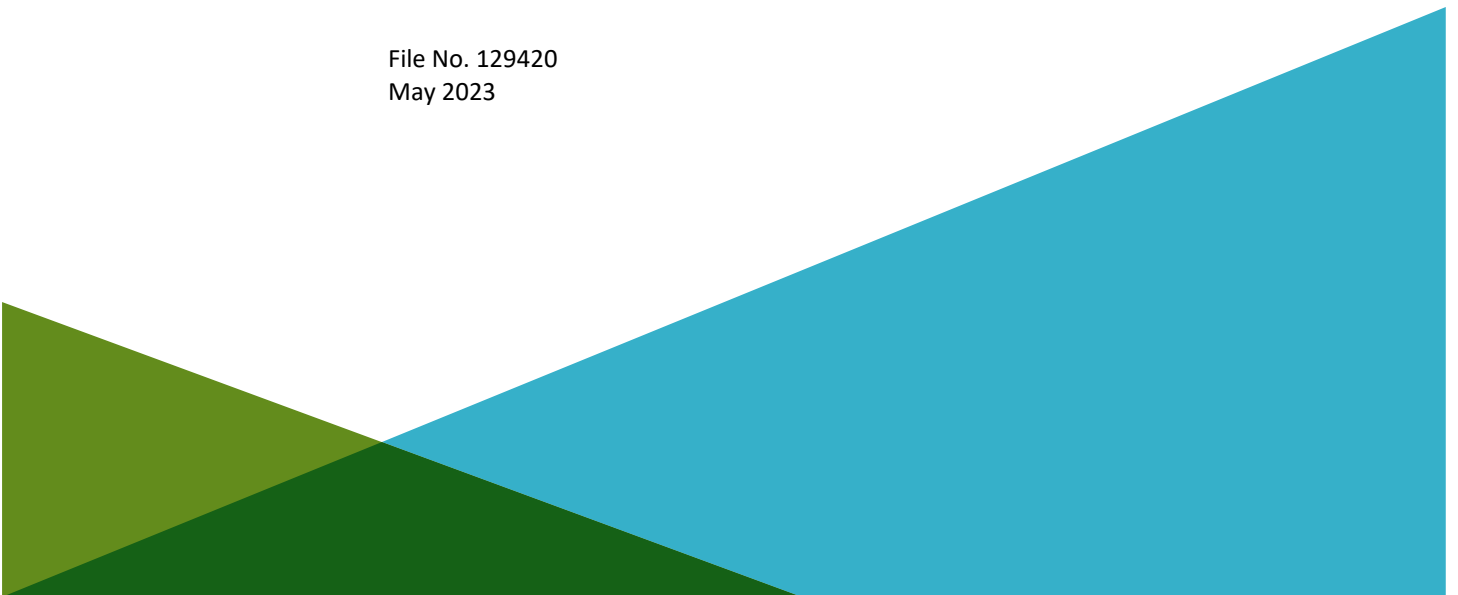


2019 ANNUAL GROUNDWATER MONITORING AND
CORRECTIVE ACTION REPORT ADDENDUM
LANDFILL
A.B. BROWN GENERATING STATION
POSEY COUNTY, INDIANA

by
Haley & Aldrich, Inc.
Greenville, South Carolina

for
Southern Indiana Gas and Electric Company
Evansville, Indiana

File No. 129420
May 2023





HALEY & ALDRICH, INC.
400 Augusta Street
Suite 100
Greenville, SC 29601
864.214.8750

23 May 2023
File No. 129420

SUBJECT: 2019 Annual Groundwater Monitoring and Corrective Action Report Addendum
Southern Indiana Gas and Electric Company
Landfill
A.B. Brown Generating Station; Posey County, Indiana

The Landfill at A.B. Brown Generating Station is subject to the groundwater monitoring and corrective action requirements described under 40 CFR § 257.90 through § 257.98 (Rule). An *Annual Groundwater Monitoring and Corrective Action Report* (Annual Groundwater Report) documenting the activities in 2019 for the Landfill was completed and placed in the facilities operating record on 31 January 2020, as required by the Rule. The Annual Groundwater Report contained the specific information listed in § 257.90(e).

This addendum has been prepared to supplement the operating record in recognition of comments issued by the United States Environmental Protection Agency (U.S. EPA) on 11 January 2022, to various utilities regarding their respective Part A extension applications, and U.S. EPA's "proposed finding that GWMCA reports are incomplete and lack clarity of visual representation of data" in the proposed conditional approval for the A.B. Brown Generating Station that was released on 5 October 2022. Those comments, proposed findings, and U.S. EPA clarifications were understood to be U.S. EPA's expectations regarding the contents of the facility's Annual Groundwater Report. In addition to the information listed in § 257.90(e), the U.S. EPA indicated in their comments that annual reports should contain:

- water level gauging data for each sampling event, including groundwater elevation data, a determination of groundwater flow direction(s) and rate(s), and updated potentiometric surface map(s);
- laboratory analytical reports to verify that groundwater sampling and analysis requirements outlined in § 257.93 are being met; and finally,
- statistical analyses, including detailed discussion of the statistical analyses (e.g., statistical method applied, confidence levels, and normality test results).

While this information is not specifically referred to in the in 257.90(e) of the Rule for inclusion in the annual reports, it has been routinely collected and maintained in Southern Indiana Gas and Electric Company's files, and is being provided in the attachments to this addendum as follows:

Attachment 1 – Groundwater Gauging Data

- Summary of groundwater gauging data

Attachment 2 – Updated Potentiometric Surface Map Containing Most Recent Groundwater Elevation Data

- Water table configuration map – June 2019
- Water table configuration map – October 2019

Water table maps include groundwater flow direction arrows and groundwater velocity calculations.

Attachment 3 – Laboratory Analytical Reports

- Laboratory data packages

Includes supporting information, such as, case narrative, sample and method summary, analytical results, quality control, and chain-of-custody documentation.

Attachment 4 – Statistical Analyses

- Statistical evaluation of the June and August 2018 *Groundwater Assessment Monitoring*
- Statistical evaluation of the May 2019 *Semi-annual Groundwater Assessment*

Includes a discussion of the statistical analysis utilized along with a table summarizing the statistical outputs (e.g., frequency of detection, maximum detection, variance, standard deviation, coefficient of variance, outlier tests, trends, upper and lower confidence limits, and comparison against Groundwater Protection Standards), and supporting backup.

ATTACHMENT 1
Groundwater Gauging Data

VECTREN - AB BROWN STATION

Groundwater Sampling Event

Gauging Date: June 14, 2019

ATC Project No. 170LF00738

WELL ID	DTW FROM TOC
CCR-AP-1R	14.64
CCR-AP-2R	36.10
CCR-AP-2I	25.95
CCR-AP-3R	33.77
CCR-AP-3I	22.61
CCR-AP-4R	30.84
CCR-AP-5	34.93
CCR-AP-6	13.25
CCR-AP-7R	32.41
CCR-AP-8	4.02
CCR-AP-9	10.81
CCR-AP-10	35.05
CCR-LF-1	6.99
CCR-LF-2	24.97
CCR-LF-3	27.37
CCR-LF-4	45.28
CCR-LF-5	18.72
CCR-LF-6	7.88
CCR-SP-1	10.23
CCR-SP-2	12.99
CCR-SP-3	5.89
CCR-BK-1R	dry to top of pump
CCR-BK-2	12.98

DTW= Depth to Water

TOC= Top of Casing

VECTREN - AB BROWN STATION
 CCR Groundwater Sampling Event
 Gauging Dates: October 14 and October 17, 2019*
 ATC Project No. 170LF00739

WELL ID	DATE	TIME	DTW FROM TOC
Ash Pond Wells			
CCR-AP-1R	10/14/2019	12:45	18.42
CCR-AP-2R	10/14/2019	17:10	42.11
CCR-AP-2I	10/14/2019	17:05	39.30
CCR-AP-3R	10/14/2019	16:25	39.30
CCR-AP-3I	10/14/2019	16:30	23.33
CCR-AP-4R	10/14/2019	16:00	35.62
CCR-AP-5	10/14/2019	16:35	37.80
CCR-AP-6	10/14/2019	14:10	16.87
CCR-AP-7R	10/14/2019	14:20	35.15
CCR-AP-8	10/14/2019	14:30	5.86
CCR-AP-9	10/14/2019	13:45	8.82
CCR-AP-10	10/14/2019	16:10	38.68
Landfill Wells			
CCR-LF-1	10/14/2019	10:25	9.97
CCR-LF-2	10/14/2019	10:30	26.87
CCR-LF-3	10/14/2019	10:35	29.00
CCR-LF-4	10/14/2019	14:00	47.30
CCR-LF-5	10/14/2019	10:00	22.09
CCR-LF-6	10/14/2019	11:35	8.03
Sedimentation Pond Wells			
CCR-SP-1	10/14/2019	10:55	14.66
CCR-SP-2	10/17/2019	9:05	16.00
CCR-SP-3	10/14/2019	11:00	14.98
Background Wells			
CCR-BK-1R	10/14/2019	13:16	60.50
CCR-BK-2	10/14/2019	12:23	23.40

DTW= Depth to Water

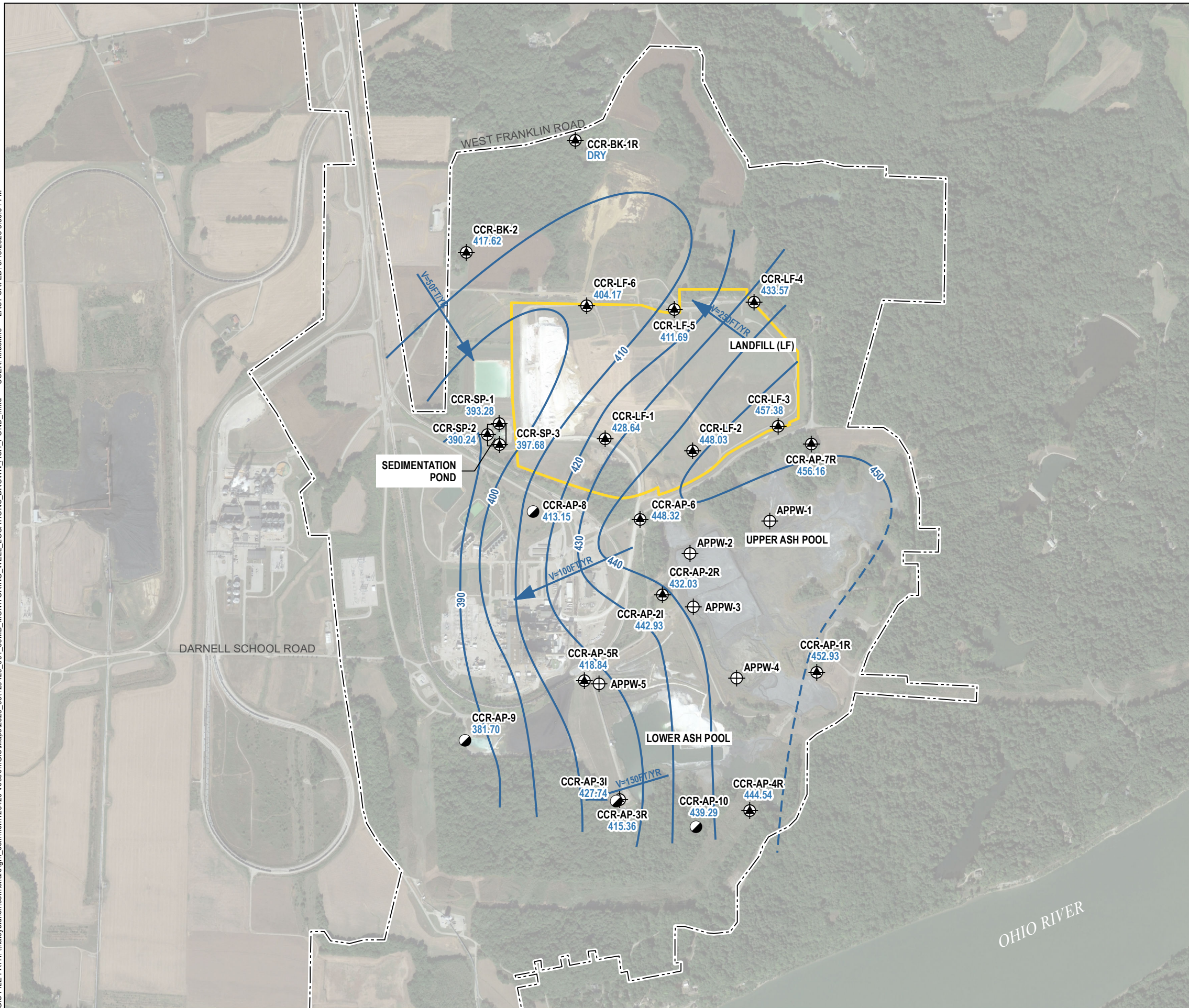
TOC= Top of Casing

*CCR-SP-2 was not located until October 17, 2019; it had been covered by washout from adjacent road.

ATTACHMENT 2

**Updated Potentiometric Surface Map Containing Most
Recent Groundwater Elevation Data**

GIS FILE PATH: \\haleyaldrich.com\share\grn_common\129420_Vectrent\GIS\Maps\2023_05\129420_001_001ME_MONITORING_WELL_LOCATIONS_BROWN_ASH_POND.mxd — USER: khaskins — LAST SAVED: 5/15/2023 3:30:01 PM



LEGEND

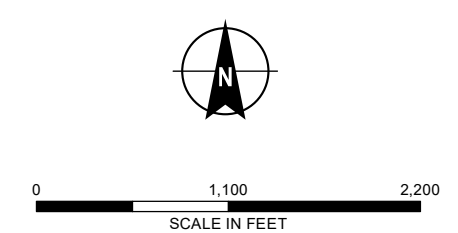
- GROUNDWATER ELEVATION CONTOUR, 10-FT INTERVAL, DASHED WHERE INFERRED
- GROUNDWATER FLOW DIRECTION
- APPROXIMATE UNIT BOUNDARY
- SEDIMENTATION POND
- PROPERTY BOUNDARY

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. CCR REGULATED UNITS INCLUDE THE ASH POND, LANDFILL, AND SEDIMENTATION POND.
3. GROUNDWATER ELEVATIONS WERE MEASURED 14 JUNE 2019.
4. APPROXIMATE GROUNDWATER FLOW RATE CALCULATED USING $V = \frac{k(i)}{n_e}$

WHERE:
V = GROUNDWATER FLOW VELOCITY (FT/YR)
k = HORIZONTAL HYDRAULIC CONDUCTIVITY (FT/DAY)
i = HORIZONTAL GROUNDWATER GRADIENT (FT/FT)
n_e = ASSUMED EFFECTIVE POROSITY

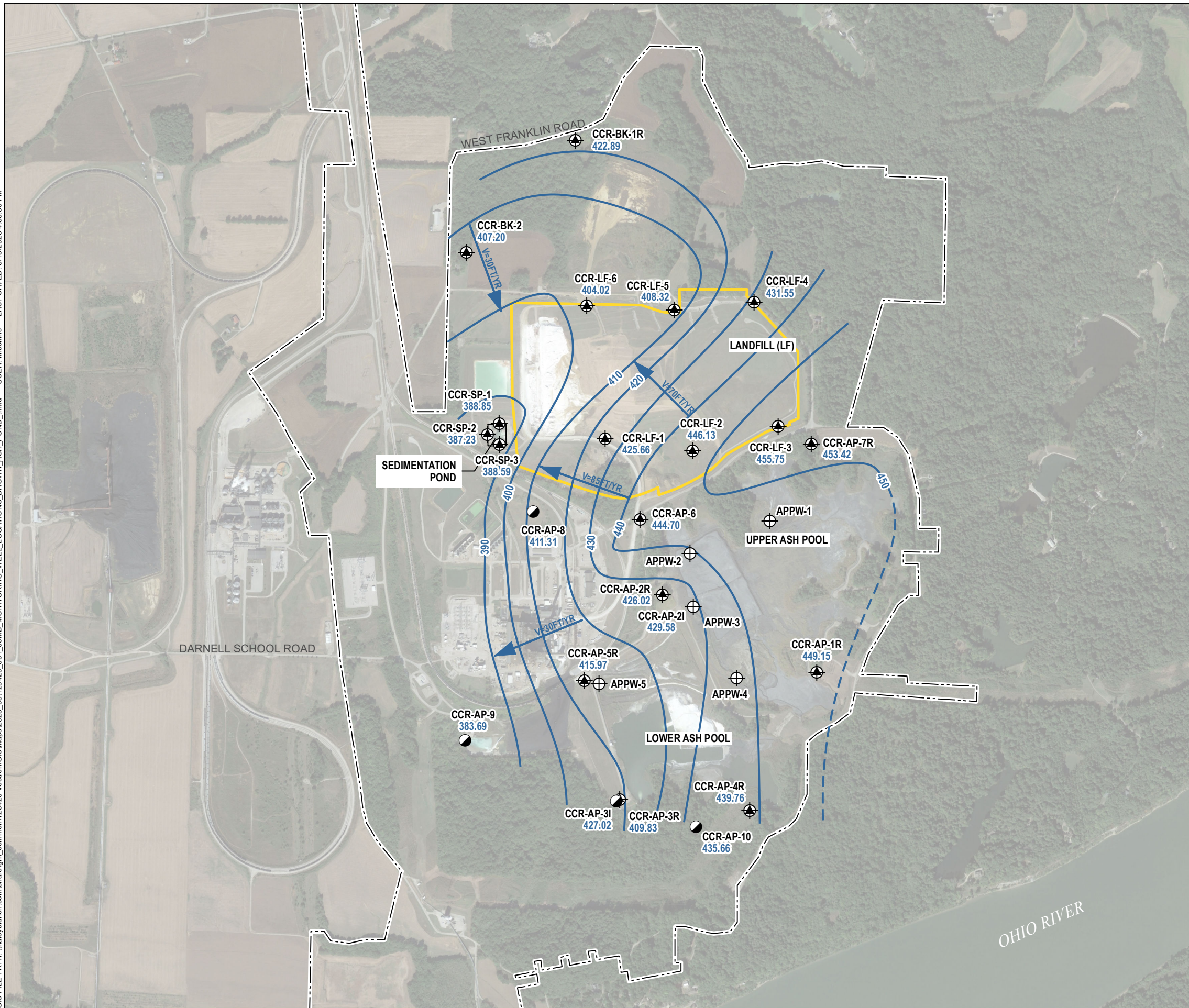
5. AERIAL IMAGERY SOURCE: GOOGLE, 2019



HALEY ALDRICH SOUTHERN INDIANA GAS AND ELECTRIC COMPANY
A.B. BROWN GENERATING STATION
MOUNT VERNON, INDIANA

SHALLOW GROUNDWATER ELEVATION CONTOURS - JUNE 2019

GIS FILE PATH: \\haleyaldrich.com\share\grn_common\129420_Vectrent\GIS\Maps\2023_05\129420_001_001\ME_MONITORING_WELL_LOCATIONS_BROWN_ASH_POND.mxd — USER: khaskins — LAST SAVED: 5/15/2023 4:55:39 PM

