	0.378	pCi/L	12/04/18 14:32	12/13/18 16:06	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*102*		*40 - 110*	*12/04/18 14:32*	*12/13/18 16:06*	*1*
Y Carrier	*83.7*		*40 - 110*	*12/04/18 14:32*	*12/13/18 16:06*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: PNMW-20
Date Collected: 11/27/18 10:55
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.609**		0.262	0.268	1.00	0.370	pCi/L	12/04/18 14:32	12/13/18 16:06	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.9*		*40 - 110*	*12/04/18 14:32*	*12/13/18 16:06*	*1*
Y Carrier	*84.1*		*40 - 110*	*12/04/18 14:32*	*12/13/18 16:06*	*1*

Client Sample ID: PNMW-19-DUP
Date Collected: 11/28/18 12:55
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.370	U	0.258	0.260	1.00	0.400	pCi/L	12/04/18 14:32	12/13/18 16:07	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.5*		*40 - 110*	*12/04/18 14:32*	*12/13/18 16:07*	*1*
Y Carrier	*81.9*		*40 - 110*	*12/04/18 14:32*	*12/13/18 16:07*	*1*

Client Sample ID: PNMW-19-EB
Date Collected: 11/28/18 10:45
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.202	U	0.218	0.219	1.00	0.357	pCi/L	12/04/18 14:32	12/13/18 16:07	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*108*		*40 - 110*	*12/04/18 14:32*	*12/13/18 16:07*	*1*
Y Carrier	*85.2*		*40 - 110*	*12/04/18 14:32*	*12/13/18 16:07*	*1*

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

Client Sample ID: PNMW-17
Date Collected: 11/27/18 15:25
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.591**		0.256	0.260	5.00	0.373	pCi/L		12/27/18 15:10	1

Client Sample ID: PNMW-18
Date Collected: 11/27/18 13:45
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.523**		0.236	0.240	5.00	0.337	pCi/L		12/27/18 15:10	1

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

Client Sample ID: PNMW-19
Date Collected: 11/28/18 12:40
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.454		0.248	0.250	5.00	0.378	pCi/L		12/27/18 15:10	1

Client Sample ID: PNMW-20
Date Collected: 11/27/18 10:55
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.745		0.270	0.277	5.00	0.370	pCi/L		12/27/18 15:10	1

Client Sample ID: PNMW-19-DUP
Date Collected: 11/28/18 12:55
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.491		0.266	0.268	5.00	0.400	pCi/L		12/27/18 15:10	1

Client Sample ID: PNMW-19-EB
Date Collected: 11/28/18 10:45
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.257	U	0.224	0.226	5.00	0.357	pCi/L		12/27/18 15:10	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-358004/1-A
Matrix: Water
Analysis Batch: 358271

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 358004

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		12/03/18 14:00	12/04/18 11:48	1

Lab Sample ID: LCS 240-358004/2-A
Matrix: Water
Analysis Batch: 358271

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 358004

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Boron			1.00	1.01		mg/L		101	80 - 120		

Lab Sample ID: 280-117422-1 MS
Matrix: Water
Analysis Batch: 358271

Client Sample ID: PNMW-17
Prep Type: Total Recoverable
Prep Batch: 358004

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Boron	0.25		1.00	1.34		mg/L		110	75 - 125		

Lab Sample ID: 280-117422-1 MSD
Matrix: Water
Analysis Batch: 358271

Client Sample ID: PNMW-17
Prep Type: Total Recoverable
Prep Batch: 358004

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	0.25		1.00	1.33		mg/L		108	75 - 125	1	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-358004/1-A
Matrix: Water
Analysis Batch: 358337

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 358004

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		12/03/18 14:00	12/04/18 12:34	1
Arsenic	ND		0.0050	0.00075	mg/L		12/03/18 14:00	12/04/18 12:34	1
Barium	ND		0.0050	0.0022	mg/L		12/03/18 14:00	12/04/18 12:34	1
Beryllium	ND		0.0010	0.00031	mg/L		12/03/18 14:00	12/04/18 12:34	1
Calcium	ND		1.0	0.58	mg/L		12/03/18 14:00	12/04/18 12:34	1
Cadmium	ND		0.0010	0.00021	mg/L		12/03/18 14:00	12/04/18 12:34	1
Cobalt	ND		0.0010	0.00019	mg/L		12/03/18 14:00	12/04/18 12:34	1
Chromium	ND		0.0020	0.00098	mg/L		12/03/18 14:00	12/04/18 12:34	1
Molybdenum	ND		0.010	0.0011	mg/L		12/03/18 14:00	12/04/18 12:34	1
Lead	ND		0.0010	0.00045	mg/L		12/03/18 14:00	12/04/18 12:34	1
Selenium	ND		0.0050	0.00089	mg/L		12/03/18 14:00	12/04/18 12:34	1
Thallium	ND		0.0010	0.00020	mg/L		12/03/18 14:00	12/04/18 12:34	1
Lithium	ND		0.0080	0.0017	mg/L		12/03/18 14:00	12/04/18 12:34	1