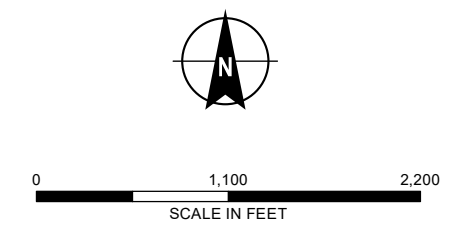


LEGEND

- CCR MONITORING WELL
- NATURE AND EXTENT MONITORING WELL
- CCR PIEZOMETER
- GROUNDWATER ELEVATION CONTOUR, 10-FT INTERVAL, DASHED WHERE INFERRED
- GROUNDWATER FLOW DIRECTION
- APPROXIMATE UNIT BOUNDARY
- SEDIMENTATION POND
- PROPERTY BOUNDARY

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
 2. CCR REGULATED UNITS INCLUDE THE ASH POND, LANDFILL, AND SEDIMENTATION POND.
 3. GROUNDWATER ELEVATIONS WERE MEASURED 14 OCTOBER 2019.
 4. APPROXIMATE GROUNDWATER FLOW RATE CALCULATED USING $V = \frac{k(i)}{n_e}$
- WHERE:
 V = GROUNDWATER FLOW VELOCITY (FT/YR)
 k = HORIZONTAL HYDRAULIC CONDUCTIVITY (FT/DAY)
 i = HORIZONTAL GROUNDWATER GRADIENT (FT/FT)
 n_e = ASSUMED EFFECTIVE POROSITY
5. AERIAL IMAGERY SOURCE: GOOGLE, 2019



HALEY ALDRICH SOUTHERN INDIANA GAS AND ELECTRIC COMPANY
 A.B. BROWN GENERATING STATION
 MOUNT VERNON, INDIANA

SHALLOW GROUNDWATER ELEVATION CONTOURS - OCTOBER 2019

NOVEMBER 2019

FIGURE 2

ATTACHMENT 3
Laboratory Analytical Reports

ANALYTICAL REPORT

Eurofins TestAmerica, Pittsburgh
301 Alpha Drive
RIDC Park
Pittsburgh, PA 15238
Tel: (412)963-7058

Laboratory Job ID: 180-90467-1

Client Project/Site: CCR Groundwater AB Brown

For:

Vectren Corporation
PO BOX 209
Evansville, Indiana 47702

Attn: Accounts Payable



*Authorized for release by:
8/28/2019 3:42:08 PM*

Veronica Bortot, Senior Project Manager
(412)963-2435

veronica.bortot@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

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.

PA Lab ID: 02-00416



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Case Narrative

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Job ID: 180-90467-1

Laboratory: Eurofins TestAmerica, Pittsburgh

Narrative

Job Narrative 180-90467-1

Comments

No additional comments.

Receipt

The samples were received on 5/23/2019 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 1.7° C, 3.4° C, 3.6° C and 4.3° C.

GC Semi VOA

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

RAD

Method(s) 903.0, 9315: Ra-226 Prep Batch 160-430235

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

CCR-LF-3 (180-90467-3), CCR-LF-5 (180-90467-5), CCR-LF-6 (180-90467-6), CCR-BK-1R (180-90467-7), CCR-AP-3R (180-90467-9), CCR-AP-4R (180-90467-10), CCR-AP-5 (180-90467-11), CCR-AP-6 (180-90467-12), (LCS 160-430235/1-A), (MB 160-430235/23-A), (500-162824-E-1-A) and (500-162824-C-1-A DU)

Method(s) 903.0, 9315: Ra-226 Prep Batch 160-433443

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

CCR-LF-1 (180-90467-1), CCR-LF-2 (180-90467-2), CCR-LF-2 (180-90467-2[DU]), CCR-LF-4 (180-90467-4), CCR-BK-2 (180-90467-8), CCR-AP-7R (180-90467-13), (LCS 160-433443/1-A) and (MB 160-433443/23-A)

Method(s) 9315: Ra-226 Prep Batch 160-430329

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

FIELD BLANK 1 (180-90467-14), FIELD BLANK 2 (180-90467-15), BLIND DUPLICATE 1 (180-90467-16), BLIND DUPLICATE 2 (180-90467-17), (LCS 160-430329/1-A), (LCS 160-430329/2-A) and (MB 160-430329/23-A)

Method(s) 904.0, 9320: Ra-228 Prep Batch 160-430397

The Ra-228 recovery in the LCS was slightly low (72) outside QC limits (75%-125%) indicating a potential slight low bias to the sample results. The barium recovery in the LCS (107%) and the Replicate Error Ratio (RER) were within limits demonstrating acceptable method performance.

CCR-LF-3 (180-90467-3), CCR-LF-5 (180-90467-5), CCR-LF-6 (180-90467-6), CCR-BK-1R (180-90467-7), CCR-AP-3R (180-90467-9), CCR-AP-4R (180-90467-10), CCR-AP-5 (180-90467-11), CCR-AP-6 (180-90467-12), (LCS 160-430397/1-A), (MB 160-430397/23-A), (500-162824-E-1-B) and (500-162824-C-1-B DU)

Case Narrative

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Job ID: 180-90467-1 (Continued)

Laboratory: Eurofins TestAmerica, Pittsburgh (Continued)

Method(s) 904.0, 9320: Ra-228 Prep Batch 160-430397

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

CCR-LF-3 (180-90467-3), CCR-LF-5 (180-90467-5), CCR-LF-6 (180-90467-6), CCR-BK-1R (180-90467-7), CCR-AP-3R (180-90467-9), CCR-AP-4R (180-90467-10), CCR-AP-5 (180-90467-11), CCR-AP-6 (180-90467-12), (LCS 160-430397/1-A), (MB 160-430397/23-A), (500-162824-E-1-B) and (500-162824-C-1-B DU)

Method(s) 904.0, 9320: Ra-228 Prep Batch 160-433455

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

CCR-LF-1 (180-90467-1), CCR-LF-2 (180-90467-2), CCR-LF-2 (180-90467-2[DU]), CCR-LF-4 (180-90467-4), CCR-BK-2 (180-90467-8), CCR-AP-7R (180-90467-13), (LCS 160-433455/1-A) and (MB 160-433455/23-A)

Method(s) 9320: Ra-228 Prep Batch 160-430398

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

FIELD BLANK 1 (180-90467-14), FIELD BLANK 2 (180-90467-15), BLIND DUPLICATE 1 (180-90467-16), BLIND DUPLICATE 2 (180-90467-17), (LCS 160-430398/1-A), (LCSD 160-430398/2-A) and (MB 160-430398/23-A)

Method(s) PrecSep_0: Radium 228 Prep Batch 160-430398:

Insufficient sample volume was available to perform a sample duplicate for the following samples: FIELD BLANK 1 (180-90467-14), FIELD BLANK 2 (180-90467-15), BLIND DUPLICATE 1 (180-90467-16) and BLIND DUPLICATE 2 (180-90467-17). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Method(s) PrecSep-21: Radium 226 Prep Batch 160-430329:

Insufficient sample volume was available to perform a sample duplicate for the following samples: FIELD BLANK 1 (180-90467-14), FIELD BLANK 2 (180-90467-15), BLIND DUPLICATE 1 (180-90467-16) and BLIND DUPLICATE 2 (180-90467-17). 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.

Metals

Method(s) 6020A: The continuing calibration verification (CCV) associated with batch 180-280271 recovered above the upper control limit for beryllium. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method(s) 6020A: The following samples were diluted due to high concentration of sodium in the sample matrix: CCR-LF-2

Case Narrative

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Job ID: 180-90467-1 (Continued)

Laboratory: Eurofins TestAmerica, Pittsburgh (Continued)

(180-90467-2), CCR-LF-2 (180-90467-2[MS]), CCR-LF-2 (180-90467-2[MSD]), CCR-LF-4 (180-90467-4), CCR-LF-5 (180-90467-5), CCR-AP-3R (180-90467-9), CCR-AP-5 (180-90467-11), CCR-AP-6 (180-90467-12), CCR-AP-7R (180-90467-13), BLIND DUPLICATE 1 (180-90467-16), BLIND DUPLICATE 2 (180-90467-17), (180-90467-E-2-A PDS ^10) and (180-90467-E-2-A SD ^50). Elevated reporting limits (RLs) are provided.

Method(s) 6020A: The post digestion spike % recovery for multiple analytes associated with batch 180-280395 was outside of control limits. The following sample is impacted: CCR-LF-2 (180-90467-2).

Method(s) 6020A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 180-280038 and analytical batch 180-280395 were outside control limits for barium. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

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

General Chemistry

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



Definitions/Glossary

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Qualifiers

HPLC/IC

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.

Metals

Qualifier	Qualifier Description
^	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.
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits
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.

Rad

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
U	Result is less than the sample detection limit.

Glossary

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

Accreditation/Certification Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Laboratory: Eurofins TestAmerica, Pittsburgh

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

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State Program	88-0690	06-27-20
California	State	2891	04-30-20
California	State Program	2891	04-30-20
Connecticut	State	PH-0688	09-30-20
Connecticut	State Program	PH-0688	09-30-20
Florida	NELAP	E871008	06-30-20
Illinois	NELAP	200005	06-30-20
Kansas	NELAP	E-10350	01-31-20
Kansas	NELAP	E-10350	03-31-20
Kentucky (UST)	State Program	162013	04-30-20
Kentucky (WW)	State Program	KY98043	12-31-19
Louisiana	NELAP	04041	06-30-20
Minnesota	NELAP	042-999-482	12-31-19
Nevada	State Program	PA00164	07-31-20
New Hampshire	NELAP	2030	04-04-20
New Jersey	NELAP	PA005	06-30-20
New York	NELAP	11182	03-31-20
New York	NELAP	11182	04-01-20
North Carolina (WW/SW)	State Program	434	12-31-19
North Dakota	State Program	R-227	04-30-20
Oregon	NELAP	PA-2151	02-06-20
Oregon	NELAP	PA-2151	02-06-20
Pennsylvania	NELAP	02-00416	04-30-20
Pennsylvania	NELAP	02-00416	06-04-19
Rhode Island	State Program	LAO00362	12-30-19
South Carolina	State Program	89014	04-30-20
Texas	NELAP	T104704528-15-2	03-31-20
US Fish & Wildlife	Federal	LE94312A-1	07-31-19
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	Federal	P-Soil-01	06-26-22
Utah	NELAP	PA001462015-4	05-31-20
Virginia	NELAP	460189	09-14-19
Virginia	NELAP	10043	09-14-19
West Virginia DEP	State	142	01-31-20
West Virginia DEP	State Program	142	01-31-20
Wisconsin	State	998027800	08-31-19
Wisconsin	State Program	998027800	08-31-19

Accreditation/Certification Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Laboratory: Eurofins TestAmerica, St. Louis

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

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	DoD	L2305	04-06-22
ANAB	DOE	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-19
Arizona	State Program	AZ0813	12-08-19
California	State	2886	06-30-20
California	State Program	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Connecticut	State Program	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
Florida	NELAP	E87689	06-30-20
Hawaii	State Program	NA	06-30-20
Illinois	NELAP	200023	11-30-19
Illinois	NELAP	004553	11-30-19
Iowa	State Program	373	12-01-20
Kansas	NELAP	E-10236	10-31-19
Kentucky (DW)	State	KY90125	12-31-19
Kentucky (DW)	State Program	KY90125	12-31-19
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	NELAP	LA011	12-31-19
Louisiana (DW)	State	LA011	12-31-19
Maryland	State	310	09-30-20
Maryland	State Program	310	09-30-20
Michigan	State Program	9005	06-30-20
Missouri	State	780	06-30-22
Missouri	State Program	780	06-30-20
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	03-31-20
New York	NELAP	11616	04-01-20
North Dakota	State	R-207	06-30-20
North Dakota	State Program	R207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-19
Oklahoma	State Program	9997	08-31-19 *
Pennsylvania	NELAP	68-00540	02-28-20
Pennsylvania	NELAP	68-00540	02-28-20
South Carolina	State Program	85002001	06-30-20
Texas	NELAP	T104704193-19-14	07-31-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	Federal	058448	07-31-20
USDA	Federal	P330-17-0028	02-02-20
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	460230	06-14-20
Virginia	NELAP	10310	06-14-20
Washington	State Program	C592	08-30-19
West Virginia DEP	State Program	381	08-31-19 *

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

Eurofins TestAmerica, Pittsburgh

Sample Summary

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
180-90467-1	CCR-LF-1	Water	05/20/19 15:00	05/23/19 09:00	
180-90467-2	CCR-LF-2	Water	05/22/19 13:20	05/23/19 09:00	
180-90467-3	CCR-LF-3	Water	05/20/19 13:35	05/23/19 09:00	
180-90467-4	CCR-LF-4	Water	05/21/19 13:05	05/23/19 09:00	
180-90467-5	CCR-LF-5	Water	05/20/19 11:55	05/23/19 09:00	
180-90467-6	CCR-LF-6	Water	05/20/19 12:45	05/23/19 09:00	
180-90467-7	CCR-BK-1R	Water	05/21/19 11:35	05/23/19 09:00	
180-90467-8	CCR-BK-2	Water	05/21/19 10:40	05/23/19 09:00	
180-90467-9	CCR-AP-3R	Water	05/22/19 14:15	05/23/19 09:00	
180-90467-10	CCR-AP-4R	Water	05/22/19 15:20	05/23/19 09:00	
180-90467-11	CCR-AP-5	Water	05/22/19 11:30	05/23/19 09:00	
180-90467-12	CCR-AP-6	Water	05/21/19 14:40	05/23/19 09:00	
180-90467-13	CCR-AP-7R	Water	05/21/19 16:00	05/23/19 09:00	
180-90467-14	FIELD BLANK 1	Water	05/20/19 15:15	05/23/19 09:00	
180-90467-15	FIELD BLANK 2	Water	05/21/19 14:50	05/23/19 09:00	
180-90467-16	BLIND DUPLICATE 1	Water	05/20/19 00:00	05/23/19 09:00	
180-90467-17	BLIND DUPLICATE 2	Water	05/22/19 00:00	05/23/19 09:00	

Method Summary

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Method	Method Description	Protocol	Laboratory
EPA 9056A	Anions, Ion Chromatography	SW846	TAL PIT
EPA 6020A	Metals (ICP/MS)	SW846	TAL PIT
EPA 7470A	Mercury (CVAA)	SW846	TAL PIT
EPA 9040C	pH	SW846	TAL PIT
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL PIT
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 PIT
7470A	Preparation, Mercury	SW846	TAL PIT
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 PIT = Eurofins TestAmerica, Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

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

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: CCR-LF-1

Lab Sample ID: 180-90467-1

Date Collected: 05/20/19 15:00

Matrix: Water

Date Received: 05/23/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A Instrument ID: CHIC2100A		1			280113	05/30/19 09:10	MJH	TAL PIT
Total/NA	Analysis	EPA 9056A Instrument ID: CHIC2100A		10			280113	05/30/19 09:25	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			280271	05/30/19 16:18	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			280395	05/31/19 16:47	RSK	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	280150	05/30/19 09:31	JJZ	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGY		1			280376	05/31/19 15:46	KAK	TAL PIT
Total/NA	Analysis	EPA 9040C Instrument ID: NOEQUIP		1			279863	05/28/19 14:27	RJP	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	279723	05/24/19 14:29	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.41 mL	1.0 g	433443	07/02/19 12:58	ORM	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			439859	08/19/19 14:05	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.41 mL	1.0 g	433455	07/02/19 14:27	ORM	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCPURPLE		1			439946	08/19/19 09:06	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			440111	08/21/19 08:50	SMP	TAL SL

Client Sample ID: CCR-LF-2

Lab Sample ID: 180-90467-2

Date Collected: 05/22/19 13:20

Matrix: Water

Date Received: 05/23/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2100B		25			280114	05/30/19 08:18	MJH	TAL PIT
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2100B		250			280114	05/30/19 08:34	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			280271	05/30/19 16:21	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		10			280395	05/31/19 16:50	RSK	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	280150	05/30/19 09:31	JJZ	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGY		1			280376	05/31/19 15:50	KAK	TAL PIT

Eurofins TestAmerica, Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: CCR-LF-2

Lab Sample ID: 180-90467-2

Date Collected: 05/22/19 13:20

Matrix: Water

Date Received: 05/23/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9040C		1			279863	05/28/19 14:21	RJP	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	5 mL	100 mL	279771	05/25/19 11:14	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.49 mL	1.0 g	433443	07/02/19 12:58	ORM	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCORANGE		1			439901	08/19/19 16:00	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.49 mL	1.0 g	433455	07/02/19 14:27	ORM	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCPURPLE		1			439946	08/19/19 09:06	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			440111	08/21/19 08:50	SMP	TAL SL

Client Sample ID: CCR-LF-3

Lab Sample ID: 180-90467-3

Date Collected: 05/20/19 13:35

Matrix: Water

Date Received: 05/23/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A Instrument ID: CHIC2100A		2.5			280113	05/30/19 10:43	MJH	TAL PIT
Total/NA	Analysis	EPA 9056A Instrument ID: CHIC2100A		25			280113	05/30/19 10:58	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			280271	05/30/19 16:38	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			280395	05/31/19 17:18	RSK	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	280150	05/30/19 09:31	JJZ	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGY		1			280376	05/31/19 15:54	KAK	TAL PIT
Total/NA	Analysis	EPA 9040C Instrument ID: NOEQUIP		1			279863	05/28/19 14:29	RJP	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	50 mL	100 mL	279723	05/24/19 14:29	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.17 mL	1.0 g	430235	05/30/19 10:35	ORM	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			439426	08/13/19 21:11	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.17 mL	1.0 g	430397	05/31/19 10:52	ORM	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCBLUE		1			435974	07/23/19 14:32	AMJ	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			440111	08/21/19 08:50	SMP	TAL SL