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

Lab Sample ID: LCS 240-358004/3-A
Matrix: Water
Analysis Batch: 358337

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 358004

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0841		mg/L		84	80 - 120
Arsenic	1.00	0.889		mg/L		89	80 - 120
Barium	1.00	0.823		mg/L		82	80 - 120
Beryllium	1.00	0.849		mg/L		85	80 - 120
Calcium	10.0	8.77		mg/L		88	80 - 120
Cadmium	1.00	0.887		mg/L		89	80 - 120
Cobalt	1.00	0.890		mg/L		89	80 - 120
Chromium	1.00	0.859		mg/L		86	80 - 120
Molybdenum	0.100	0.0841		mg/L		84	80 - 120
Lead	1.00	0.874		mg/L		87	80 - 120
Selenium	1.00	0.934		mg/L		93	80 - 120
Thallium	0.250	0.211		mg/L		84	80 - 120
Lithium	0.100	0.0822		mg/L		82	80 - 120

Lab Sample ID: 280-117422-1 MS
Matrix: Water
Analysis Batch: 358337

Client Sample ID: PNMW-17
Prep Type: Total Recoverable
Prep Batch: 358004

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	ND		0.100	0.0971		mg/L		97	75 - 125
Arsenic	ND		1.00	0.993		mg/L		99	75 - 125
Barium	0.080		1.00	1.04		mg/L		96	75 - 125
Beryllium	ND		1.00	0.905		mg/L		90	75 - 125
Calcium	270		10.0	259	4	mg/L		-113	75 - 125
Cadmium	ND		1.00	0.970		mg/L		97	75 - 125
Cobalt	ND		1.00	0.964		mg/L		96	75 - 125
Chromium	0.0047		1.00	0.973		mg/L		97	75 - 125
Molybdenum	ND		0.100	0.102		mg/L		102	75 - 125
Lead	0.00046	J	1.00	1.01		mg/L		101	75 - 125
Selenium	0.018		1.00	0.991		mg/L		97	75 - 125
Thallium	ND		0.250	0.248		mg/L		99	75 - 125
Lithium	0.039		0.100	0.127		mg/L		88	75 - 125

Lab Sample ID: 280-117422-1 MSD
Matrix: Water
Analysis Batch: 358337

Client Sample ID: PNMW-17
Prep Type: Total Recoverable
Prep Batch: 358004

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	ND		0.100	0.102		mg/L		102	75 - 125	5	20
Arsenic	ND		1.00	1.05		mg/L		105	75 - 125	6	20
Barium	0.080		1.00	1.09		mg/L		101	75 - 125	4	20
Beryllium	ND		1.00	0.936		mg/L		94	75 - 125	3	20
Calcium	270		10.0	272	4	mg/L		26	75 - 125	5	20
Cadmium	ND		1.00	1.01		mg/L		101	75 - 125	4	20
Cobalt	ND		1.00	1.03		mg/L		103	75 - 125	7	20
Chromium	0.0047		1.00	1.03		mg/L		103	75 - 125	6	20
Molybdenum	ND		0.100	0.107		mg/L		107	75 - 125	5	20
Lead	0.00046	J	1.00	1.07		mg/L		107	75 - 125	5	20

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

Lab Sample ID: 280-117422-1 MSD
Matrix: Water
Analysis Batch: 358337

Client Sample ID: PNMW-17
Prep Type: Total Recoverable
Prep Batch: 358004

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Selenium	0.018		1.00	1.04		mg/L		102	75 - 125	4	20
Thallium	ND		0.250	0.259		mg/L		104	75 - 125	4	20
Lithium	0.039		0.100	0.131		mg/L		93	75 - 125	4	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-439597/1-A
Matrix: Water
Analysis Batch: 439730

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 439597

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		12/03/18 09:06	12/03/18 16:18	1

Lab Sample ID: LCS 280-439597/2-A
Matrix: Water
Analysis Batch: 439730

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 439597

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			0.00500	0.00459		mg/L		92	84 - 120		

Lab Sample ID: 280-117422-2 MS
Matrix: Water
Analysis Batch: 439730

Client Sample ID: PNMW-18
Prep Type: Total/NA
Prep Batch: 439597

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury	ND		0.00500	0.00479		mg/L		96	75 - 125		

Lab Sample ID: 280-117422-2 MSD
Matrix: Water
Analysis Batch: 439730

Client Sample ID: PNMW-18
Prep Type: Total/NA
Prep Batch: 439597

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		0.00500	0.00482		mg/L		96	75 - 125	1	20

Method: 9040B - pH

Lab Sample ID: LCS 280-440327/29
Matrix: Water
Analysis Batch: 440327

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 280-440143/6
Matrix: Water
Analysis Batch: 440143

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.659	J	3.0	0.25	mg/L			12/06/18 12:12	1
Sulfate	0.482	J	5.0	0.23	mg/L			12/06/18 12:12	1