Eurofins TestAmerica, Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: CCR-LF-4

Lab Sample ID: 180-90467-4

Date Collected: 05/21/19 13:05

Matrix: Water

Date Received: 05/23/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A Instrument ID: CHIC2100A		10			280113	05/30/19 15:50	MJH	TAL PIT
Total/NA	Analysis	EPA 9056A Instrument ID: CHIC2100A		100			280113	05/30/19 16:05	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			280271	05/30/19 16:41	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		10			280395	05/31/19 17:21	RSK	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	280150	05/30/19 09:31	JJZ	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGY		1			280376	05/31/19 15:55	KAK	TAL PIT
Total/NA	Analysis	EPA 9040C Instrument ID: NOEQUIP		1			279863	05/28/19 14:31	RJP	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	10 mL	100 mL	279730	05/24/19 15:09	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.56 mL	1.0 g	433443	07/02/19 12:58	ORM	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCORANGE		1			439901	08/19/19 16:01	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.56 mL	1.0 g	433455	07/02/19 14:27	ORM	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCPURPLE		1			439946	08/19/19 09:06	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			440111	08/21/19 08:50	SMP	TAL SL

Client Sample ID: CCR-LF-5

Lab Sample ID: 180-90467-5

Date Collected: 05/20/19 11:55

Matrix: Water

Date Received: 05/23/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A Instrument ID: CHIC2100A		5			280113	05/30/19 12:15	MJH	TAL PIT
Total/NA	Analysis	EPA 9056A Instrument ID: CHIC2100A		50			280113	05/30/19 12:30	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			280271	05/30/19 16:44	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		10			280395	05/31/19 17:24	RSK	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	280150	05/30/19 09:31	JJZ	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGY		1			280376	05/31/19 15:56	KAK	TAL PIT

Eurofins TestAmerica, Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: CCR-LF-5

Lab Sample ID: 180-90467-5

Date Collected: 05/20/19 11:55

Matrix: Water

Date Received: 05/23/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9040C		1			279863	05/28/19 14:32	RJP	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	25 mL	100 mL	279723	05/24/19 14:29	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.27 mL	1.0 g	430235	05/30/19 10:35	ORM	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCPURPLE		1	1.0 mL	1.0 mL	439394	08/13/19 21:09	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.27 mL	1.0 g	430397	05/31/19 10:52	ORM	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCBLUE		1			435974	07/23/19 14:32	AMJ	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			440111	08/21/19 08:50	SMP	TAL SL

Client Sample ID: CCR-LF-6

Lab Sample ID: 180-90467-6

Date Collected: 05/20/19 12:45

Matrix: Water

Date Received: 05/23/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A Instrument ID: CHIC2100A		1			280113	05/30/19 09:40	MJH	TAL PIT
Total/NA	Analysis	EPA 9056A Instrument ID: CHIC2100A		10			280113	05/30/19 09:55	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			280271	05/30/19 16:55	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			280395	05/31/19 17:28	RSK	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	280150	05/30/19 09:31	JJZ	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGY		1			280376	05/31/19 15:57	KAK	TAL PIT
Total/NA	Analysis	EPA 9040C Instrument ID: NOEQUIP		1			279863	05/28/19 14:34	RJP	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	279723	05/24/19 14:29	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.03 mL	1.0 g	430235	05/30/19 10:35	ORM	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCPURPLE		1			439394	08/13/19 21:09	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.03 mL	1.0 g	430397	05/31/19 10:52	ORM	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCBLUE		1			435974	07/23/19 14:33	AMJ	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			440111	08/21/19 08:50	SMP	TAL SL

Eurofins TestAmerica, Pittsburgh

Lab Chronicle

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: CCR-BK-1R

Lab Sample ID: 180-90467-7

Date Collected: 05/21/19 11:35

Matrix: Water

Date Received: 05/23/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		1			280114	05/30/19 11:40	MJH	TAL PIT
		Instrument ID: CHICS2100B								
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			280271	05/30/19 16:58	RSK	TAL PIT
		Instrument ID: A								
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			280395	05/31/19 17:31	RSK	TAL PIT
		Instrument ID: A								
Total/NA	Prep	7470A			50 mL	50 mL	280150	05/30/19 09:31	JJZ	TAL PIT
Total/NA	Analysis	EPA 7470A		1			280376	05/31/19 15:59	KAK	TAL PIT
		Instrument ID: HGY								
Total/NA	Analysis	EPA 9040C		1			279863	05/28/19 14:36	RJP	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	279730	05/24/19 15:09	AVS	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Prep	PrecSep-21			1000.45 mL	1.0 g	430235	05/30/19 10:35	ORM	TAL SL
Total/NA	Analysis	9315		1			439426	08/13/19 22:59	CDR	TAL SL
		Instrument ID: GFPCBLUE								
Total/NA	Prep	PrecSep_0			1000.45 mL	1.0 g	430397	05/31/19 10:52	ORM	TAL SL
Total/NA	Analysis	9320		1			435974	07/23/19 14:33	AMJ	TAL SL
		Instrument ID: GFPCBLUE								
Total/NA	Analysis	Ra226_Ra228		1			440111	08/21/19 08:50	SMP	TAL SL
		Instrument ID: NOEQUIP								

Client Sample ID: CCR-BK-2

Lab Sample ID: 180-90467-8

Date Collected: 05/21/19 10:40

Matrix: Water

Date Received: 05/23/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		1			280114	05/30/19 11:24	MJH	TAL PIT
		Instrument ID: CHICS2100B								
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			280271	05/30/19 17:01	RSK	TAL PIT
		Instrument ID: A								
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			280395	05/31/19 17:34	RSK	TAL PIT
		Instrument ID: A								
Total/NA	Prep	7470A			50 mL	50 mL	280150	05/30/19 09:31	JJZ	TAL PIT
Total/NA	Analysis	EPA 7470A		1			280376	05/31/19 16:00	KAK	TAL PIT
		Instrument ID: HGY								
Total/NA	Analysis	EPA 9040C		1			279863	05/28/19 14:38	RJP	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	279730	05/24/19 15:09	AVS	TAL PIT
		Instrument ID: NOEQUIP								

Eurofins TestAmerica, Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: CCR-BK-2

Lab Sample ID: 180-90467-8

Date Collected: 05/21/19 10:40

Matrix: Water

Date Received: 05/23/19 09:00

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			1000.31 mL	1.0 g	433443	07/02/19 12:58	ORM	TAL SL
Total/NA	Analysis	9315		1			439859	08/19/19 16:02	CDR	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Prep	PrecSep_0			1000.31 mL	1.0 g	433455	07/02/19 14:27	ORM	TAL SL
Total/NA	Analysis	9320		1			439946	08/19/19 09:06	CDR	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			440111	08/21/19 08:50	SMP	TAL SL
Instrument ID: NOEQUIP										

Client Sample ID: CCR-AP-3R

Lab Sample ID: 180-90467-9

Date Collected: 05/22/19 14:15

Matrix: Water

Date Received: 05/23/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		5			280113	05/30/19 15:19	MJH	TAL PIT
Instrument ID: CHIC2100A										
Total/NA	Analysis	EPA 9056A		50			280113	05/30/19 15:35	MJH	TAL PIT
Instrument ID: CHIC2100A										
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			280271	05/30/19 17:05	RSK	TAL PIT
Instrument ID: A										
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		10			280395	05/31/19 17:45	RSK	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	280150	05/30/19 09:31	JJZ	TAL PIT
Total/NA	Analysis	EPA 7470A		1			280376	05/31/19 16:01	KAK	TAL PIT
Instrument ID: HGY										
Total/NA	Analysis	EPA 9040C		1			279863	05/28/19 14:40	RJP	TAL PIT
Instrument ID: NOEQUIP										
Total/NA	Analysis	SM 2540C		1	20 mL	100 mL	279771	05/25/19 11:14	AVS	TAL PIT
Instrument ID: NOEQUIP										
Total/NA	Prep	PrecSep-21			1000.21 mL	1.0 g	430235	05/30/19 10:35	ORM	TAL SL
Total/NA	Analysis	9315		1			439426	08/13/19 23:00	CDR	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Prep	PrecSep_0			1000.21 mL	1.0 g	430397	05/31/19 10:52	ORM	TAL SL
Total/NA	Analysis	9320		1			435974	07/23/19 14:33	AMJ	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228		1			440111	08/21/19 08:50	SMP	TAL SL
Instrument ID: NOEQUIP										

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: CCR-AP-4R

Lab Sample ID: 180-90467-10

Date Collected: 05/22/19 15:20

Matrix: Water

Date Received: 05/23/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A Instrument ID: CHIC2100A		1			280113	05/30/19 10:11	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			280271	05/30/19 17:08	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			280395	05/31/19 17:55	RSK	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	280150	05/30/19 09:31	JJZ	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGY		1			280376	05/31/19 16:06	KAK	TAL PIT
Total/NA	Analysis	EPA 9040C Instrument ID: NOEQUIP		1			279863	05/28/19 14:43	RJP	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	279771	05/25/19 11:14	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.00 mL	1.0 g	430235	05/30/19 10:35	ORM	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			439426	08/13/19 23:00	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.00 mL	1.0 g	430397	05/31/19 10:52	ORM	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCBLUE		1			435974	07/23/19 14:33	AMJ	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			440111	08/21/19 08:50	SMP	TAL SL

Client Sample ID: CCR-AP-5

Lab Sample ID: 180-90467-11

Date Collected: 05/22/19 11:30

Matrix: Water

Date Received: 05/23/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A Instrument ID: CHIC2100A		5			280113	05/30/19 12:45	MJH	TAL PIT
Total/NA	Analysis	EPA 9056A Instrument ID: CHIC2100A		50			280113	05/30/19 13:01	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			280271	05/30/19 17:11	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		10			280395	05/31/19 17:58	RSK	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	280150	05/30/19 09:31	JJZ	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGY		1			280376	05/31/19 16:07	KAK	TAL PIT
Total/NA	Analysis	EPA 9040C Instrument ID: NOEQUIP		1			279863	05/28/19 14:47	RJP	TAL PIT

Eurofins TestAmerica, Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: CCR-AP-5

Lab Sample ID: 180-90467-11

Date Collected: 05/22/19 11:30

Matrix: Water

Date Received: 05/23/19 09:00

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	25 mL	100 mL	279771	05/25/19 11:14	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.23 mL	1.0 g	430235	05/30/19 10:35	ORM	TAL SL
Total/NA	Analysis	9315		1			439426	08/13/19 23:00	CDR	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Prep	PrecSep_0			1000.23 mL	1.0 g	430397	05/31/19 10:52	ORM	TAL SL
Total/NA	Analysis	9320		1			435974	07/23/19 14:33	AMJ	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228		1			440111	08/21/19 08:50	SMP	TAL SL
Instrument ID: NOEQUIP										

Client Sample ID: CCR-AP-6

Lab Sample ID: 180-90467-12

Date Collected: 05/21/19 14:40

Matrix: Water

Date Received: 05/23/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		2.5			280113	05/30/19 11:44	MJH	TAL PIT
Instrument ID: CHIC2100A										
Total/NA	Analysis	EPA 9056A		25			280113	05/30/19 11:59	MJH	TAL PIT
Instrument ID: CHIC2100A										
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			280271	05/30/19 17:15	RSK	TAL PIT
Instrument ID: A										
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		10			280395	05/31/19 18:02	RSK	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	280150	05/30/19 09:31	JJZ	TAL PIT
Total/NA	Analysis	EPA 7470A		1			280376	05/31/19 16:08	KAK	TAL PIT
Instrument ID: HGY										
Total/NA	Analysis	EPA 9040C		1			279863	05/28/19 14:49	RJP	TAL PIT
Instrument ID: NOEQUIP										
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	279730	05/24/19 15:09	AVS	TAL PIT
Instrument ID: NOEQUIP										
Total/NA	Prep	PrecSep-21			1000.54 mL	1.0 g	430235	05/30/19 10:35	ORM	TAL SL
Total/NA	Analysis	9315		1			439521	08/14/19 06:57	KLS	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Prep	PrecSep_0			1000.54 mL	1.0 g	430397	05/31/19 10:52	ORM	TAL SL
Total/NA	Analysis	9320		1			435974	07/23/19 14:33	AMJ	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228		1			440111	08/21/19 08:50	SMP	TAL SL
Instrument ID: NOEQUIP										

Eurofins TestAmerica, Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: CCR-AP-7R

Lab Sample ID: 180-90467-13

Date Collected: 05/21/19 16:00

Matrix: Water

Date Received: 05/23/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A Instrument ID: CHIC2100A		5			280113	05/30/19 13:16	MJH	TAL PIT
Total/NA	Analysis	EPA 9056A Instrument ID: CHIC2100A		50			280113	05/30/19 13:31	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			280271	05/30/19 17:18	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		10			280395	05/31/19 18:05	RSK	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	280150	05/30/19 09:31	JJZ	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGY		1			280376	05/31/19 16:09	KAK	TAL PIT
Total/NA	Analysis	EPA 9040C Instrument ID: NOEQUIP		1			279863	05/28/19 14:51	RJP	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	25 mL	100 mL	279730	05/24/19 15:09	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.71 mL	1.0 g	433443	07/02/19 12:58	ORM	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			439859	08/19/19 16:02	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.71 mL	1.0 g	433455	07/02/19 14:27	ORM	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCPURPLE		1	1.0 mL	1.0 mL	439946	08/19/19 09:07	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			440111	08/21/19 08:50	SMP	TAL SL

Client Sample ID: FIELD BLANK 1

Lab Sample ID: 180-90467-14

Date Collected: 05/20/19 15:15

Matrix: Water

Date Received: 05/23/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2100B		1			280114	05/30/19 07:46	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			280271	05/30/19 17:21	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			280395	05/31/19 18:08	RSK	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	280150	05/30/19 09:31	JJZ	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGY		1			280376	05/31/19 16:11	KAK	TAL PIT
Total/NA	Analysis	EPA 9040C Instrument ID: NOEQUIP		1			279863	05/28/19 14:53	RJP	TAL PIT

Eurofins TestAmerica, Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: FIELD BLANK 1

Lab Sample ID: 180-90467-14

Date Collected: 05/20/19 15:15

Matrix: Water

Date Received: 05/23/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	279723	05/24/19 14:29	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.84 mL	1.0 g	430329	05/31/19 08:57	EJQ	TAL SL
Total/NA	Analysis	9315		1			440197	08/22/19 12:21	KLS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			1000.84 mL	1.0 g	430398	05/31/19 10:52	EJQ	TAL SL
Total/NA	Analysis	9320		1			440196	08/22/19 09:04	KLS	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Analysis	Ra226_Ra228		1			441084	08/28/19 12:52	SMP	TAL SL
Instrument ID: NOEQUIP										

Client Sample ID: FIELD BLANK 2

Lab Sample ID: 180-90467-15

Date Collected: 05/21/19 14:50

Matrix: Water

Date Received: 05/23/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		1	1 mL	1.0 mL	280114	05/30/19 08:02	MJH	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			280271	05/30/19 17:25	RSK	TAL PIT
Instrument ID: A										
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			280395	05/31/19 18:12	RSK	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	280150	05/30/19 09:31	JJZ	TAL PIT
Total/NA	Analysis	EPA 7470A		1			280376	05/31/19 16:12	KAK	TAL PIT
Instrument ID: HGY										
Total/NA	Analysis	EPA 9040C		1			279863	05/28/19 14:54	RJP	TAL PIT
Instrument ID: NOEQUIP										
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	279723	05/24/19 14:29	AVS	TAL PIT
Instrument ID: NOEQUIP										
Total/NA	Prep	PrecSep-21			1000.76 mL	1.0 g	430329	05/31/19 08:57	EJQ	TAL SL
Total/NA	Analysis	9315		1			440198	08/22/19 12:23	KLS	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Prep	PrecSep_0			1000.76 mL	1.0 g	430398	05/31/19 10:52	EJQ	TAL SL
Total/NA	Analysis	9320		1			440196	08/22/19 09:04	KLS	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Analysis	Ra226_Ra228		1			441084	08/28/19 12:52	SMP	TAL SL
Instrument ID: NOEQUIP										

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: BLIND DUPLICATE 1

Lab Sample ID: 180-90467-16

Date Collected: 05/20/19 00:00

Matrix: Water

Date Received: 05/23/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A Instrument ID: CHIC2100A		5			280113	05/30/19 13:47	MJH	TAL PIT
Total/NA	Analysis	EPA 9056A Instrument ID: CHIC2100A		50			280113	05/30/19 14:02	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			280271	05/30/19 17:35	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		10			280395	05/31/19 18:15	RSK	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	280150	05/30/19 09:31	JJZ	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGY		1			280376	05/31/19 16:13	KAK	TAL PIT
Total/NA	Analysis	EPA 9040C Instrument ID: NOEQUIP		1			279863	05/28/19 14:56	RJP	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	25 mL	100 mL	279723	05/24/19 14:29	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.46 mL	1.0 g	430329	05/31/19 08:57	EJQ	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			440198	08/22/19 12:23	KLS	TAL SL
Total/NA	Prep	PrecSep_0			1000.46 mL	1.0 g	430398	05/31/19 10:52	EJQ	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			440196	08/22/19 09:05	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			441084	08/28/19 12:52	SMP	TAL SL

Client Sample ID: BLIND DUPLICATE 2

Lab Sample ID: 180-90467-17

Date Collected: 05/22/19 00:00

Matrix: Water

Date Received: 05/23/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A Instrument ID: CHIC2100A		5			280113	05/30/19 14:48	MJH	TAL PIT
Total/NA	Analysis	EPA 9056A Instrument ID: CHIC2100A		50			280113	05/30/19 15:03	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			280271	05/30/19 17:39	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	280038	05/29/19 11:24	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		10			280395	05/31/19 18:19	RSK	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	280150	05/30/19 09:31	JJZ	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGY		1			280376	05/31/19 16:14	KAK	TAL PIT

Eurofins TestAmerica, Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: BLIND DUPLICATE 2

Lab Sample ID: 180-90467-17

Date Collected: 05/22/19 00:00

Matrix: Water

Date Received: 05/23/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9040C		1			279863	05/28/19 14:58	RJP	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	25 mL	100 mL	279771	05/25/19 11:14	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.74 mL	1.0 g	430329	05/31/19 08:57	EJQ	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			440198	08/22/19 12:23	KLS	TAL SL
Total/NA	Prep	PrecSep_0			1000.74 mL	1.0 g	430398	05/31/19 10:52	EJQ	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			440196	08/22/19 09:05	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			441084	08/28/19 12:52	SMP	TAL SL

Laboratory References:

TAL PIT = Eurofins TestAmerica, Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

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

Analyst References:

Lab: TAL PIT

Batch Type: Prep

JJZ = Joseph Zubrow

NAM = Nicole Marfisi

Batch Type: Analysis

AVS = Abbey Smith

KAK = Kayla Kalamasz

MJH = Matthew Hartman

RJP = Rockwell Pokrant

RSK = Robert Kurtz

Lab: TAL SL

Batch Type: Prep

EJQ = Erin Quinn

ORM = Octavia Moore

Batch Type: Analysis

AMJ = Ashay Jefferson

CDR = Conrad Reuscher

KLS = Kody Saulters

SMP = Siobhan Perry

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: CCR-LF-1

Lab Sample ID: 180-90467-1

Date Collected: 05/20/19 15:00

Matrix: Water

Date Received: 05/23/19 09:00

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	23		1.0	0.71	mg/L			05/30/19 09:10	1
Fluoride	0.21		0.10	0.026	mg/L			05/30/19 09:10	1
Sulfate	1100		10	3.8	mg/L			05/30/19 09:25	10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00039	J	0.0010	0.00032	mg/L		05/29/19 11:24	05/31/19 16:47	1
Boron	0.034	J	0.080	0.030	mg/L		05/29/19 11:24	05/31/19 16:47	1
Barium	0.029		0.010	0.0015	mg/L		05/29/19 11:24	05/30/19 16:18	1
Beryllium	ND	^	0.0010	0.00016	mg/L		05/29/19 11:24	05/30/19 16:18	1
Calcium	290		0.50	0.12	mg/L		05/29/19 11:24	05/30/19 16:18	1
Cadmium	ND		0.0010	0.00013	mg/L		05/29/19 11:24	05/30/19 16:18	1
Cobalt	0.00020	J	0.00050	0.000075	mg/L		05/29/19 11:24	05/30/19 16:18	1
Chromium	ND		0.0020	0.0015	mg/L		05/29/19 11:24	05/30/19 16:18	1
Molybdenum	0.00090	J	0.0050	0.00061	mg/L		05/29/19 11:24	05/30/19 16:18	1
Lead	ND		0.0010	0.00013	mg/L		05/29/19 11:24	05/30/19 16:18	1
Antimony	ND		0.0020	0.00038	mg/L		05/29/19 11:24	05/30/19 16:18	1
Selenium	ND		0.0050	0.0026	mg/L		05/29/19 11:24	05/30/19 16:18	1
Thallium	ND		0.0010	0.00013	mg/L		05/29/19 11:24	05/30/19 16:18	1
Lithium	5.9		5.0	3.1	ug/L		05/29/19 11:24	05/30/19 16:18	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00010	mg/L		05/30/19 09:31	05/31/19 15:46	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	1900		10	10	mg/L			05/24/19 14:29	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.1	HF	0.1	0.1	SU			05/28/19 14:27	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.000	U	0.172	0.172	1.00	0.355	pCi/L	07/02/19 12:58	08/19/19 14:05	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.1		40 - 110					07/02/19 12:58	08/19/19 14:05	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.466		0.277	0.281	1.00	0.422	pCi/L	07/02/19 14:27	08/19/19 09:06	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.1		40 - 110					07/02/19 14:27	08/19/19 09:06	1
Y Carrier	86.4		40 - 110					07/02/19 14:27	08/19/19 09:06	1

Eurofins TestAmerica, Pittsburgh

Client Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: CCR-LF-1

Lab Sample ID: 180-90467-1

Date Collected: 05/20/19 15:00

Matrix: Water

Date Received: 05/23/19 09:00

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.466		0.326	0.329	5.00	0.422	pCi/L		08/21/19 08:50	1

Client Sample ID: CCR-LF-2

Lab Sample ID: 180-90467-2

Date Collected: 05/22/19 13:20

Matrix: Water

Date Received: 05/23/19 09:00

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	390		25	18	mg/L			05/30/19 08:18	25
Fluoride	ND		2.5	0.66	mg/L			05/30/19 08:18	25
Sulfate	15000		250	95	mg/L			05/30/19 08:34	250

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.010	0.0032	mg/L		05/29/19 11:24	05/31/19 16:50	10
Boron	5.4		0.80	0.30	mg/L		05/29/19 11:24	05/31/19 16:50	10
Barium	ND	F2 F1	0.10	0.015	mg/L		05/29/19 11:24	05/31/19 16:50	10
Beryllium	ND	^	0.0010	0.00016	mg/L		05/29/19 11:24	05/30/19 16:21	1
Calcium	420		5.0	1.2	mg/L		05/29/19 11:24	05/31/19 16:50	10
Cadmium	0.0044	J	0.010	0.0013	mg/L		05/29/19 11:24	05/31/19 16:50	10
Cobalt	0.0098		0.0050	0.00075	mg/L		05/29/19 11:24	05/31/19 16:50	10
Chromium	ND		0.020	0.015	mg/L		05/29/19 11:24	05/31/19 16:50	10
Molybdenum	ND		0.050	0.0061	mg/L		05/29/19 11:24	05/31/19 16:50	10
Lead	ND		0.010	0.0013	mg/L		05/29/19 11:24	05/31/19 16:50	10
Antimony	ND		0.020	0.0038	mg/L		05/29/19 11:24	05/31/19 16:50	10
Selenium	ND		0.050	0.026	mg/L		05/29/19 11:24	05/31/19 16:50	10
Thallium	ND		0.010	0.0013	mg/L		05/29/19 11:24	05/31/19 16:50	10
Lithium	ND		50	31	ug/L		05/29/19 11:24	05/31/19 16:50	10

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00010	mg/L		05/30/19 09:31	05/31/19 15:50	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	21000		200	200	mg/L			05/25/19 11:14	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.8	HF	0.1	0.1	SU			05/28/19 14:21	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.593		0.290	0.295	1.00	0.360	pCi/L	07/02/19 12:58	08/19/19 16:00	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.1		40 - 110					07/02/19 12:58	08/19/19 16:00	1

Eurofins TestAmerica, Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: CCR-LF-2

Lab Sample ID: 180-90467-2

Date Collected: 05/22/19 13:20

Matrix: Water

Date Received: 05/23/19 09:00

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	2.31		0.418	0.469	1.00	0.465	pCi/L	07/02/19 14:27	08/19/19 09:06	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.1		40 - 110					07/02/19 14:27	08/19/19 09:06	1
Y Carrier	85.2		40 - 110					07/02/19 14:27	08/19/19 09:06	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	2.90		0.509	0.554	5.00	0.465	pCi/L		08/21/19 08:50	1

Client Sample ID: CCR-LF-3

Lab Sample ID: 180-90467-3

Date Collected: 05/20/19 13:35

Matrix: Water

Date Received: 05/23/19 09:00

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	98		2.5	1.8	mg/L			05/30/19 10:43	2.5
Fluoride	0.34		0.25	0.066	mg/L			05/30/19 10:43	2.5
Sulfate	1600		25	9.5	mg/L			05/30/19 10:58	25

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00037	J	0.0010	0.00032	mg/L		05/29/19 11:24	05/31/19 17:18	1
Boron	0.13		0.080	0.030	mg/L		05/29/19 11:24	05/31/19 17:18	1
Barium	0.019		0.010	0.0015	mg/L		05/29/19 11:24	05/30/19 16:38	1
Beryllium	ND	^	0.0010	0.00016	mg/L		05/29/19 11:24	05/30/19 16:38	1
Calcium	350		0.50	0.12	mg/L		05/29/19 11:24	05/30/19 16:38	1
Cadmium	ND		0.0010	0.00013	mg/L		05/29/19 11:24	05/30/19 16:38	1
Cobalt	0.00028	J	0.00050	0.000075	mg/L		05/29/19 11:24	05/30/19 16:38	1
Chromium	0.0025		0.0020	0.0015	mg/L		05/29/19 11:24	05/30/19 16:38	1
Molybdenum	0.0056		0.0050	0.00061	mg/L		05/29/19 11:24	05/30/19 16:38	1
Lead	ND		0.0010	0.00013	mg/L		05/29/19 11:24	05/30/19 16:38	1
Antimony	ND		0.0020	0.00038	mg/L		05/29/19 11:24	05/30/19 16:38	1
Selenium	ND		0.0050	0.0026	mg/L		05/29/19 11:24	05/30/19 16:38	1
Thallium	ND		0.0010	0.00013	mg/L		05/29/19 11:24	05/30/19 16:38	1
Lithium	7.4		5.0	3.1	ug/L		05/29/19 11:24	05/30/19 16:38	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00010	mg/L		05/30/19 09:31	05/31/19 15:54	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	2800		20	20	mg/L			05/24/19 14:29	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.4	HF	0.1	0.1	SU			05/28/19 14:29	1

Eurofins TestAmerica, Pittsburgh

Client Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: CCR-LF-3

Lab Sample ID: 180-90467-3

Date Collected: 05/20/19 13:35

Matrix: Water

Date Received: 05/23/19 09:00

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.196		0.0937	0.0954	1.00	0.118	pCi/L	05/30/19 10:35	08/13/19 21:11	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.7		40 - 110					05/30/19 10:35	08/13/19 21:11	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.105	U *	0.333	0.333	1.00	0.578	pCi/L	05/31/19 10:52	07/23/19 14:32	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.7		40 - 110					05/31/19 10:52	07/23/19 14:32	1
Y Carrier	68.0		40 - 110					05/31/19 10:52	07/23/19 14:32	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.301	U	0.346	0.346	5.00	0.578	pCi/L		08/21/19 08:50	1

Client Sample ID: CCR-LF-4

Lab Sample ID: 180-90467-4

Date Collected: 05/21/19 13:05

Matrix: Water

Date Received: 05/23/19 09:00

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	120		10	7.1	mg/L			05/30/19 15:50	10
Fluoride	0.34	J	1.0	0.26	mg/L			05/30/19 15:50	10
Sulfate	7900		100	38	mg/L			05/30/19 16:05	100

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.017		0.010	0.0032	mg/L		05/29/19 11:24	05/31/19 17:21	10
Boron	ND		0.80	0.30	mg/L		05/29/19 11:24	05/31/19 17:21	10
Barium	ND		0.10	0.015	mg/L		05/29/19 11:24	05/31/19 17:21	10
Beryllium	ND	^	0.0010	0.00016	mg/L		05/29/19 11:24	05/30/19 16:41	1
Calcium	370		5.0	1.2	mg/L		05/29/19 11:24	05/31/19 17:21	10
Cadmium	ND		0.010	0.0013	mg/L		05/29/19 11:24	05/31/19 17:21	10
Cobalt	0.0014	J	0.0050	0.00075	mg/L		05/29/19 11:24	05/31/19 17:21	10
Chromium	ND		0.020	0.015	mg/L		05/29/19 11:24	05/31/19 17:21	10
Molybdenum	0.021	J	0.050	0.0061	mg/L		05/29/19 11:24	05/31/19 17:21	10
Lead	ND		0.010	0.0013	mg/L		05/29/19 11:24	05/31/19 17:21	10
Antimony	ND		0.020	0.0038	mg/L		05/29/19 11:24	05/31/19 17:21	10
Selenium	ND		0.050	0.026	mg/L		05/29/19 11:24	05/31/19 17:21	10
Thallium	ND		0.010	0.0013	mg/L		05/29/19 11:24	05/31/19 17:21	10
Lithium	74		50	31	ug/L		05/29/19 11:24	05/31/19 17:21	10

Eurofins TestAmerica, Pittsburgh

Client Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: CCR-LF-4

Lab Sample ID: 180-90467-4

Date Collected: 05/21/19 13:05

Matrix: Water

Date Received: 05/23/19 09:00

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00010	mg/L		05/30/19 09:31	05/31/19 15:55	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	10000		100	100	mg/L			05/24/19 15:09	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.9	HF	0.1	0.1	SU			05/28/19 14:31	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	1.61		0.422	0.446	1.00	0.353	pCi/L	07/02/19 12:58	08/19/19 16:01	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	81.9		40 - 110	07/02/19 12:58	08/19/19 16:01	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.50		0.386	0.410	1.00	0.472	pCi/L	07/02/19 14:27	08/19/19 09:06	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	81.9		40 - 110	07/02/19 14:27	08/19/19 09:06	1
Y Carrier	80.4		40 - 110	07/02/19 14:27	08/19/19 09:06	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	3.11		0.572	0.606	5.00	0.472	pCi/L		08/21/19 08:50	1

Client Sample ID: CCR-LF-5

Lab Sample ID: 180-90467-5

Date Collected: 05/20/19 11:55

Matrix: Water

Date Received: 05/23/19 09:00

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	460		5.0	3.6	mg/L			05/30/19 12:15	5
Fluoride	0.34	J	0.50	0.13	mg/L			05/30/19 12:15	5
Sulfate	3000		50	19	mg/L			05/30/19 12:30	50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.010	0.0032	mg/L		05/29/19 11:24	05/31/19 17:24	10
Boron	1.9		0.80	0.30	mg/L		05/29/19 11:24	05/31/19 17:24	10
Barium	0.023	J	0.10	0.015	mg/L		05/29/19 11:24	05/31/19 17:24	10
Beryllium	ND	^	0.0010	0.00016	mg/L		05/29/19 11:24	05/30/19 16:44	1
Calcium	430		5.0	1.2	mg/L		05/29/19 11:24	05/31/19 17:24	10
Cadmium	ND		0.010	0.0013	mg/L		05/29/19 11:24	05/31/19 17:24	10

Eurofins TestAmerica, Pittsburgh

Client Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: CCR-LF-5

Lab Sample ID: 180-90467-5

Date Collected: 05/20/19 11:55

Matrix: Water

Date Received: 05/23/19 09:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	ND		0.0050	0.00075	mg/L		05/29/19 11:24	05/31/19 17:24	10
Chromium	ND		0.020	0.015	mg/L		05/29/19 11:24	05/31/19 17:24	10
Molybdenum	ND		0.050	0.0061	mg/L		05/29/19 11:24	05/31/19 17:24	10
Lead	ND		0.010	0.0013	mg/L		05/29/19 11:24	05/31/19 17:24	10
Antimony	ND		0.020	0.0038	mg/L		05/29/19 11:24	05/31/19 17:24	10
Selenium	ND		0.050	0.026	mg/L		05/29/19 11:24	05/31/19 17:24	10
Thallium	ND		0.010	0.0013	mg/L		05/29/19 11:24	05/31/19 17:24	10
Lithium	ND		50	31	ug/L		05/29/19 11:24	05/31/19 17:24	10

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00010	mg/L		05/30/19 09:31	05/31/19 15:56	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	5400		40	40	mg/L			05/24/19 14:29	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.2	HF	0.1	0.1	SU			05/28/19 14:32	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0326	U	0.0577	0.0578	1.00	0.101	pCi/L	05/30/19 10:35	08/13/19 21:09	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	98.3		40 - 110	05/30/19 10:35	08/13/19 21:09	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0605	U *	0.273	0.273	1.00	0.480	pCi/L	05/31/19 10:52	07/23/19 14:32	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	98.3		40 - 110	05/31/19 10:52	07/23/19 14:32	1
Y Carrier	74.0		40 - 110	05/31/19 10:52	07/23/19 14:32	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0931	U	0.279	0.279	5.00	0.480	pCi/L		08/21/19 08:50	1

Client Sample ID: CCR-LF-6

Lab Sample ID: 180-90467-6

Date Collected: 05/20/19 12:45

Matrix: Water

Date Received: 05/23/19 09:00

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	35		1.0	0.71	mg/L			05/30/19 09:40	1

Eurofins TestAmerica, Pittsburgh

Client Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: CCR-LF-6

Lab Sample ID: 180-90467-6

Date Collected: 05/20/19 12:45

Matrix: Water

Date Received: 05/23/19 09:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.34		0.10	0.026	mg/L			05/30/19 09:40	1
Sulfate	730		10	3.8	mg/L			05/30/19 09:55	10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0010	0.00032	mg/L		05/29/19 11:24	05/31/19 17:28	1
Boron	0.73		0.080	0.030	mg/L		05/29/19 11:24	05/31/19 17:28	1
Barium	0.016		0.010	0.0015	mg/L		05/29/19 11:24	05/30/19 16:55	1
Beryllium	ND	^	0.0010	0.00016	mg/L		05/29/19 11:24	05/30/19 16:55	1
Calcium	260		0.50	0.12	mg/L		05/29/19 11:24	05/30/19 16:55	1
Cadmium	0.00019	J	0.0010	0.00013	mg/L		05/29/19 11:24	05/30/19 16:55	1
Cobalt	0.00027	J	0.00050	0.000075	mg/L		05/29/19 11:24	05/30/19 16:55	1
Chromium	ND		0.0020	0.0015	mg/L		05/29/19 11:24	05/30/19 16:55	1
Molybdenum	0.00061	J	0.0050	0.00061	mg/L		05/29/19 11:24	05/30/19 16:55	1
Lead	ND		0.0010	0.00013	mg/L		05/29/19 11:24	05/30/19 16:55	1
Antimony	ND		0.0020	0.00038	mg/L		05/29/19 11:24	05/30/19 16:55	1
Selenium	ND		0.0050	0.0026	mg/L		05/29/19 11:24	05/30/19 16:55	1
Thallium	ND		0.0010	0.00013	mg/L		05/29/19 11:24	05/30/19 16:55	1
Lithium	19		5.0	3.1	ug/L		05/29/19 11:24	05/30/19 16:55	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00010	mg/L		05/30/19 09:31	05/31/19 15:57	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	1500		10	10	mg/L			05/24/19 14:29	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.3	HF	0.1	0.1	SU			05/28/19 14:34	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.144		0.0785	0.0796	1.00	0.103	pCi/L	05/30/19 10:35	08/13/19 21:09	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	92.9		40 - 110	05/30/19 10:35	08/13/19 21:09	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.129	U*	0.290	0.290	1.00	0.498	pCi/L	05/31/19 10:52	07/23/19 14:33	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	92.9		40 - 110	05/31/19 10:52	07/23/19 14:33	1
Y Carrier	75.9		40 - 110	05/31/19 10:52	07/23/19 14:33	1