Lab Sample ID: LCS 280-440143/4
Matrix: Water
Analysis Batch: 440143

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
Sulfate	100	98.1		mg/L		98	90 - 110

Lab Sample ID: LCSD 280-440143/5
Matrix: Water
Analysis Batch: 440143

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	98.0		mg/L		98	90 - 110	0	10
Sulfate	100	98.1		mg/L		98	90 - 110	0	10

Lab Sample ID: MRL 280-440143/3
Matrix: Water
Analysis Batch: 440143

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		94	50 - 150
Fluoride	0.200	0.246	J	mg/L		123	50 - 150
Sulfate	2.50	2.45	J	mg/L		98	50 - 150

Lab Sample ID: MB 280-440567/6
Matrix: Water
Analysis Batch: 440567

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	0.308	J	5.0	0.23	mg/L			12/10/18 15:48	1

Lab Sample ID: LCS 280-440567/4
Matrix: Water
Analysis Batch: 440567

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

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

Lab Sample ID: LCSD 280-440567/5
Matrix: Water
Analysis Batch: 440567

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
Sulfate	100	101		mg/L		101	90 - 110	0	10

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

Lab Sample ID: MRL 280-440567/3
Matrix: Water
Analysis Batch: 440567

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	2.50	2.32	J	mg/L		93	50 - 150

Lab Sample ID: MB 280-440715/6
Matrix: Water
Analysis Batch: 440715

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			12/11/18 11:39	1
Fluoride	ND		0.50	0.060	mg/L			12/11/18 11:39	1
Sulfate	ND		5.0	0.23	mg/L			12/11/18 11:39	1

Lab Sample ID: LCS 280-440715/4
Matrix: Water
Analysis Batch: 440715

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	98.0		mg/L		98	90 - 110
Fluoride	5.00	5.25		mg/L		105	90 - 110
Sulfate	100	97.8		mg/L		98	90 - 110

Lab Sample ID: LCSD 280-440715/5
Matrix: Water
Analysis Batch: 440715

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	98.0		mg/L		98	90 - 110	0	10
Fluoride	5.00	5.26		mg/L		105	90 - 110	0	10
Sulfate	100	98.2		mg/L		98	90 - 110	0	10

Lab Sample ID: MRL 280-440715/3
Matrix: Water
Analysis Batch: 440715

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	2.31	J	mg/L		92	50 - 150
Fluoride	0.200	0.189	J	mg/L		95	50 - 150
Sulfate	2.50	2.44	J	mg/L		98	50 - 150

Lab Sample ID: MB 280-440958/6
Matrix: Water
Analysis Batch: 440958

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.437	J	3.0	0.25	mg/L			12/12/18 12:34	1
Fluoride	ND		0.50	0.060	mg/L			12/12/18 12:34	1
Sulfate	ND		5.0	0.23	mg/L			12/12/18 12:34	1

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

Lab Sample ID: LCS 280-440958/4
Matrix: Water
Analysis Batch: 440958

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	96.9		mg/L		97	90 - 110
Fluoride	5.00	5.02		mg/L		100	90 - 110
Sulfate	100	102		mg/L		102	90 - 110

Lab Sample ID: LCSD 280-440958/5
Matrix: Water
Analysis Batch: 440958

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	96.9		mg/L		97	90 - 110	0	10
Fluoride	5.00	4.99		mg/L		100	90 - 110	1	10
Sulfate	100	102		mg/L		102	90 - 110	0	10

Lab Sample ID: MRL 280-440958/3
Matrix: Water
Analysis Batch: 440958

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	2.38	J	mg/L		95	50 - 150
Fluoride	0.200	0.237	J	mg/L		118	50 - 150
Sulfate	2.50	2.45	J	mg/L		98	50 - 150

Lab Sample ID: 280-117422-1 MS
Matrix: Water
Analysis Batch: 440958

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	300	E B	25.0	320	E 4	mg/L		96	80 - 120
Fluoride	0.23	J	5.00	5.15		mg/L		98	80 - 120
Sulfate	590	E	25.0	614	E 4	mg/L		89	80 - 120

Lab Sample ID: 280-117422-1 MSD
Matrix: Water
Analysis Batch: 440958

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	300	E B	25.0	320	E 4	mg/L		97	80 - 120	0	20
Fluoride	0.23	J	5.00	5.22		mg/L		100	80 - 120	1	20
Sulfate	590	E	25.0	614	E 4	mg/L		90	80 - 120	0	20

Lab Sample ID: 280-117422-1 DU
Matrix: Water
Analysis Batch: 440958

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

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Chloride	300	E B	296	E	mg/L		0.2	15
Fluoride	0.23	J	0.262	J	mg/L		12	15
Sulfate	590	E	592	E	mg/L		0.09	15