Eurofins TestAmerica, Pittsburgh

Client Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: CCR-LF-6

Lab Sample ID: 180-90467-6

Date Collected: 05/20/19 12:45

Matrix: Water

Date Received: 05/23/19 09:00

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.273	U	0.300	0.301	5.00	0.498	pCi/L		08/21/19 08:50	1

Client Sample ID: CCR-BK-1R

Lab Sample ID: 180-90467-7

Date Collected: 05/21/19 11:35

Matrix: Water

Date Received: 05/23/19 09:00

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	2.3		1.0	0.71	mg/L			05/30/19 11:40	1
Fluoride	0.23		0.10	0.026	mg/L			05/30/19 11:40	1
Sulfate	23		1.0	0.38	mg/L			05/30/19 11:40	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00034	J	0.0010	0.00032	mg/L		05/29/19 11:24	05/31/19 17:31	1
Boron	ND		0.080	0.030	mg/L		05/29/19 11:24	05/31/19 17:31	1
Barium	0.027		0.010	0.0015	mg/L		05/29/19 11:24	05/30/19 16:58	1
Beryllium	ND	^	0.0010	0.00016	mg/L		05/29/19 11:24	05/30/19 16:58	1
Calcium	37		0.50	0.12	mg/L		05/29/19 11:24	05/30/19 16:58	1
Cadmium	ND		0.0010	0.00013	mg/L		05/29/19 11:24	05/30/19 16:58	1
Cobalt	0.00012	J	0.00050	0.000075	mg/L		05/29/19 11:24	05/30/19 16:58	1
Chromium	ND		0.0020	0.0015	mg/L		05/29/19 11:24	05/30/19 16:58	1
Molybdenum	0.00063	J	0.0050	0.00061	mg/L		05/29/19 11:24	05/30/19 16:58	1
Lead	0.00016	J	0.0010	0.00013	mg/L		05/29/19 11:24	05/30/19 16:58	1
Antimony	ND		0.0020	0.00038	mg/L		05/29/19 11:24	05/30/19 16:58	1
Selenium	ND		0.0050	0.0026	mg/L		05/29/19 11:24	05/30/19 16:58	1
Thallium	ND		0.0010	0.00013	mg/L		05/29/19 11:24	05/30/19 16:58	1
Lithium	6.5		5.0	3.1	ug/L		05/29/19 11:24	05/30/19 16:58	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00010	mg/L		05/30/19 09:31	05/31/19 15:59	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	230		10	10	mg/L			05/24/19 15:09	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.4	HF	0.1	0.1	SU			05/28/19 14:36	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.336		0.104	0.108	1.00	0.103	pCi/L	05/30/19 10:35	08/13/19 22:59	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.3		40 - 110					05/30/19 10:35	08/13/19 22:59	1

Eurofins TestAmerica, Pittsburgh

Client Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: CCR-BK-1R

Lab Sample ID: 180-90467-7

Date Collected: 05/21/19 11:35

Matrix: Water

Date Received: 05/23/19 09:00

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0733	U*	0.235	0.235	1.00	0.439	pCi/L	05/31/19 10:52	07/23/19 14:33	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.3		40 - 110					05/31/19 10:52	07/23/19 14:33	1
Y Carrier	80.0		40 - 110					05/31/19 10:52	07/23/19 14:33	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.263	U	0.257	0.259	5.00	0.439	pCi/L		08/21/19 08:50	1

Client Sample ID: CCR-BK-2

Lab Sample ID: 180-90467-8

Date Collected: 05/21/19 10:40

Matrix: Water

Date Received: 05/23/19 09:00

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4.6		1.0	0.71	mg/L			05/30/19 11:24	1
Fluoride	0.12		0.10	0.026	mg/L			05/30/19 11:24	1
Sulfate	60		1.0	0.38	mg/L			05/30/19 11:24	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00041	J	0.0010	0.00032	mg/L		05/29/19 11:24	05/31/19 17:34	1
Boron	0.58		0.080	0.030	mg/L		05/29/19 11:24	05/31/19 17:34	1
Barium	0.045		0.010	0.0015	mg/L		05/29/19 11:24	05/30/19 17:01	1
Beryllium	ND	^	0.0010	0.00016	mg/L		05/29/19 11:24	05/30/19 17:01	1
Calcium	71		0.50	0.12	mg/L		05/29/19 11:24	05/30/19 17:01	1
Cadmium	ND		0.0010	0.00013	mg/L		05/29/19 11:24	05/30/19 17:01	1
Cobalt	0.00050		0.00050	0.000075	mg/L		05/29/19 11:24	05/30/19 17:01	1
Chromium	0.0087		0.0020	0.0015	mg/L		05/29/19 11:24	05/30/19 17:01	1
Molybdenum	0.0025	J	0.0050	0.00061	mg/L		05/29/19 11:24	05/30/19 17:01	1
Lead	ND		0.0010	0.00013	mg/L		05/29/19 11:24	05/30/19 17:01	1
Antimony	ND		0.0020	0.00038	mg/L		05/29/19 11:24	05/30/19 17:01	1
Selenium	ND		0.0050	0.0026	mg/L		05/29/19 11:24	05/30/19 17:01	1
Thallium	ND		0.0010	0.00013	mg/L		05/29/19 11:24	05/30/19 17:01	1
Lithium	9.5		5.0	3.1	ug/L		05/29/19 11:24	05/30/19 17:01	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00010	mg/L		05/30/19 09:31	05/31/19 16:00	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	440		10	10	mg/L			05/24/19 15:09	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.5	HF	0.1	0.1	SU			05/28/19 14:38	1

Eurofins TestAmerica, Pittsburgh

Client Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: CCR-BK-2

Lab Sample ID: 180-90467-8

Date Collected: 05/21/19 10:40

Matrix: Water

Date Received: 05/23/19 09:00

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0109	U	0.184	0.184	1.00	0.373	pCi/L	07/02/19 12:58	08/19/19 16:02	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.2		40 - 110					07/02/19 12:58	08/19/19 16:02	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0733	U	0.246	0.246	1.00	0.428	pCi/L	07/02/19 14:27	08/19/19 09:06	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.2		40 - 110					07/02/19 14:27	08/19/19 09:06	1
Y Carrier	86.4		40 - 110					07/02/19 14:27	08/19/19 09:06	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0623	U	0.307	0.307	5.00	0.428	pCi/L		08/21/19 08:50	1

Client Sample ID: CCR-AP-3R

Lab Sample ID: 180-90467-9

Date Collected: 05/22/19 14:15

Matrix: Water

Date Received: 05/23/19 09:00

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	620		5.0	3.6	mg/L			05/30/19 15:19	5
Fluoride	1.3		0.50	0.13	mg/L			05/30/19 15:19	5
Sulfate	3100		50	19	mg/L			05/30/19 15:35	50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.010	0.0032	mg/L		05/29/19 11:24	05/31/19 17:45	10
Boron	11		0.80	0.30	mg/L		05/29/19 11:24	05/31/19 17:45	10
Barium	0.16		0.10	0.015	mg/L		05/29/19 11:24	05/31/19 17:45	10
Beryllium	ND	^	0.0010	0.00016	mg/L		05/29/19 11:24	05/30/19 17:05	1
Calcium	260		5.0	1.2	mg/L		05/29/19 11:24	05/31/19 17:45	10
Cadmium	ND		0.010	0.0013	mg/L		05/29/19 11:24	05/31/19 17:45	10
Cobalt	0.0017	J	0.0050	0.00075	mg/L		05/29/19 11:24	05/31/19 17:45	10
Chromium	ND		0.020	0.015	mg/L		05/29/19 11:24	05/31/19 17:45	10
Molybdenum	0.89		0.050	0.0061	mg/L		05/29/19 11:24	05/31/19 17:45	10
Lead	ND		0.010	0.0013	mg/L		05/29/19 11:24	05/31/19 17:45	10
Antimony	ND		0.020	0.0038	mg/L		05/29/19 11:24	05/31/19 17:45	10
Selenium	ND		0.050	0.026	mg/L		05/29/19 11:24	05/31/19 17:45	10
Thallium	ND		0.010	0.0013	mg/L		05/29/19 11:24	05/31/19 17:45	10
Lithium	62		50	31	ug/L		05/29/19 11:24	05/31/19 17:45	10

Eurofins TestAmerica, Pittsburgh

Client Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: CCR-AP-3R

Lab Sample ID: 180-90467-9

Date Collected: 05/22/19 14:15

Matrix: Water

Date Received: 05/23/19 09:00

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00010	mg/L		05/30/19 09:31	05/31/19 16:01	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	5800		50	50	mg/L			05/25/19 11:14	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.5	HF	0.1	0.1	SU			05/28/19 14:40	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.283		0.0966	0.0999	1.00	0.0962	pCi/L	05/30/19 10:35	08/13/19 23:00	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	93.2		40 - 110	05/30/19 10:35	08/13/19 23:00	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.163	U *	0.283	0.283	1.00	0.480	pCi/L	05/31/19 10:52	07/23/19 14:33	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	93.2		40 - 110	05/31/19 10:52	07/23/19 14:33	1
Y Carrier	76.6		40 - 110	05/31/19 10:52	07/23/19 14:33	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.447	U	0.299	0.300	5.00	0.480	pCi/L		08/21/19 08:50	1

Client Sample ID: CCR-AP-4R

Lab Sample ID: 180-90467-10

Date Collected: 05/22/19 15:20

Matrix: Water

Date Received: 05/23/19 09:00

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	40		1.0	0.71	mg/L			05/30/19 10:11	1
Fluoride	0.41		0.10	0.026	mg/L			05/30/19 10:11	1
Sulfate	99		1.0	0.38	mg/L			05/30/19 10:11	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00038	J	0.0010	0.00032	mg/L		05/29/19 11:24	05/31/19 17:55	1
Boron	0.045	J	0.080	0.030	mg/L		05/29/19 11:24	05/31/19 17:55	1
Barium	0.094		0.010	0.0015	mg/L		05/29/19 11:24	05/30/19 17:08	1
Beryllium	ND	^	0.0010	0.00016	mg/L		05/29/19 11:24	05/30/19 17:08	1
Calcium	190		0.50	0.12	mg/L		05/29/19 11:24	05/30/19 17:08	1
Cadmium	ND		0.0010	0.00013	mg/L		05/29/19 11:24	05/30/19 17:08	1

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Client Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: CCR-AP-4R

Lab Sample ID: 180-90467-10

Date Collected: 05/22/19 15:20

Matrix: Water

Date Received: 05/23/19 09:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	0.00017	J	0.00050	0.000075	mg/L	-	05/29/19 11:24	05/30/19 17:08	1
Chromium	0.0035		0.0020	0.0015	mg/L	-	05/29/19 11:24	05/30/19 17:08	1
Molybdenum	0.0014	J	0.0050	0.00061	mg/L	-	05/29/19 11:24	05/30/19 17:08	1
Lead	ND		0.0010	0.00013	mg/L	-	05/29/19 11:24	05/30/19 17:08	1
Antimony	ND		0.0020	0.00038	mg/L	-	05/29/19 11:24	05/30/19 17:08	1
Selenium	ND		0.0050	0.0026	mg/L	-	05/29/19 11:24	05/30/19 17:08	1
Thallium	ND		0.0010	0.00013	mg/L	-	05/29/19 11:24	05/30/19 17:08	1
Lithium	6.7		5.0	3.1	ug/L	-	05/29/19 11:24	05/30/19 17:08	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00010	mg/L	-	05/30/19 09:31	05/31/19 16:06	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	950		10	10	mg/L	-		05/25/19 11:14	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.4	HF	0.1	0.1	SU	-		05/28/19 14:43	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0797	U	0.0788	0.0791	1.00	0.125	pCi/L	05/30/19 10:35	08/13/19 23:00	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	88.1		40 - 110					05/30/19 10:35	08/13/19 23:00	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.412	U *	0.359	0.361	1.00	0.574	pCi/L	05/31/19 10:52	07/23/19 14:33	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	88.1		40 - 110					05/31/19 10:52	07/23/19 14:33	1
<i>Y Carrier</i>	71.8		40 - 110					05/31/19 10:52	07/23/19 14:33	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.492	U	0.368	0.370	5.00	0.574	pCi/L		08/21/19 08:50	1

Client Sample ID: CCR-AP-5

Lab Sample ID: 180-90467-11

Date Collected: 05/22/19 11:30

Matrix: Water

Date Received: 05/23/19 09:00

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	410		5.0	3.6	mg/L	-		05/30/19 12:45	5

Eurofins TestAmerica, Pittsburgh

Client Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: CCR-AP-5

Lab Sample ID: 180-90467-11

Date Collected: 05/22/19 11:30

Matrix: Water

Date Received: 05/23/19 09:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.31	J	0.50	0.13	mg/L			05/30/19 12:45	5
Sulfate	3100		50	19	mg/L			05/30/19 13:01	50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.010	0.0032	mg/L		05/29/19 11:24	05/31/19 17:58	10
Boron	11		0.80	0.30	mg/L		05/29/19 11:24	05/31/19 17:58	10
Barium	0.018	J	0.10	0.015	mg/L		05/29/19 11:24	05/31/19 17:58	10
Beryllium	ND	^	0.0010	0.00016	mg/L		05/29/19 11:24	05/30/19 17:11	1
Calcium	410		5.0	1.2	mg/L		05/29/19 11:24	05/31/19 17:58	10
Cadmium	ND		0.010	0.0013	mg/L		05/29/19 11:24	05/31/19 17:58	10
Cobalt	ND		0.0050	0.00075	mg/L		05/29/19 11:24	05/31/19 17:58	10
Chromium	ND		0.020	0.015	mg/L		05/29/19 11:24	05/31/19 17:58	10
Molybdenum	0.059		0.050	0.0061	mg/L		05/29/19 11:24	05/31/19 17:58	10
Lead	ND		0.010	0.0013	mg/L		05/29/19 11:24	05/31/19 17:58	10
Antimony	ND		0.020	0.0038	mg/L		05/29/19 11:24	05/31/19 17:58	10
Selenium	ND		0.050	0.026	mg/L		05/29/19 11:24	05/31/19 17:58	10
Thallium	ND		0.010	0.0013	mg/L		05/29/19 11:24	05/31/19 17:58	10
Lithium	ND		50	31	ug/L		05/29/19 11:24	05/31/19 17:58	10

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00010	mg/L		05/30/19 09:31	05/31/19 16:07	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	5000		40	40	mg/L			05/25/19 11:14	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.4	HF	0.1	0.1	SU			05/28/19 14:47	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0606	U	0.0575	0.0578	1.00	0.0887	pCi/L	05/30/19 10:35	08/13/19 23:00	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	96.6		40 - 110	05/30/19 10:35	08/13/19 23:00	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0634	U*	0.257	0.257	1.00	0.476	pCi/L	05/31/19 10:52	07/23/19 14:33	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	96.6		40 - 110	05/31/19 10:52	07/23/19 14:33	1
Y Carrier	76.3		40 - 110	05/31/19 10:52	07/23/19 14:33	1

Eurofins TestAmerica, Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: CCR-AP-5

Lab Sample ID: 180-90467-11

Date Collected: 05/22/19 11:30

Matrix: Water

Date Received: 05/23/19 09:00

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	-0.00280	U	0.263	0.263	5.00	0.476	pCi/L		08/21/19 08:50	1

Client Sample ID: CCR-AP-6

Lab Sample ID: 180-90467-12

Date Collected: 05/21/19 14:40

Matrix: Water

Date Received: 05/23/19 09:00

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	230		2.5	1.8	mg/L			05/30/19 11:44	2.5
Fluoride	0.17	J	0.25	0.066	mg/L			05/30/19 11:44	2.5
Sulfate	1200		25	9.5	mg/L			05/30/19 11:59	25

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.010	0.0032	mg/L		05/29/19 11:24	05/31/19 18:02	10
Boron	2.9		0.80	0.30	mg/L		05/29/19 11:24	05/31/19 18:02	10
Barium	ND		0.10	0.015	mg/L		05/29/19 11:24	05/31/19 18:02	10
Beryllium	ND	^	0.0010	0.00016	mg/L		05/29/19 11:24	05/30/19 17:15	1
Calcium	320		5.0	1.2	mg/L		05/29/19 11:24	05/31/19 18:02	10
Cadmium	ND		0.010	0.0013	mg/L		05/29/19 11:24	05/31/19 18:02	10
Cobalt	0.0013	J	0.0050	0.00075	mg/L		05/29/19 11:24	05/31/19 18:02	10
Chromium	ND		0.020	0.015	mg/L		05/29/19 11:24	05/31/19 18:02	10
Molybdenum	0.0067	J	0.050	0.0061	mg/L		05/29/19 11:24	05/31/19 18:02	10
Lead	ND		0.010	0.0013	mg/L		05/29/19 11:24	05/31/19 18:02	10
Antimony	ND		0.020	0.0038	mg/L		05/29/19 11:24	05/31/19 18:02	10
Selenium	ND		0.050	0.026	mg/L		05/29/19 11:24	05/31/19 18:02	10
Thallium	ND		0.010	0.0013	mg/L		05/29/19 11:24	05/31/19 18:02	10
Lithium	34	J	50	31	ug/L		05/29/19 11:24	05/31/19 18:02	10

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00010	mg/L		05/30/19 09:31	05/31/19 16:08	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	2400		20	20	mg/L			05/24/19 15:09	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.5	HF	0.1	0.1	SU			05/28/19 14:49	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0195	U	0.0642	0.0643	1.00	0.119	pCi/L	05/30/19 10:35	08/14/19 06:57	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.5		40 - 110					05/30/19 10:35	08/14/19 06:57	1

Eurofins TestAmerica, Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: CCR-AP-6

Lab Sample ID: 180-90467-12

Date Collected: 05/21/19 14:40

Matrix: Water

Date Received: 05/23/19 09:00

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.237	U*	0.233	0.234	1.00	0.377	pCi/L	05/31/19 10:52	07/23/19 14:33	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.5		40 - 110					05/31/19 10:52	07/23/19 14:33	1
Y Carrier	87.9		40 - 110					05/31/19 10:52	07/23/19 14:33	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.257	U	0.242	0.243	5.00	0.377	pCi/L		08/21/19 08:50	1

Client Sample ID: CCR-AP-7R

Lab Sample ID: 180-90467-13

Date Collected: 05/21/19 16:00

Matrix: Water

Date Received: 05/23/19 09:00

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	500		5.0	3.6	mg/L			05/30/19 13:16	5
Fluoride	0.17	J	0.50	0.13	mg/L			05/30/19 13:16	5
Sulfate	2600		50	19	mg/L			05/30/19 13:31	50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.010	0.0032	mg/L		05/29/19 11:24	05/31/19 18:05	10
Boron	5.6		0.80	0.30	mg/L		05/29/19 11:24	05/31/19 18:05	10
Barium	0.029	J	0.10	0.015	mg/L		05/29/19 11:24	05/31/19 18:05	10
Beryllium	ND	^	0.0010	0.00016	mg/L		05/29/19 11:24	05/30/19 17:18	1
Calcium	410		5.0	1.2	mg/L		05/29/19 11:24	05/31/19 18:05	10
Cadmium	ND		0.010	0.0013	mg/L		05/29/19 11:24	05/31/19 18:05	10
Cobalt	ND		0.0050	0.00075	mg/L		05/29/19 11:24	05/31/19 18:05	10
Chromium	ND		0.020	0.015	mg/L		05/29/19 11:24	05/31/19 18:05	10
Molybdenum	ND		0.050	0.0061	mg/L		05/29/19 11:24	05/31/19 18:05	10
Lead	ND		0.010	0.0013	mg/L		05/29/19 11:24	05/31/19 18:05	10
Antimony	ND		0.020	0.0038	mg/L		05/29/19 11:24	05/31/19 18:05	10
Selenium	ND		0.050	0.026	mg/L		05/29/19 11:24	05/31/19 18:05	10
Thallium	ND		0.010	0.0013	mg/L		05/29/19 11:24	05/31/19 18:05	10
Lithium	ND		50	31	ug/L		05/29/19 11:24	05/31/19 18:05	10

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00010	mg/L		05/30/19 09:31	05/31/19 16:09	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	4200		40	40	mg/L			05/24/19 15:09	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.8	HF	0.1	0.1	SU			05/28/19 14:51	1

Eurofins TestAmerica, Pittsburgh

Client Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: CCR-AP-7R

Lab Sample ID: 180-90467-13

Date Collected: 05/21/19 16:00

Matrix: Water

Date Received: 05/23/19 09:00

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0773	U	0.198	0.198	1.00	0.416	pCi/L	07/02/19 12:58	08/19/19 16:02	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.1		40 - 110					07/02/19 12:58	08/19/19 16:02	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.307	U	0.258	0.260	1.00	0.412	pCi/L	07/02/19 14:27	08/19/19 09:07	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.1		40 - 110					07/02/19 14:27	08/19/19 09:07	1
Y Carrier	85.6		40 - 110					07/02/19 14:27	08/19/19 09:07	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.229	U	0.325	0.327	5.00	0.416	pCi/L		08/21/19 08:50	1

Client Sample ID: FIELD BLANK 1

Lab Sample ID: 180-90467-14

Date Collected: 05/20/19 15:15

Matrix: Water

Date Received: 05/23/19 09:00

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.0	0.71	mg/L			05/30/19 07:46	1
Fluoride	0.051	J	0.10	0.026	mg/L			05/30/19 07:46	1
Sulfate	ND		1.0	0.38	mg/L			05/30/19 07:46	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0010	0.00032	mg/L		05/29/19 11:24	05/31/19 18:08	1
Boron	ND		0.080	0.030	mg/L		05/29/19 11:24	05/31/19 18:08	1
Barium	ND		0.010	0.0015	mg/L		05/29/19 11:24	05/30/19 17:21	1
Beryllium	ND	^	0.0010	0.00016	mg/L		05/29/19 11:24	05/30/19 17:21	1
Calcium	0.13	J	0.50	0.12	mg/L		05/29/19 11:24	05/30/19 17:21	1
Cadmium	ND		0.0010	0.00013	mg/L		05/29/19 11:24	05/30/19 17:21	1
Cobalt	ND		0.00050	0.000075	mg/L		05/29/19 11:24	05/30/19 17:21	1
Chromium	ND		0.0020	0.0015	mg/L		05/29/19 11:24	05/30/19 17:21	1
Molybdenum	ND		0.0050	0.00061	mg/L		05/29/19 11:24	05/30/19 17:21	1
Lead	ND		0.0010	0.00013	mg/L		05/29/19 11:24	05/30/19 17:21	1
Antimony	ND		0.0020	0.00038	mg/L		05/29/19 11:24	05/30/19 17:21	1
Selenium	ND		0.0050	0.0026	mg/L		05/29/19 11:24	05/30/19 17:21	1
Thallium	ND		0.0010	0.00013	mg/L		05/29/19 11:24	05/30/19 17:21	1
Lithium	4.5	J	5.0	3.1	ug/L		05/29/19 11:24	05/30/19 17:21	1

Eurofins TestAmerica, Pittsburgh

Client Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: FIELD BLANK 1

Lab Sample ID: 180-90467-14

Date Collected: 05/20/19 15:15

Matrix: Water

Date Received: 05/23/19 09:00

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00010	mg/L		05/30/19 09:31	05/31/19 16:11	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	10	mg/L			05/24/19 14:29	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	5.9	HF	0.1	0.1	SU			05/28/19 14:53	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.119	U	0.142	0.142	1.00	0.343	pCi/L	05/31/19 08:57	08/22/19 12:21	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110	05/31/19 08:57	08/22/19 12:21	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.137	U	0.199	0.199	1.00	0.334	pCi/L	05/31/19 10:52	08/22/19 09:04	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110	05/31/19 10:52	08/22/19 09:04	1
Y Carrier	87.5		40 - 110	05/31/19 10:52	08/22/19 09:04	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0176	U	0.244	0.244	5.00	0.343	pCi/L		08/28/19 12:52	1

Client Sample ID: FIELD BLANK 2

Lab Sample ID: 180-90467-15

Date Collected: 05/21/19 14:50

Matrix: Water

Date Received: 05/23/19 09:00

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.0	0.71	mg/L			05/30/19 08:02	1
Fluoride	0.17		0.10	0.026	mg/L			05/30/19 08:02	1
Sulfate	ND		1.0	0.38	mg/L			05/30/19 08:02	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0010	0.00032	mg/L		05/29/19 11:24	05/31/19 18:12	1
Boron	ND		0.080	0.030	mg/L		05/29/19 11:24	05/31/19 18:12	1
Barium	0.0041	J	0.010	0.0015	mg/L		05/29/19 11:24	05/30/19 17:25	1
Beryllium	ND	^	0.0010	0.00016	mg/L		05/29/19 11:24	05/30/19 17:25	1
Calcium	ND		0.50	0.12	mg/L		05/29/19 11:24	05/30/19 17:25	1
Cadmium	ND		0.0010	0.00013	mg/L		05/29/19 11:24	05/30/19 17:25	1

Eurofins TestAmerica, Pittsburgh

Client Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: FIELD BLANK 2

Lab Sample ID: 180-90467-15

Date Collected: 05/21/19 14:50

Matrix: Water

Date Received: 05/23/19 09:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	ND		0.00050	0.000075	mg/L		05/29/19 11:24	05/30/19 17:25	1
Chromium	ND		0.0020	0.0015	mg/L		05/29/19 11:24	05/30/19 17:25	1
Molybdenum	ND		0.0050	0.00061	mg/L		05/29/19 11:24	05/30/19 17:25	1
Lead	ND		0.0010	0.00013	mg/L		05/29/19 11:24	05/30/19 17:25	1
Antimony	ND		0.0020	0.00038	mg/L		05/29/19 11:24	05/30/19 17:25	1
Selenium	ND		0.0050	0.0026	mg/L		05/29/19 11:24	05/30/19 17:25	1
Thallium	ND		0.0010	0.00013	mg/L		05/29/19 11:24	05/30/19 17:25	1
Lithium	4.7	J	5.0	3.1	ug/L		05/29/19 11:24	05/30/19 17:25	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00010	mg/L		05/30/19 09:31	05/31/19 16:12	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	10	mg/L			05/24/19 14:29	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.0	HF	0.1	0.1	SU			05/28/19 14:54	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0733	U	0.160	0.160	1.00	0.356	pCi/L	05/31/19 08:57	08/22/19 12:23	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	98.9		40 - 110	05/31/19 08:57	08/22/19 12:23	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0649	U	0.251	0.251	1.00	0.435	pCi/L	05/31/19 10:52	08/22/19 09:04	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	98.9		40 - 110	05/31/19 10:52	08/22/19 09:04	1
Y Carrier	87.5		40 - 110	05/31/19 10:52	08/22/19 09:04	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	-0.00841	U	0.298	0.298	5.00	0.435	pCi/L		08/28/19 12:52	1

Client Sample ID: BLIND DUPLICATE 1

Lab Sample ID: 180-90467-16

Date Collected: 05/20/19 00:00

Matrix: Water

Date Received: 05/23/19 09:00

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	450		5.0	3.6	mg/L			05/30/19 13:47	5

Eurofins TestAmerica, Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: BLIND DUPLICATE 1

Lab Sample ID: 180-90467-16

Date Collected: 05/20/19 00:00

Matrix: Water

Date Received: 05/23/19 09:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.30	J	0.50	0.13	mg/L			05/30/19 13:47	5
Sulfate	3000		50	19	mg/L			05/30/19 14:02	50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.010	0.0032	mg/L		05/29/19 11:24	05/31/19 18:15	10
Boron	2.0		0.80	0.30	mg/L		05/29/19 11:24	05/31/19 18:15	10
Barium	0.023	J	0.10	0.015	mg/L		05/29/19 11:24	05/31/19 18:15	10
Beryllium	ND	^	0.0010	0.00016	mg/L		05/29/19 11:24	05/30/19 17:35	1
Calcium	430		5.0	1.2	mg/L		05/29/19 11:24	05/31/19 18:15	10
Cadmium	ND		0.010	0.0013	mg/L		05/29/19 11:24	05/31/19 18:15	10
Cobalt	ND		0.0050	0.00075	mg/L		05/29/19 11:24	05/31/19 18:15	10
Chromium	ND		0.020	0.015	mg/L		05/29/19 11:24	05/31/19 18:15	10
Molybdenum	ND		0.050	0.0061	mg/L		05/29/19 11:24	05/31/19 18:15	10
Lead	ND		0.010	0.0013	mg/L		05/29/19 11:24	05/31/19 18:15	10
Antimony	ND		0.020	0.0038	mg/L		05/29/19 11:24	05/31/19 18:15	10
Selenium	ND		0.050	0.026	mg/L		05/29/19 11:24	05/31/19 18:15	10
Thallium	ND		0.010	0.0013	mg/L		05/29/19 11:24	05/31/19 18:15	10
Lithium	ND		50	31	ug/L		05/29/19 11:24	05/31/19 18:15	10

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00010	mg/L		05/30/19 09:31	05/31/19 16:13	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	5200		40	40	mg/L			05/24/19 14:29	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.3	HF	0.1	0.1	SU			05/28/19 14:56	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.00860	U	0.216	0.216	1.00	0.417	pCi/L	05/31/19 08:57	08/22/19 12:23	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	97.7		40 - 110	05/31/19 08:57	08/22/19 12:23	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.292	U	0.264	0.266	1.00	0.426	pCi/L	05/31/19 10:52	08/22/19 09:05	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	97.7		40 - 110	05/31/19 10:52	08/22/19 09:05	1
Y Carrier	84.1		40 - 110	05/31/19 10:52	08/22/19 09:05	1

Eurofins TestAmerica, Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: BLIND DUPLICATE 1

Lab Sample ID: 180-90467-16

Date Collected: 05/20/19 00:00

Matrix: Water

Date Received: 05/23/19 09:00

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.301	U	0.341	0.343	5.00	0.426	pCi/L		08/28/19 12:52	1

Client Sample ID: BLIND DUPLICATE 2

Lab Sample ID: 180-90467-17

Date Collected: 05/22/19 00:00

Matrix: Water

Date Received: 05/23/19 09:00

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	390		5.0	3.6	mg/L			05/30/19 14:48	5
Fluoride	0.31	J	0.50	0.13	mg/L			05/30/19 14:48	5
Sulfate	2900		50	19	mg/L			05/30/19 15:03	50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.010	0.0032	mg/L		05/29/19 11:24	05/31/19 18:19	10
Boron	11		0.80	0.30	mg/L		05/29/19 11:24	05/31/19 18:19	10
Barium	0.020	J	0.10	0.015	mg/L		05/29/19 11:24	05/31/19 18:19	10
Beryllium	ND	^	0.0010	0.00016	mg/L		05/29/19 11:24	05/30/19 17:39	1
Calcium	420		5.0	1.2	mg/L		05/29/19 11:24	05/31/19 18:19	10
Cadmium	ND		0.010	0.0013	mg/L		05/29/19 11:24	05/31/19 18:19	10
Cobalt	ND		0.0050	0.00075	mg/L		05/29/19 11:24	05/31/19 18:19	10
Chromium	ND		0.020	0.015	mg/L		05/29/19 11:24	05/31/19 18:19	10
Molybdenum	0.053		0.050	0.0061	mg/L		05/29/19 11:24	05/31/19 18:19	10
Lead	ND		0.010	0.0013	mg/L		05/29/19 11:24	05/31/19 18:19	10
Antimony	ND		0.020	0.0038	mg/L		05/29/19 11:24	05/31/19 18:19	10
Selenium	ND		0.050	0.026	mg/L		05/29/19 11:24	05/31/19 18:19	10
Thallium	ND		0.010	0.0013	mg/L		05/29/19 11:24	05/31/19 18:19	10
Lithium	ND		50	31	ug/L		05/29/19 11:24	05/31/19 18:19	10

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00010	mg/L		05/30/19 09:31	05/31/19 16:14	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	4900		40	40	mg/L			05/25/19 11:14	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.4	HF	0.1	0.1	SU			05/28/19 14:58	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.153	U	0.196	0.196	1.00	0.325	pCi/L	05/31/19 08:57	08/22/19 12:23	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.3		40 - 110					05/31/19 08:57	08/22/19 12:23	1

Eurofins TestAmerica, Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Client Sample ID: BLIND DUPLICATE 2

Lab Sample ID: 180-90467-17

Date Collected: 05/22/19 00:00

Matrix: Water

Date Received: 05/23/19 09:00

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.254	U	0.269	0.270	1.00	0.441	pCi/L	05/31/19 10:52	08/22/19 09:05	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.3		40 - 110					05/31/19 10:52	08/22/19 09:05	1
Y Carrier	86.0		40 - 110					05/31/19 10:52	08/22/19 09:05	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.406	U	0.333	0.334	5.00	0.441	pCi/L		08/28/19 12:52	1

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Method: EPA 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 180-280113/6
Matrix: Water
Analysis Batch: 280113

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.0	0.71	mg/L			05/30/19 05:10	1
Fluoride	ND		0.10	0.026	mg/L			05/30/19 05:10	1
Sulfate	ND		1.0	0.38	mg/L			05/30/19 05:10	1

Lab Sample ID: LCS 180-280113/5
Matrix: Water
Analysis Batch: 280113

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	25.0	25.4		mg/L		101	80 - 120
Fluoride	1.25	1.30		mg/L		104	80 - 120
Sulfate	25.0	25.4		mg/L		102	80 - 120

Lab Sample ID: MB 180-280114/6
Matrix: Water
Analysis Batch: 280114

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.0	0.71	mg/L			05/30/19 05:16	1
Fluoride	ND		0.10	0.026	mg/L			05/30/19 05:16	1
Sulfate	ND		1.0	0.38	mg/L			05/30/19 05:16	1

Lab Sample ID: LCS 180-280114/5
Matrix: Water
Analysis Batch: 280114

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	25.0	24.7		mg/L		99	80 - 120
Fluoride	1.25	1.22		mg/L		98	80 - 120
Sulfate	25.0	25.1		mg/L		100	80 - 120

Lab Sample ID: 180-90467-2 MS
Matrix: Water
Analysis Batch: 280114

Client Sample ID: CCR-LF-2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	360		6250	6510		mg/L		98	80 - 120
Fluoride	ND		313	306		mg/L		98	80 - 120
Sulfate	15000		6250	21500		mg/L		98	80 - 120

Lab Sample ID: 180-90467-2 MSD
Matrix: Water
Analysis Batch: 280114

Client Sample ID: CCR-LF-2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	360		6250	6310		mg/L		95	80 - 120	3	15
Fluoride	ND		313	295		mg/L		95	80 - 120	3	15
Sulfate	15000		6250	21200		mg/L		93	80 - 120	2	15

Eurofins TestAmerica, Pittsburgh

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

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

Lab Sample ID: MB 180-280038/1-A
Matrix: Water
Analysis Batch: 280271

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 280038

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.010	0.0015	mg/L		05/29/19 11:24	05/30/19 15:57	1
Beryllium	ND	^	0.0010	0.00016	mg/L		05/29/19 11:24	05/30/19 15:57	1
Calcium	ND		0.50	0.12	mg/L		05/29/19 11:24	05/30/19 15:57	1
Cadmium	ND		0.0010	0.00013	mg/L		05/29/19 11:24	05/30/19 15:57	1
Cobalt	ND		0.00050	0.000075	mg/L		05/29/19 11:24	05/30/19 15:57	1
Chromium	ND		0.0020	0.0015	mg/L		05/29/19 11:24	05/30/19 15:57	1
Molybdenum	ND		0.0050	0.00061	mg/L		05/29/19 11:24	05/30/19 15:57	1
Lead	ND		0.0010	0.00013	mg/L		05/29/19 11:24	05/30/19 15:57	1
Antimony	ND		0.0020	0.00038	mg/L		05/29/19 11:24	05/30/19 15:57	1
Selenium	ND		0.0050	0.0026	mg/L		05/29/19 11:24	05/30/19 15:57	1
Thallium	ND		0.0010	0.00013	mg/L		05/29/19 11:24	05/30/19 15:57	1
Lithium	ND		5.0	3.1	ug/L		05/29/19 11:24	05/30/19 15:57	1