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

Lab Sample ID: MB 280-439394/1
Matrix: Water
Analysis Batch: 439394

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			11/30/18 07:55	1

Lab Sample ID: LCS 280-439394/2
Matrix: Water
Analysis Batch: 439394

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	497		mg/L		99	93 - 110

Lab Sample ID: 280-117422-1 DU
Matrix: Water
Analysis Batch: 439394

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)	1400		1410		mg/L		2	10

Lab Sample ID: MB 280-439937/1
Matrix: Water
Analysis Batch: 439937

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			12/05/18 09:32	1

Lab Sample ID: LCS 280-439937/2
Matrix: Water
Analysis Batch: 439937

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	502		mg/L		100	93 - 110

Lab Sample ID: 280-117422-6 DU
Matrix: Water
Analysis Batch: 439937

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

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids (TDS)	7.0	J	ND		mg/L		NC	10

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

Lab Sample ID: MB 280-439446/1
Matrix: Water
Analysis Batch: 439446

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			11/30/18 10:40	1

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

Lab Sample ID: LCS 280-439446/2
Matrix: Water
Analysis Batch: 439446

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

Lab Sample ID: LCSD 280-439446/3
Matrix: Water
Analysis Batch: 439446

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	112		mg/L		112	79 - 114	10	20

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-404012/18-A
Matrix: Water
Analysis Batch: 407600

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 404012

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.002673	U	0.0371	0.0371	1.00	0.0758	pCi/L	12/04/18 14:09	12/27/18 07:35	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*111*	*X*	*40 - 110*	*12/04/18 14:09*	*12/27/18 07:35*	*1*

Lab Sample ID: LCS 160-404012/1-A
Matrix: Water
Analysis Batch: 407600

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 404012

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.4	10.09		1.03	1.00	0.0595	pCi/L	89	68 - 137

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

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-404020/18-A
Matrix: Water
Analysis Batch: 405468

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 404020

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.2224	U	0.209	0.210	1.00	0.337	pCi/L	12/04/18 14:32	12/13/18 16:07	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*111*	*X*	*40 - 110*	*12/04/18 14:32*	*12/13/18 16:07*	*1*
Y Carrier	*83.7*		*40 - 110*	*12/04/18 14:32*	*12/13/18 16:07*	*1*

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

Lab Sample ID: LCS 160-404020/1-A
Matrix: Water
Analysis Batch: 405468

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 404020

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.13	8.645		1.02	1.00	0.360	pCi/L	95	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*110*		*40 - 110*
Y Carrier	*78.9*		*40 - 110*

Metals

Prep Batch: 358004

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-117422-1	PNMW-17	Total Recoverable	Water	3005A	
280-117422-2	PNMW-18	Total Recoverable	Water	3005A	
280-117422-3	PNMW-19	Total Recoverable	Water	3005A	
280-117422-4	PNMW-20	Total Recoverable	Water	3005A	
280-117422-5	PNMW-19-DUP	Total Recoverable	Water	3005A	
280-117422-6	PNMW-19-EB	Total Recoverable	Water	3005A	
MB 240-358004/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-358004/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-358004/3-A	Lab Control Sample	Total Recoverable	Water	3005A	
280-117422-1 MS	PNMW-17	Total Recoverable	Water	3005A	
280-117422-1 MS	PNMW-17	Total Recoverable	Water	3005A	
280-117422-1 MSD	PNMW-17	Total Recoverable	Water	3005A	
280-117422-1 MSD	PNMW-17	Total Recoverable	Water	3005A	

Analysis Batch: 358271

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-117422-1	PNMW-17	Total Recoverable	Water	6010C	358004
280-117422-2	PNMW-18	Total Recoverable	Water	6010C	358004
280-117422-3	PNMW-19	Total Recoverable	Water	6010C	358004
280-117422-4	PNMW-20	Total Recoverable	Water	6010C	358004
280-117422-5	PNMW-19-DUP	Total Recoverable	Water	6010C	358004
280-117422-6	PNMW-19-EB	Total Recoverable	Water	6010C	358004
MB 240-358004/1-A	Method Blank	Total Recoverable	Water	6010C	358004
LCS 240-358004/2-A	Lab Control Sample	Total Recoverable	Water	6010C	358004
280-117422-1 MS	PNMW-17	Total Recoverable	Water	6010C	358004
280-117422-1 MSD	PNMW-17	Total Recoverable	Water	6010C	358004

Analysis Batch: 358337

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-117422-1	PNMW-17	Total Recoverable	Water	6020A	358004
280-117422-2	PNMW-18	Total Recoverable	Water	6020A	358004
280-117422-3	PNMW-19	Total Recoverable	Water	6020A	358004
280-117422-4	PNMW-20	Total Recoverable	Water	6020A	358004
280-117422-5	PNMW-19-DUP	Total Recoverable	Water	6020A	358004
280-117422-6	PNMW-19-EB	Total Recoverable	Water	6020A	358004
MB 240-358004/1-A	Method Blank	Total Recoverable	Water	6020A	358004
LCS 240-358004/3-A	Lab Control Sample	Total Recoverable	Water	6020A	358004
280-117422-1 MS	PNMW-17	Total Recoverable	Water	6020A	358004
280-117422-1 MSD	PNMW-17	Total Recoverable	Water	6020A	358004

Analysis Batch: 358416

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-117422-5	PNMW-19-DUP	Total Recoverable	Water	6020A	358004
280-117422-6	PNMW-19-EB	Total Recoverable	Water	6020A	358004

Prep Batch: 439597

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-117422-1	PNMW-17	Total/NA	Water	7470A	
280-117422-2	PNMW-18	Total/NA	Water	7470A	
280-117422-3	PNMW-19	Total/NA	Water	7470A	
280-117422-4	PNMW-20	Total/NA	Water	7470A	

Metals (Continued)

Prep Batch: 439597 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-117422-5	PNMW-19-DUP	Total/NA	Water	7470A	
280-117422-6	PNMW-19-EB	Total/NA	Water	7470A	
MB 280-439597/1-A	Method Blank	Total/NA	Water	7470A	
LCS 280-439597/2-A	Lab Control Sample	Total/NA	Water	7470A	
280-117422-2 MS	PNMW-18	Total/NA	Water	7470A	
280-117422-2 MSD	PNMW-18	Total/NA	Water	7470A	

Analysis Batch: 439730

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-117422-1	PNMW-17	Total/NA	Water	7470A	439597
280-117422-2	PNMW-18	Total/NA	Water	7470A	439597
280-117422-3	PNMW-19	Total/NA	Water	7470A	439597
280-117422-4	PNMW-20	Total/NA	Water	7470A	439597
280-117422-5	PNMW-19-DUP	Total/NA	Water	7470A	439597
280-117422-6	PNMW-19-EB	Total/NA	Water	7470A	439597
MB 280-439597/1-A	Method Blank	Total/NA	Water	7470A	439597
LCS 280-439597/2-A	Lab Control Sample	Total/NA	Water	7470A	439597
280-117422-2 MS	PNMW-18	Total/NA	Water	7470A	439597
280-117422-2 MSD	PNMW-18	Total/NA	Water	7470A	439597

General Chemistry

Analysis Batch: 439394

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-117422-1	PNMW-17	Total/NA	Water	SM 2540C	
280-117422-2	PNMW-18	Total/NA	Water	SM 2540C	
280-117422-3	PNMW-19	Total/NA	Water	SM 2540C	
280-117422-4	PNMW-20	Total/NA	Water	SM 2540C	
280-117422-5	PNMW-19-DUP	Total/NA	Water	SM 2540C	
MB 280-439394/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-439394/2	Lab Control Sample	Total/NA	Water	SM 2540C	
280-117422-1 DU	PNMW-17	Total/NA	Water	SM 2540C	

Analysis Batch: 439446

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-117422-1	PNMW-17	Total/NA	Water	SM 2540D	
280-117422-2	PNMW-18	Total/NA	Water	SM 2540D	
280-117422-3	PNMW-19	Total/NA	Water	SM 2540D	
280-117422-4	PNMW-20	Total/NA	Water	SM 2540D	
280-117422-5	PNMW-19-DUP	Total/NA	Water	SM 2540D	
280-117422-6	PNMW-19-EB	Total/NA	Water	SM 2540D	
MB 280-439446/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-439446/2	Lab Control Sample	Total/NA	Water	SM 2540D	
LCSD 280-439446/3	Lab Control Sample Dup	Total/NA	Water	SM 2540D	

Analysis Batch: 439937

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-117422-6	PNMW-19-EB	Total/NA	Water	SM 2540C	
MB 280-439937/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-439937/2	Lab Control Sample	Total/NA	Water	SM 2540C	

General Chemistry (Continued)

Analysis Batch: 439937 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-117422-6 DU	PNMW-19-EB	Total/NA	Water	SM 2540C	

Analysis Batch: 440143

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-117422-1	PNMW-17	Total/NA	Water	9056A	
280-117422-3	PNMW-19	Total/NA	Water	9056A	
280-117422-4	PNMW-20	Total/NA	Water	9056A	
280-117422-4	PNMW-20	Total/NA	Water	9056A	
280-117422-5	PNMW-19-DUP	Total/NA	Water	9056A	
280-117422-6	PNMW-19-EB	Total/NA	Water	9056A	
MB 280-440143/6	Method Blank	Total/NA	Water	9056A	
LCS 280-440143/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-440143/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-440143/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 440327

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-117422-1	PNMW-17	Total/NA	Water	9040B	
280-117422-2	PNMW-18	Total/NA	Water	9040B	
280-117422-3	PNMW-19	Total/NA	Water	9040B	
280-117422-4	PNMW-20	Total/NA	Water	9040B	
280-117422-5	PNMW-19-DUP	Total/NA	Water	9040B	
280-117422-6	PNMW-19-EB	Total/NA	Water	9040B	
LCS 280-440327/29	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 440567

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 280-440567/6	Method Blank	Total/NA	Water	9056A	
LCS 280-440567/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-440567/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-440567/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 440715