Lab Sample ID: LCS 180-280038/2-A
Matrix: Water
Analysis Batch: 280271

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 280038

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Barium	1.00	1.04		mg/L		104	80 - 120
Calcium	25.0	28.3		mg/L		113	80 - 120
Cadmium	0.500	0.517		mg/L		103	80 - 120
Cobalt	0.500	0.517		mg/L		103	80 - 120
Chromium	0.500	0.514		mg/L		103	80 - 120
Molybdenum	0.500	0.516		mg/L		103	80 - 120
Lead	0.500	0.497		mg/L		99	80 - 120
Antimony	0.250	0.266		mg/L		106	80 - 120
Selenium	1.00	1.04		mg/L		104	80 - 120
Thallium	1.00	1.01		mg/L		101	80 - 120
Lithium	500	470		ug/L		94	80 - 120

Lab Sample ID: LCS 180-280038/2-A
Matrix: Water
Analysis Batch: 280395

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 280038

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Arsenic	1.00	0.925		mg/L		93	80 - 120
Boron	1.25	1.22		mg/L		98	80 - 120

Lab Sample ID: 180-90467-2 MS
Matrix: Water
Analysis Batch: 280271

Client Sample ID: CCR-LF-2
Prep Type: Total Recoverable
Prep Batch: 280038

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Beryllium	ND	^	0.500	0.467	^	mg/L		93	75 - 125

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

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

Lab Sample ID: 180-90467-2 MS
Matrix: Water
Analysis Batch: 280395

Client Sample ID: CCR-LF-2
Prep Type: Total Recoverable
Prep Batch: 280038

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	Limits	%Rec.
	Result	Qualifier	Added	Result	Qualifier					
Arsenic	ND		1.00	1.04		mg/L		104	75 - 125	
Boron	5.4		1.25	6.59	4	mg/L		95	75 - 125	
Barium	ND	F2 F1	1.00	0.407	F1	mg/L		41	75 - 125	
Calcium	420		25.0	442	4	mg/L		92	75 - 125	
Cadmium	0.0044	J	0.500	0.515		mg/L		102	75 - 125	
Cobalt	0.0098		0.500	0.516		mg/L		101	75 - 125	
Chromium	ND		0.500	0.500		mg/L		100	75 - 125	
Molybdenum	ND		0.500	0.544		mg/L		109	75 - 125	
Lead	ND		0.500	0.422		mg/L		84	75 - 125	
Antimony	ND		0.250	0.273		mg/L		109	75 - 125	
Selenium	ND		1.00	0.977		mg/L		98	75 - 125	
Thallium	ND		1.00	1.03		mg/L		103	75 - 125	
Lithium	ND		500	520		ug/L		104	75 - 125	

Lab Sample ID: 180-90467-2 MSD
Matrix: Water
Analysis Batch: 280271

Client Sample ID: CCR-LF-2
Prep Type: Total Recoverable
Prep Batch: 280038

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier						
Beryllium	ND	^	0.500	0.486	^	mg/L		97	75 - 125	4	20

Lab Sample ID: 180-90467-2 MSD
Matrix: Water
Analysis Batch: 280395

Client Sample ID: CCR-LF-2
Prep Type: Total Recoverable
Prep Batch: 280038

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier						
Arsenic	ND		1.00	1.03		mg/L		103	75 - 125	1	20
Boron	5.4		1.25	6.66	4	mg/L		100	75 - 125	1	20
Barium	ND	F2 F1	1.00	0.530	F2 F1	mg/L		53	75 - 125	26	20
Calcium	420		25.0	454	4	mg/L		141	75 - 125	3	20
Cadmium	0.0044	J	0.500	0.518		mg/L		103	75 - 125	1	20
Cobalt	0.0098		0.500	0.512		mg/L		100	75 - 125	1	20
Chromium	ND		0.500	0.496		mg/L		99	75 - 125	1	20
Molybdenum	ND		0.500	0.533		mg/L		107	75 - 125	2	20
Lead	ND		0.500	0.430		mg/L		86	75 - 125	2	20
Antimony	ND		0.250	0.271		mg/L		109	75 - 125	1	20
Selenium	ND		1.00	0.971		mg/L		97	75 - 125	1	20
Thallium	ND		1.00	1.00		mg/L		100	75 - 125	3	20
Lithium	ND		500	519		ug/L		104	75 - 125	0	20

Method: EPA 7470A - Mercury (CVAA)

Lab Sample ID: MB 180-280150/1-A
Matrix: Water
Analysis Batch: 280376

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 280150

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Mercury	ND		0.00020	0.00010	mg/L		05/30/19 09:31	05/31/19 15:43	1

Eurofins TestAmerica, Pittsburgh

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Method: EPA 7470A - Mercury (CVAA) (Continued)

Lab Sample ID: LCS 180-280150/2-A
Matrix: Water
Analysis Batch: 280376

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 280150
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	0.00250	0.00243		mg/L	-	97	80 - 120

Lab Sample ID: 180-90467-2 MS
Matrix: Water
Analysis Batch: 280376

Client Sample ID: CCR-LF-2
Prep Type: Total/NA
Prep Batch: 280150
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		0.00100	0.000847		mg/L	-	85	75 - 125

Lab Sample ID: 180-90467-2 MSD
Matrix: Water
Analysis Batch: 280376

Client Sample ID: CCR-LF-2
Prep Type: Total/NA
Prep Batch: 280150
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		0.00100	0.000896		mg/L	-	90	75 - 125	6	20

Method: EPA 9040C - pH

Lab Sample ID: LCS 180-279863/1
Matrix: Water
Analysis Batch: 279863

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
pH	7.00	7.0		SU	-	100	99 - 101

Lab Sample ID: 180-90467-2 DU
Matrix: Water
Analysis Batch: 279863

Client Sample ID: CCR-LF-2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
pH	6.8	HF	6.8	HF	SU	-	0.7	2

Lab Sample ID: 180-90467-10 DU
Matrix: Water
Analysis Batch: 279863

Client Sample ID: CCR-AP-4R
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
pH	7.4	HF	7.4		SU	-	0.1	2

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

Lab Sample ID: MB 180-279723/2
Matrix: Water
Analysis Batch: 279723

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	ND		10	10	mg/L	-		05/24/19 14:29	1

Eurofins TestAmerica, Pittsburgh

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

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

Lab Sample ID: LCS 180-279723/1
Matrix: Water
Analysis Batch: 279723

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	201	208		mg/L		103	80 - 120

Lab Sample ID: MB 180-279730/2
Matrix: Water
Analysis Batch: 279730

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	ND		10	10	mg/L			05/24/19 15:09	1

Lab Sample ID: LCS 180-279730/1
Matrix: Water
Analysis Batch: 279730

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	201	200		mg/L		100	80 - 120

Lab Sample ID: MB 180-279771/2
Matrix: Water
Analysis Batch: 279771

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	ND		10	10	mg/L			05/25/19 11:14	1

Lab Sample ID: LCS 180-279771/1
Matrix: Water
Analysis Batch: 279771

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	201	184		mg/L		92	80 - 120

Lab Sample ID: 180-90467-2 DU
Matrix: Water
Analysis Batch: 279771

Client Sample ID: CCR-LF-2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	21000		22700		mg/L		9	10

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-430235/23-A
Matrix: Water
Analysis Batch: 439426

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 430235

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.005455	U	0.0525	0.0525	1.00	0.107	pCi/L	05/30/19 10:35	08/13/19 23:00	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	98.9		40 - 110	05/30/19 10:35	08/13/19 23:00	1

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QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

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

Lab Sample ID: LCS 160-430235/1-A
Matrix: Water
Analysis Batch: 439308

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 430235

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	11.4	8.579		0.902	1.00	0.103	pCi/L	76	75 - 125	
Carrier	%Yield	LCS Qualifier	LCS Limits							
Ba Carrier	95.2		40 - 110							

Lab Sample ID: MB 160-430329/23-A
Matrix: Water
Analysis Batch: 440198

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 430329

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.06585	U	0.179	0.180	1.00	0.381	pCi/L	05/31/19 08:57	08/22/19 16:28	1
Carrier	%Yield	MB Qualifier	Limits							
Ba Carrier	96.3		40 - 110							
								Prepared	Analyzed	Dil Fac
								05/31/19 08:57	08/22/19 16:28	1

Lab Sample ID: LCS 160-430329/1-A
Matrix: Water
Analysis Batch: 440197

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 430329

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	11.4	10.61		1.34	1.00	0.340	pCi/L	93	75 - 125	
Carrier	%Yield	LCS Qualifier	LCS Limits							
Ba Carrier	105		40 - 110							

Lab Sample ID: LCSD 160-430329/2-A
Matrix: Water
Analysis Batch: 440197

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 430329

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit	
Radium-226	11.4	10.34		1.33	1.00	0.343	pCi/L	91	75 - 125	0.10	1	
Carrier	%Yield	LCSD Qualifier	LCSD Limits									
Ba Carrier	96.9		40 - 110									

Lab Sample ID: MB 160-433443/23-A
Matrix: Water
Analysis Batch: 439859

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 433443

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.1063	U	0.122	0.122	1.00	0.318	pCi/L	07/02/19 12:58	08/19/19 18:00	1

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QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

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

Lab Sample ID: MB 160-433443/23-A
 Matrix: Water
 Analysis Batch: 439859

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 433443

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	92.7		40 - 110	07/02/19 12:58	08/19/19 18:00	1

Lab Sample ID: LCS 160-433443/1-A
 Matrix: Water
 Analysis Batch: 439859

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 433443

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.4	10.36		1.34	1.00	0.411	pCi/L	91	75 - 125

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	92.7		40 - 110

Lab Sample ID: 180-90467-2 DU
 Matrix: Water
 Analysis Batch: 439901

Client Sample ID: CCR-LF-2
 Prep Type: Total/NA
 Prep Batch: 433443

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-226	0.593		0.4458		0.256	1.00	0.322	pCi/L	0.27	1

Carrier	DU %Yield	DU Qualifier	Limits
Ba Carrier	86.7		40 - 110

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-430397/23-A
 Matrix: Water
 Analysis Batch: 435974

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 430397

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.03968	U	0.302	0.302	1.00	0.553	pCi/L	05/31/19 10:52	07/23/19 14:34	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	98.9		40 - 110	05/31/19 10:52	07/23/19 14:34	1
Y Carrier	62.8		40 - 110	05/31/19 10:52	07/23/19 14:34	1

Lab Sample ID: LCS 160-430397/1-A
 Matrix: Water
 Analysis Batch: 436112

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 430397

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	9.00	6.483	*	0.923	1.00	0.554	pCi/L	72	75 - 125

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QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

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

Lab Sample ID: LCS 160-430397/1-A
Matrix: Water
Analysis Batch: 436112

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 430397

Carrier	LCS		Limits
	%Yield	Qualifier	
Ba Carrier	95.2		40 - 110
Y Carrier	65.8		40 - 110

Lab Sample ID: MB 160-430398/23-A
Matrix: Water
Analysis Batch: 440197

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 430398

Analyte	MB		Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier								
Radium-228	0.1328	U	0.223	0.223	1.00	0.376	pCi/L	05/31/19 10:52	08/22/19 09:10	1
Carrier	MB		Limits			Prepared	Analyzed	Dil Fac		
	%Yield	Qualifier								
Ba Carrier	96.3		40 - 110			05/31/19 10:52	08/22/19 09:10	1		
Y Carrier	87.9		40 - 110			05/31/19 10:52	08/22/19 09:10	1		

Lab Sample ID: LCS 160-430398/1-A
Matrix: Water
Analysis Batch: 440196

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 430398

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Carrier	LCS		Limits			Prepared	Analyzed	Dil Fac	
	%Yield	Qualifier							
Ba Carrier	105		40 - 110						
Y Carrier	86.7		40 - 110						

Lab Sample ID: LCSD 160-430398/2-A
Matrix: Water
Analysis Batch: 440196

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 430398

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Carrier	LCSD		Limits			Prepared	Analyzed	Dil Fac			
	%Yield	Qualifier									
Ba Carrier	96.9		40 - 110								
Y Carrier	85.2		40 - 110								

Lab Sample ID: MB 160-433455/23-A
Matrix: Water
Analysis Batch: 439909

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 433455

Analyte	MB		Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier								
Radium-228	0.4270		0.265	0.267	1.00	0.403	pCi/L	07/02/19 14:27	08/19/19 09:13	1

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QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

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

Lab Sample ID: MB 160-433455/23-A
Matrix: Water
Analysis Batch: 439909

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 433455

Carrier	MB MB		Limits
	%Yield	Qualifier	
Ba Carrier	92.7		40 - 110
Y Carrier	84.9		40 - 110

Prepared	Analyzed	Dil Fac
07/02/19 14:27	08/19/19 09:13	1
07/02/19 14:27	08/19/19 09:13	1

Lab Sample ID: LCS 160-433455/1-A
Matrix: Water
Analysis Batch: 439946

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 433455

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-228	8.92	10.43		1.19	1.00	0.411	pCi/L	117	75 - 125	

Carrier	LCS LCS		Limits
	%Yield	Qualifier	
Ba Carrier	92.7		40 - 110
Y Carrier	86.7		40 - 110

Lab Sample ID: 180-90467-2 DU
Matrix: Water
Analysis Batch: 439946

Client Sample ID: CCR-LF-2
Prep Type: Total/NA
Prep Batch: 433455

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-228	2.31		2.285		0.460	1.00	0.438	pCi/L	0.03	1

Carrier	DU DU		Limits
	%Yield	Qualifier	
Ba Carrier	86.7		40 - 110
Y Carrier	84.9		40 - 110

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

Lab Sample ID: 180-90467-2 DU
Matrix: Water
Analysis Batch: 440111

Client Sample ID: CCR-LF-2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Combined Radium 226 + 228	2.90		2.731		0.526	5.00	0.438	pCi/L	0.16	

QC Association Summary

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

HPLC/IC

Analysis Batch: 280113

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-90467-1	CCR-LF-1	Total/NA	Water	EPA 9056A	
180-90467-1	CCR-LF-1	Total/NA	Water	EPA 9056A	
180-90467-3	CCR-LF-3	Total/NA	Water	EPA 9056A	
180-90467-3	CCR-LF-3	Total/NA	Water	EPA 9056A	
180-90467-4	CCR-LF-4	Total/NA	Water	EPA 9056A	
180-90467-4	CCR-LF-4	Total/NA	Water	EPA 9056A	
180-90467-5	CCR-LF-5	Total/NA	Water	EPA 9056A	
180-90467-5	CCR-LF-5	Total/NA	Water	EPA 9056A	
180-90467-6	CCR-LF-6	Total/NA	Water	EPA 9056A	
180-90467-6	CCR-LF-6	Total/NA	Water	EPA 9056A	
180-90467-9	CCR-AP-3R	Total/NA	Water	EPA 9056A	
180-90467-9	CCR-AP-3R	Total/NA	Water	EPA 9056A	
180-90467-10	CCR-AP-4R	Total/NA	Water	EPA 9056A	
180-90467-11	CCR-AP-5	Total/NA	Water	EPA 9056A	
180-90467-11	CCR-AP-5	Total/NA	Water	EPA 9056A	
180-90467-12	CCR-AP-6	Total/NA	Water	EPA 9056A	
180-90467-12	CCR-AP-6	Total/NA	Water	EPA 9056A	
180-90467-13	CCR-AP-7R	Total/NA	Water	EPA 9056A	
180-90467-13	CCR-AP-7R	Total/NA	Water	EPA 9056A	
180-90467-16	BLIND DUPLICATE 1	Total/NA	Water	EPA 9056A	
180-90467-16	BLIND DUPLICATE 1	Total/NA	Water	EPA 9056A	
180-90467-17	BLIND DUPLICATE 2	Total/NA	Water	EPA 9056A	
180-90467-17	BLIND DUPLICATE 2	Total/NA	Water	EPA 9056A	
MB 180-280113/6	Method Blank	Total/NA	Water	EPA 9056A	
LCS 180-280113/5	Lab Control Sample	Total/NA	Water	EPA 9056A	

Analysis Batch: 280114

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-90467-2	CCR-LF-2	Total/NA	Water	EPA 9056A	
180-90467-2	CCR-LF-2	Total/NA	Water	EPA 9056A	
180-90467-7	CCR-BK-1R	Total/NA	Water	EPA 9056A	
180-90467-8	CCR-BK-2	Total/NA	Water	EPA 9056A	
180-90467-14	FIELD BLANK 1	Total/NA	Water	EPA 9056A	
180-90467-15	FIELD BLANK 2	Total/NA	Water	EPA 9056A	
MB 180-280114/6	Method Blank	Total/NA	Water	EPA 9056A	
LCS 180-280114/5	Lab Control Sample	Total/NA	Water	EPA 9056A	
180-90467-2 MS	CCR-LF-2	Total/NA	Water	EPA 9056A	
180-90467-2 MSD	CCR-LF-2	Total/NA	Water	EPA 9056A	

Metals

Prep Batch: 280038

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-90467-1	CCR-LF-1	Total Recoverable	Water	3005A	
180-90467-2	CCR-LF-2	Total Recoverable	Water	3005A	
180-90467-3	CCR-LF-3	Total Recoverable	Water	3005A	
180-90467-4	CCR-LF-4	Total Recoverable	Water	3005A	
180-90467-5	CCR-LF-5	Total Recoverable	Water	3005A	
180-90467-6	CCR-LF-6	Total Recoverable	Water	3005A	
180-90467-7	CCR-BK-1R	Total Recoverable	Water	3005A	
180-90467-8	CCR-BK-2	Total Recoverable	Water	3005A	

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QC Association Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Metals (Continued)

Prep Batch: 280038 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-90467-9	CCR-AP-3R	Total Recoverable	Water	3005A	
180-90467-10	CCR-AP-4R	Total Recoverable	Water	3005A	
180-90467-11	CCR-AP-5	Total Recoverable	Water	3005A	
180-90467-12	CCR-AP-6	Total Recoverable	Water	3005A	
180-90467-13	CCR-AP-7R	Total Recoverable	Water	3005A	
180-90467-14	FIELD BLANK 1	Total Recoverable	Water	3005A	
180-90467-15	FIELD BLANK 2	Total Recoverable	Water	3005A	
180-90467-16	BLIND DUPLICATE 1	Total Recoverable	Water	3005A	
180-90467-17	BLIND DUPLICATE 2	Total Recoverable	Water	3005A	
MB 180-280038/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 180-280038/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
180-90467-2 MS	CCR-LF-2	Total Recoverable	Water	3005A	
180-90467-2 MSD	CCR-LF-2	Total Recoverable	Water	3005A	