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-117422-2	PNMW-18	Total/NA	Water	9056A	
280-117422-3	PNMW-19	Total/NA	Water	9056A	
280-117422-4	PNMW-20	Total/NA	Water	9056A	
280-117422-5	PNMW-19-DUP	Total/NA	Water	9056A	
280-117422-6	PNMW-19-EB	Total/NA	Water	9056A	
MB 280-440715/6	Method Blank	Total/NA	Water	9056A	
LCS 280-440715/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-440715/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-440715/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 440958

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-117422-1	PNMW-17	Total/NA	Water	9056A	
280-117422-2	PNMW-18	Total/NA	Water	9056A	
MB 280-440958/6	Method Blank	Total/NA	Water	9056A	
LCS 280-440958/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-440958/5	Lab Control Sample Dup	Total/NA	Water	9056A	

General Chemistry (Continued)

Analysis Batch: 440958 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MRL 280-440958/3	Lab Control Sample	Total/NA	Water	9056A	
280-117422-1 MS	PNMW-17	Total/NA	Water	9056A	
280-117422-1 MSD	PNMW-17	Total/NA	Water	9056A	
280-117422-1 DU	PNMW-17	Total/NA	Water	9056A	

Rad

Prep Batch: 404012

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-117422-1	PNMW-17	Total/NA	Water	PrecSep-21	
280-117422-2	PNMW-18	Total/NA	Water	PrecSep-21	
280-117422-3	PNMW-19	Total/NA	Water	PrecSep-21	
280-117422-4	PNMW-20	Total/NA	Water	PrecSep-21	
280-117422-5	PNMW-19-DUP	Total/NA	Water	PrecSep-21	
280-117422-6	PNMW-19-EB	Total/NA	Water	PrecSep-21	
MB 160-404012/18-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-404012/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 404020

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-117422-1	PNMW-17	Total/NA	Water	PrecSep_0	
280-117422-2	PNMW-18	Total/NA	Water	PrecSep_0	
280-117422-3	PNMW-19	Total/NA	Water	PrecSep_0	
280-117422-4	PNMW-20	Total/NA	Water	PrecSep_0	
280-117422-5	PNMW-19-DUP	Total/NA	Water	PrecSep_0	
280-117422-6	PNMW-19-EB	Total/NA	Water	PrecSep_0	
MB 160-404020/18-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-404020/1-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: 280-117422-1

Client Sample ID: PNMW-17

Date Collected: 11/27/18 15:25
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-1

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	358004	12/03/18 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			358271	12/04/18 11:56	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	358004	12/03/18 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			358337	12/04/18 12:43	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	439597	12/03/18 09:06	MRJ	TAL DEN
Total/NA	Analysis	7470A		1			439730	12/03/18 16:27	MRJ	TAL DEN
Total/NA	Analysis	9040B		1			440327	12/06/18 21:27	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	440958	12/12/18 19:14	ARM	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	440143	12/07/18 02:07	A1D	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	439394	11/30/18 07:55	MJS	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	439446	11/30/18 10:40	MJS	TAL DEN
Total/NA	Prep	PrecSep-21			999.76 mL	1.0 g	404012	12/04/18 14:09	JLC	TAL SL
Total/NA	Analysis	9315		1			407600	12/27/18 05:41	KLS	TAL SL
Total/NA	Prep	PrecSep_0			999.76 mL	1.0 g	404020	12/04/18 14:32	JLC	TAL SL
Total/NA	Analysis	9320		1			405468	12/13/18 16:06	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			407737	12/27/18 15:10	RTM	TAL SL

Client Sample ID: PNMW-18

Date Collected: 11/27/18 13:45
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-2

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	358004	12/03/18 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			358271	12/04/18 12:26	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	358004	12/03/18 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			358337	12/04/18 13:06	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	439597	12/03/18 09:06	MRJ	TAL DEN
Total/NA	Analysis	7470A		1			439730	12/03/18 16:29	MRJ	TAL DEN
Total/NA	Analysis	9040B		1			440327	12/06/18 21:22	SGB	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	440958	12/12/18 20:24	ARM	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	440715	12/11/18 19:52	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	439394	11/30/18 07:55	MJS	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	439446	11/30/18 10:40	MJS	TAL DEN
Total/NA	Prep	PrecSep-21			1000.13 mL	1.0 g	404012	12/04/18 14:09	JLC	TAL SL
Total/NA	Analysis	9315		1			407606	12/27/18 05:42	KLS	TAL SL
Total/NA	Prep	PrecSep_0			1000.13 mL	1.0 g	404020	12/04/18 14:32	JLC	TAL SL
Total/NA	Analysis	9320		1			405468	12/13/18 16:06	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			407737	12/27/18 15:10	RTM	TAL SL

Client Sample ID: PNMW-19

Date Collected: 11/28/18 12:40
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-3

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	358004	12/03/18 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			358271	12/04/18 12:31	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	358004	12/03/18 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			358337	12/04/18 13:10	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	439597	12/03/18 09:06	MRJ	TAL DEN
Total/NA	Analysis	7470A		1			439730	12/03/18 16:35	MRJ	TAL DEN
Total/NA	Analysis	9040B		1			440327	12/06/18 21:14	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	440143	12/07/18 03:13	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	440715	12/11/18 20:11	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	439394	11/30/18 07:55	MJS	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	439446	11/30/18 10:40	MJS	TAL DEN
Total/NA	Prep	PrecSep-21			1000.11 mL	1.0 g	404012	12/04/18 14:09	JLC	TAL SL
Total/NA	Analysis	9315		1			407606	12/27/18 05:42	KLS	TAL SL
Total/NA	Prep	PrecSep_0			1000.11 mL	1.0 g	404020	12/04/18 14:32	JLC	TAL SL
Total/NA	Analysis	9320		1			405468	12/13/18 16:06	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			407737	12/27/18 15:10	RTM	TAL SL

Client Sample ID: PNMW-20

Date Collected: 11/27/18 10:55
Date Received: 11/28/18 09:00

Lab Sample ID: 280-117422-4

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	358004	12/03/18 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			358271	12/04/18 12:35	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	358004	12/03/18 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			358337	12/04/18 13:15	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	439597	12/03/18 09:06	MRJ	TAL DEN
Total/NA	Analysis	7470A		1			439730	12/03/18 16:38	MRJ	TAL DEN
Total/NA	Analysis	9040B		1			440327	12/06/18 21:18	SGB	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	440143	12/07/18 03:29	A1D	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	440143	12/07/18 03:45	A1D	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	440715	12/11/18 20:29	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	439394	11/30/18 07:55	MJS	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	439446	11/30/18 10:40	MJS	TAL DEN
Total/NA	Prep	PrecSep-21			1000.45 mL	1.0 g	404012	12/04/18 14:09	JLC	TAL SL
Total/NA	Analysis	9315		1			407606	12/27/18 05:42	KLS	TAL SL
Total/NA	Prep	PrecSep_0			1000.45 mL	1.0 g	404020	12/04/18 14:32	JLC	TAL SL
Total/NA	Analysis	9320		1			405468	12/13/18 16:06	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			407737	12/27/18 15:10	RTM	TAL SL

Client Sample ID: PNMW-19-DUP

Lab Sample ID: 280-117422-5

Date Collected: 11/28/18 12:55
Matrix: Water
Date Received: 11/28/18 09:00

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	358004	12/03/18 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			358271	12/04/18 12:40	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	358004	12/03/18 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			358337	12/04/18 13:29	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	358004	12/03/18 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			358416	12/04/18 15:14	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	439597	12/03/18 09:06	MRJ	TAL DEN
Total/NA	Analysis	7470A		1			439730	12/03/18 16:40	MRJ	TAL DEN
Total/NA	Analysis	9040B		1			440327	12/06/18 21:35	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	440143	12/07/18 04:02	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	440715	12/11/18 20:48	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	439394	11/30/18 07:55	MJS	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	439446	11/30/18 10:40	MJS	TAL DEN
Total/NA	Prep	PrecSep-21			1000.09 mL	1.0 g	404012	12/04/18 14:09	JLC	TAL SL
Total/NA	Analysis	9315		1			407606	12/27/18 05:43	KLS	TAL SL
Total/NA	Prep	PrecSep_0			1000.09 mL	1.0 g	404020	12/04/18 14:32	JLC	TAL SL
Total/NA	Analysis	9320		1			405468	12/13/18 16:07	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			407737	12/27/18 15:10	RTM	TAL SL

Client Sample ID: PNMW-19-EB

Lab Sample ID: 280-117422-6

Date Collected: 11/28/18 10:45
Matrix: Water
Date Received: 11/28/18 09:00

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	358004	12/03/18 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			358271	12/04/18 12:44	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	358004	12/03/18 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			358337	12/04/18 13:33	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	358004	12/03/18 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			358416	12/04/18 15:19	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	439597	12/03/18 09:06	MRJ	TAL DEN
Total/NA	Analysis	7470A		1			439730	12/03/18 16:42	MRJ	TAL DEN
Total/NA	Analysis	9040B		1			440327	12/06/18 21:31	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	440143	12/07/18 04:18	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	440715	12/11/18 21:44	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	439937	12/05/18 09:32	MJS	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	439446	11/30/18 10:40	MJS	TAL DEN
Total/NA	Prep	PrecSep-21			999.84 mL	1.0 g	404012	12/04/18 14:09	JLC	TAL SL
Total/NA	Analysis	9315		1			407607	12/27/18 05:44	KLS	TAL SL
Total/NA	Prep	PrecSep_0			999.84 mL	1.0 g	404020	12/04/18 14:32	JLC	TAL SL
Total/NA	Analysis	9320		1			405468	12/13/18 16:07	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			407737	12/27/18 15:10	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-117422-1

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

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: 280-117422-1

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 ELAP		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
7470A	7470A	Water	Mercury
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	01-31-19 *
Kentucky (UST)	State Program	4	58	02-23-19 *
Kentucky (WW)	State Program	4	98016	12-31-18 *
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	01-12-19 *
West Virginia DEP	State Program	3	210	12-31-18 *