Prep Batch: 280150

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-90467-1	CCR-LF-1	Total/NA	Water	7470A	
180-90467-2	CCR-LF-2	Total/NA	Water	7470A	
180-90467-3	CCR-LF-3	Total/NA	Water	7470A	
180-90467-4	CCR-LF-4	Total/NA	Water	7470A	
180-90467-5	CCR-LF-5	Total/NA	Water	7470A	
180-90467-6	CCR-LF-6	Total/NA	Water	7470A	
180-90467-7	CCR-BK-1R	Total/NA	Water	7470A	
180-90467-8	CCR-BK-2	Total/NA	Water	7470A	
180-90467-9	CCR-AP-3R	Total/NA	Water	7470A	
180-90467-10	CCR-AP-4R	Total/NA	Water	7470A	
180-90467-11	CCR-AP-5	Total/NA	Water	7470A	
180-90467-12	CCR-AP-6	Total/NA	Water	7470A	
180-90467-13	CCR-AP-7R	Total/NA	Water	7470A	
180-90467-14	FIELD BLANK 1	Total/NA	Water	7470A	
180-90467-15	FIELD BLANK 2	Total/NA	Water	7470A	
180-90467-16	BLIND DUPLICATE 1	Total/NA	Water	7470A	
180-90467-17	BLIND DUPLICATE 2	Total/NA	Water	7470A	
MB 180-280150/1-A	Method Blank	Total/NA	Water	7470A	
LCS 180-280150/2-A	Lab Control Sample	Total/NA	Water	7470A	
180-90467-2 MS	CCR-LF-2	Total/NA	Water	7470A	
180-90467-2 MSD	CCR-LF-2	Total/NA	Water	7470A	

Analysis Batch: 280271

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-90467-1	CCR-LF-1	Total Recoverable	Water	EPA 6020A	280038
180-90467-2	CCR-LF-2	Total Recoverable	Water	EPA 6020A	280038
180-90467-3	CCR-LF-3	Total Recoverable	Water	EPA 6020A	280038
180-90467-4	CCR-LF-4	Total Recoverable	Water	EPA 6020A	280038
180-90467-5	CCR-LF-5	Total Recoverable	Water	EPA 6020A	280038
180-90467-6	CCR-LF-6	Total Recoverable	Water	EPA 6020A	280038
180-90467-7	CCR-BK-1R	Total Recoverable	Water	EPA 6020A	280038
180-90467-8	CCR-BK-2	Total Recoverable	Water	EPA 6020A	280038
180-90467-9	CCR-AP-3R	Total Recoverable	Water	EPA 6020A	280038
180-90467-10	CCR-AP-4R	Total Recoverable	Water	EPA 6020A	280038
180-90467-11	CCR-AP-5	Total Recoverable	Water	EPA 6020A	280038

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QC Association Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Metals (Continued)

Analysis Batch: 280271 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-90467-12	CCR-AP-6	Total Recoverable	Water	EPA 6020A	280038
180-90467-13	CCR-AP-7R	Total Recoverable	Water	EPA 6020A	280038
180-90467-14	FIELD BLANK 1	Total Recoverable	Water	EPA 6020A	280038
180-90467-15	FIELD BLANK 2	Total Recoverable	Water	EPA 6020A	280038
180-90467-16	BLIND DUPLICATE 1	Total Recoverable	Water	EPA 6020A	280038
180-90467-17	BLIND DUPLICATE 2	Total Recoverable	Water	EPA 6020A	280038
MB 180-280038/1-A	Method Blank	Total Recoverable	Water	EPA 6020A	280038
LCS 180-280038/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020A	280038
180-90467-2 MS	CCR-LF-2	Total Recoverable	Water	EPA 6020A	280038
180-90467-2 MSD	CCR-LF-2	Total Recoverable	Water	EPA 6020A	280038

Analysis Batch: 280376

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-90467-1	CCR-LF-1	Total/NA	Water	EPA 7470A	280150
180-90467-2	CCR-LF-2	Total/NA	Water	EPA 7470A	280150
180-90467-3	CCR-LF-3	Total/NA	Water	EPA 7470A	280150
180-90467-4	CCR-LF-4	Total/NA	Water	EPA 7470A	280150
180-90467-5	CCR-LF-5	Total/NA	Water	EPA 7470A	280150
180-90467-6	CCR-LF-6	Total/NA	Water	EPA 7470A	280150
180-90467-7	CCR-BK-1R	Total/NA	Water	EPA 7470A	280150
180-90467-8	CCR-BK-2	Total/NA	Water	EPA 7470A	280150
180-90467-9	CCR-AP-3R	Total/NA	Water	EPA 7470A	280150
180-90467-10	CCR-AP-4R	Total/NA	Water	EPA 7470A	280150
180-90467-11	CCR-AP-5	Total/NA	Water	EPA 7470A	280150
180-90467-12	CCR-AP-6	Total/NA	Water	EPA 7470A	280150
180-90467-13	CCR-AP-7R	Total/NA	Water	EPA 7470A	280150
180-90467-14	FIELD BLANK 1	Total/NA	Water	EPA 7470A	280150
180-90467-15	FIELD BLANK 2	Total/NA	Water	EPA 7470A	280150
180-90467-16	BLIND DUPLICATE 1	Total/NA	Water	EPA 7470A	280150
180-90467-17	BLIND DUPLICATE 2	Total/NA	Water	EPA 7470A	280150
MB 180-280150/1-A	Method Blank	Total/NA	Water	EPA 7470A	280150
LCS 180-280150/2-A	Lab Control Sample	Total/NA	Water	EPA 7470A	280150
180-90467-2 MS	CCR-LF-2	Total/NA	Water	EPA 7470A	280150
180-90467-2 MSD	CCR-LF-2	Total/NA	Water	EPA 7470A	280150

Analysis Batch: 280395

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-90467-1	CCR-LF-1	Total Recoverable	Water	EPA 6020A	280038
180-90467-2	CCR-LF-2	Total Recoverable	Water	EPA 6020A	280038
180-90467-3	CCR-LF-3	Total Recoverable	Water	EPA 6020A	280038
180-90467-4	CCR-LF-4	Total Recoverable	Water	EPA 6020A	280038
180-90467-5	CCR-LF-5	Total Recoverable	Water	EPA 6020A	280038
180-90467-6	CCR-LF-6	Total Recoverable	Water	EPA 6020A	280038
180-90467-7	CCR-BK-1R	Total Recoverable	Water	EPA 6020A	280038
180-90467-8	CCR-BK-2	Total Recoverable	Water	EPA 6020A	280038
180-90467-9	CCR-AP-3R	Total Recoverable	Water	EPA 6020A	280038
180-90467-10	CCR-AP-4R	Total Recoverable	Water	EPA 6020A	280038
180-90467-11	CCR-AP-5	Total Recoverable	Water	EPA 6020A	280038
180-90467-12	CCR-AP-6	Total Recoverable	Water	EPA 6020A	280038
180-90467-13	CCR-AP-7R	Total Recoverable	Water	EPA 6020A	280038
180-90467-14	FIELD BLANK 1	Total Recoverable	Water	EPA 6020A	280038

Eurofins TestAmerica, Pittsburgh

QC Association Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Metals (Continued)

Analysis Batch: 280395 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-90467-15	FIELD BLANK 2	Total Recoverable	Water	EPA 6020A	280038
180-90467-16	BLIND DUPLICATE 1	Total Recoverable	Water	EPA 6020A	280038
180-90467-17	BLIND DUPLICATE 2	Total Recoverable	Water	EPA 6020A	280038
LCS 180-280038/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020A	280038
180-90467-2 MS	CCR-LF-2	Total Recoverable	Water	EPA 6020A	280038
180-90467-2 MSD	CCR-LF-2	Total Recoverable	Water	EPA 6020A	280038

General Chemistry

Analysis Batch: 279723

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-90467-1	CCR-LF-1	Total/NA	Water	SM 2540C	
180-90467-3	CCR-LF-3	Total/NA	Water	SM 2540C	
180-90467-5	CCR-LF-5	Total/NA	Water	SM 2540C	
180-90467-6	CCR-LF-6	Total/NA	Water	SM 2540C	
180-90467-14	FIELD BLANK 1	Total/NA	Water	SM 2540C	
180-90467-15	FIELD BLANK 2	Total/NA	Water	SM 2540C	
180-90467-16	BLIND DUPLICATE 1	Total/NA	Water	SM 2540C	
MB 180-279723/2	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-279723/1	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 279730

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-90467-4	CCR-LF-4	Total/NA	Water	SM 2540C	
180-90467-7	CCR-BK-1R	Total/NA	Water	SM 2540C	
180-90467-8	CCR-BK-2	Total/NA	Water	SM 2540C	
180-90467-12	CCR-AP-6	Total/NA	Water	SM 2540C	
180-90467-13	CCR-AP-7R	Total/NA	Water	SM 2540C	
MB 180-279730/2	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-279730/1	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 279771

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-90467-2	CCR-LF-2	Total/NA	Water	SM 2540C	
180-90467-9	CCR-AP-3R	Total/NA	Water	SM 2540C	
180-90467-10	CCR-AP-4R	Total/NA	Water	SM 2540C	
180-90467-11	CCR-AP-5	Total/NA	Water	SM 2540C	
180-90467-17	BLIND DUPLICATE 2	Total/NA	Water	SM 2540C	
MB 180-279771/2	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-279771/1	Lab Control Sample	Total/NA	Water	SM 2540C	
180-90467-2 DU	CCR-LF-2	Total/NA	Water	SM 2540C	

Analysis Batch: 279863

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-90467-1	CCR-LF-1	Total/NA	Water	EPA 9040C	
180-90467-2	CCR-LF-2	Total/NA	Water	EPA 9040C	
180-90467-3	CCR-LF-3	Total/NA	Water	EPA 9040C	
180-90467-4	CCR-LF-4	Total/NA	Water	EPA 9040C	
180-90467-5	CCR-LF-5	Total/NA	Water	EPA 9040C	
180-90467-6	CCR-LF-6	Total/NA	Water	EPA 9040C	
180-90467-7	CCR-BK-1R	Total/NA	Water	EPA 9040C	

Eurofins TestAmerica, Pittsburgh

QC Association Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

General Chemistry (Continued)

Analysis Batch: 279863 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-90467-8	CCR-BK-2	Total/NA	Water	EPA 9040C	
180-90467-9	CCR-AP-3R	Total/NA	Water	EPA 9040C	
180-90467-10	CCR-AP-4R	Total/NA	Water	EPA 9040C	
180-90467-11	CCR-AP-5	Total/NA	Water	EPA 9040C	
180-90467-12	CCR-AP-6	Total/NA	Water	EPA 9040C	
180-90467-13	CCR-AP-7R	Total/NA	Water	EPA 9040C	
180-90467-14	FIELD BLANK 1	Total/NA	Water	EPA 9040C	
180-90467-15	FIELD BLANK 2	Total/NA	Water	EPA 9040C	
180-90467-16	BLIND DUPLICATE 1	Total/NA	Water	EPA 9040C	
180-90467-17	BLIND DUPLICATE 2	Total/NA	Water	EPA 9040C	
LCS 180-279863/1	Lab Control Sample	Total/NA	Water	EPA 9040C	
180-90467-2 DU	CCR-LF-2	Total/NA	Water	EPA 9040C	
180-90467-10 DU	CCR-AP-4R	Total/NA	Water	EPA 9040C	

Rad

Prep Batch: 430235

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-90467-3	CCR-LF-3	Total/NA	Water	PrecSep-21	
180-90467-5	CCR-LF-5	Total/NA	Water	PrecSep-21	
180-90467-6	CCR-LF-6	Total/NA	Water	PrecSep-21	
180-90467-7	CCR-BK-1R	Total/NA	Water	PrecSep-21	
180-90467-9	CCR-AP-3R	Total/NA	Water	PrecSep-21	
180-90467-10	CCR-AP-4R	Total/NA	Water	PrecSep-21	
180-90467-11	CCR-AP-5	Total/NA	Water	PrecSep-21	
180-90467-12	CCR-AP-6	Total/NA	Water	PrecSep-21	
MB 160-430235/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-430235/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 430329

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-90467-14	FIELD BLANK 1	Total/NA	Water	PrecSep-21	
180-90467-15	FIELD BLANK 2	Total/NA	Water	PrecSep-21	
180-90467-16	BLIND DUPLICATE 1	Total/NA	Water	PrecSep-21	
180-90467-17	BLIND DUPLICATE 2	Total/NA	Water	PrecSep-21	
MB 160-430329/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-430329/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-430329/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 430397

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-90467-3	CCR-LF-3	Total/NA	Water	PrecSep_0	
180-90467-5	CCR-LF-5	Total/NA	Water	PrecSep_0	
180-90467-6	CCR-LF-6	Total/NA	Water	PrecSep_0	
180-90467-7	CCR-BK-1R	Total/NA	Water	PrecSep_0	
180-90467-9	CCR-AP-3R	Total/NA	Water	PrecSep_0	
180-90467-10	CCR-AP-4R	Total/NA	Water	PrecSep_0	
180-90467-11	CCR-AP-5	Total/NA	Water	PrecSep_0	
180-90467-12	CCR-AP-6	Total/NA	Water	PrecSep_0	
MB 160-430397/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-430397/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Eurofins TestAmerica, Pittsburgh

QC Association Summary

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

Job ID: 180-90467-1

Rad

Prep Batch: 430398

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-90467-14	FIELD BLANK 1	Total/NA	Water	PrecSep_0	
180-90467-15	FIELD BLANK 2	Total/NA	Water	PrecSep_0	
180-90467-16	BLIND DUPLICATE 1	Total/NA	Water	PrecSep_0	
180-90467-17	BLIND DUPLICATE 2	Total/NA	Water	PrecSep_0	
MB 160-430398/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-430398/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-430398/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Prep Batch: 433443

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-90467-1	CCR-LF-1	Total/NA	Water	PrecSep-21	
180-90467-2	CCR-LF-2	Total/NA	Water	PrecSep-21	
180-90467-4	CCR-LF-4	Total/NA	Water	PrecSep-21	
180-90467-8	CCR-BK-2	Total/NA	Water	PrecSep-21	
180-90467-13	CCR-AP-7R	Total/NA	Water	PrecSep-21	
MB 160-433443/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-433443/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
180-90467-2 DU	CCR-LF-2	Total/NA	Water	PrecSep-21	

Prep Batch: 433455

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-90467-1	CCR-LF-1	Total/NA	Water	PrecSep_0	
180-90467-2	CCR-LF-2	Total/NA	Water	PrecSep_0	
180-90467-4	CCR-LF-4	Total/NA	Water	PrecSep_0	
180-90467-8	CCR-BK-2	Total/NA	Water	PrecSep_0	
180-90467-13	CCR-AP-7R	Total/NA	Water	PrecSep_0	
MB 160-433455/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-433455/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
180-90467-2 DU	CCR-LF-2	Total/NA	Water	PrecSep_0	

Chain of Custody Record

Client Information		Lab PIV: Bortot, Veronica		Carrier Tracking No(s):	
Client Contact: Angela Casbon Scheller		E-Mail: veronica.bortot@testamericainc.com		COC No: 180-49738-8017.1	
Company: Vectren Corporation		Address: PO BOX 209		Page: Page 1 of 1	
City: Evansville		State, Zip: IN, 47702		Job #:	
Phone: 864-214-8750(Tel)		Email: aacscheller@vectren.com		Preservation Codes:	
Project Name: CCR Groundwater Monitoring - AB Brown		Project #: 18016014		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)	
Site: AB Brown		SSOW#:		Other:	

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=wastewater, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Analysis Requested	Total Number of Containers	Special Instructions/Note:
CCR-AP-2L CCR-AP-6	5-21-19	1440	G	Water	X	X	9315_Ra226, 9320_Ra228	5	Appendix III & Appendix IV analytes needed: No Sb, Ve, Tl
CCR-AP-3L CCR-AP-7R	5-21-19	1600	G	Water			9404C, 9056A_ORGFM_28D		
CCR-AP-8 Field Blank 1	5-20-19	1515	G	Water			6020A, 7470A		
CCR-AP-9 Field Blank 2	5-21-19	1450	G	Water			2540C, Calcd - TDS		
CCR-AP-10 Blind Duplicate 1	5-20-19	-	G	Water					
CCR-AP- Blind Duplicate 2	5-22-19	-	G	Water					
MSMSD	5-22-19	1320	G	Water					

Possible Hazard Identification
 Non-Hazard Flammable Skin Irritant Poison B Unknown Radiological
 Deliverable Requested: I, II, III, IV, Other (specify)

Empty Kit Relinquished by: _____ Date: _____
Relinquished by: Jacob Winsett Date: 5-22-19/1830 Company: ATC
Relinquished by: _____ Date: _____ Company: _____
Relinquished by: _____ Date: _____ Company: _____

Sample Disposal (A fee may be assessed if samples are retained longer than 30 days):
 Return To Client Disposal By Lab Archive For _____
 Special Instructions/QC Requirements:

Received by: _____ Date/Time: _____
Received by: Judy Watson Date/Time: 5-23-19 Company: APITTT
Received by: _____ Date/Time: _____ Company: _____

Cooler Temperature(s) °C and Other Remarks:



Chain of Custody Record

Client Information		Sampler: <i>Jacob Winseth</i>		Lab PM: <i>Bortol, Veronica</i>		Carrier Tracking No(s):		COC No: 180-49738-8017.1	
Client Contact: <i>Angela Casbon Scheller</i>		Phone: <i>(812) 208-9422</i>		E-Mail: <i>veronica.bortol@testamericainc.com</i>				Page: Page 1 of 1	
Company: <i>Vectren Corporation</i>		Address: <i>PO BOX 209</i>		City: <i>Evansville</i>		State: <i>IN</i>		Zip: <i>47702</i>	
Phone: <i>864-214-8750(Tel)</i>		E-mail: <i>acscheller@vectren.com</i>		Project #: <i>18016014</i>		Site: <i>CCR Groundwater Monitoring - AB Brown</i>			
TAT Requested (days): <i>Standard</i>		Due Date Requested:		Sample Date		Sample Time		Sample Type (C=Comp, G=grab)	
Purchase Order