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 ELAP		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	11-30-18 *
Iowa	State Program	7	373	12-01-18 *
Kansas	NELAP	7	E-10236	10-31-19
Kentucky (DW)	State Program	4	90125	12-31-18 *
Louisiana	NELAP	6	04080	06-30-19

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

Accreditation/Certification Summary

Client: HDR Inc
TestAmerica Job ID: 280-117422-1
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	LA180017	12-31-18 *
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:	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	11/27	1525	G	W	9	N	N	X	X	X	X	X	X	4x500mL w/ HNO3 for Ra 226/228
PNMW-18	11/27	1345	G	W	7	N	N	X	X	X	X	X	X	
PNMW-19	11/28	1240	G	W	7	N	N	X	X	X	X	X	X	
PNMW-20	11/27	1055	G	W	7	N	N	X	X	X	X	X	X	
PNMW 19-DUP	11/28	1255	G	W	7	N	N	X	X	X	X	X	X	
PNMW 19- EB	11/28	1045	G	W	7	N	N	X	X	X	X	X	X	

280-117422 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: 1.6, 1.4, +1.0, IRS, returned by SB, 11/28/18

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd: _____ Corr'd: _____		Therm ID No.: _____
Relinquished by: K Fishburn	Company: HDR	Date/Time: 11/28 1520	Received by:	Company: TA Den	Date/Time: 11/28/18 1520
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: SB 1.6, 1.4	Company:	Date/Time:

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: 280-464178.1
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 #: 280-117422-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 12/27/2018			
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-17 (280-117422-1)	11/27/18	15:25 Mountain		Water			X	X	X	4	
PNMW-18 (280-117422-2)	11/27/18	13:45 Mountain		Water			X	X	X	2	
PNMW-19 (280-117422-3)	11/28/18	12:40 Mountain		Water			X	X	X	2	
PNMW-20 (280-117422-4)	11/27/18	10:55 Mountain		Water			X	X	X	2	
PNMW-19-DUP (280-117422-5)	11/28/18	12:55 Mountain		Water			X	X	X	2	
PNMW-19-EB (280-117422-6)	11/28/18	10:45 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: 11-27-2018 1503	Company: TALDen	Received by: Michael Hess	Date/Time: 11/30/18 0930	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: 09/20/2016

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: 280-464179.1
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 #: 280-117422-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 12/18/2018			
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:

Analysis Requested

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	Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X				S67
PNMW-17 (280-117422-1)	11/27/18	15:25 Mountain		Water			X	X	1	Use Collision Cell
PNMW-18 (280-117422-2)	11/27/18	13:45 Mountain		Water			X	X	1	Use Collision Cell
PNMW-19 (280-117422-3)	11/28/18	12:40 Mountain		Water			X	X	1	Use Collision Cell
PNMW-20 (280-117422-4)	11/27/18	10:55 Mountain		Water			X	X	1	Use Collision Cell
PNMW-19-DUP (280-117422-5)	11/28/18	12:55 Mountain		Water			X	X	1	Use Collision Cell
PNMW-19-EB (280-117422-6)	11/28/18	10:45 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	Christina Baca	11-29-18 1530	TAden		11-30-18 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: 09/20/2016

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

Client Denver Site Name _____ Cooler unpacked by:

Cooler Received on 11-30-18 Opened on 11-30-18

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

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

TestAmerica Cooler # _____ Foam Box ~~Client Cooler~~ Box Other _____

Packing material used: ~~Bubble~~ Wrap Foam Plastic Bag None Other _____

COOLANT: ~~Wet Ice~~ Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF **-0.2** °C) Observed Cooler Temp. 1.~~0~~ °C Corrected Cooler Temp. _____ °C
   IR GUN #36 (CF **+0**°C) Observed Cooler Temp. 1.0 °C Corrected Cooler Temp. 1.0 °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: 280-117422-1

Login Number: 117422
List Number: 1
Creator: Zimmerman, Steven 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.	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.	False	Refer to Job Narrative for details.
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: 280-117422-1

Login Number: 117422
List Number: 3
Creator: Hellm, Michael

List Source: TestAmerica St. Louis
List Creation: 11/30/18 02:38 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	22.0
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: 280-117422-1

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)
280-117422-1	PNMW-17	106
280-117422-2	PNMW-18	101
280-117422-3	PNMW-19	102
280-117422-4	PNMW-20	97.9
280-117422-5	PNMW-19-DUP	96.5
280-117422-6	PNMW-19-EB	108
LCS 160-404012/1-A	Lab Control Sample	110
MB 160-404012/18-A	Method Blank	111 X

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)
280-117422-1	PNMW-17	106	81.1
280-117422-2	PNMW-18	101	83.7
280-117422-3	PNMW-19	102	83.7
280-117422-4	PNMW-20	97.9	84.1
280-117422-5	PNMW-19-DUP	96.5	81.9
280-117422-6	PNMW-19-EB	108	85.2
LCS 160-404020/1-A	Lab Control Sample	110	78.9
MB 160-404020/18-A	Method Blank	111 X	83.7

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier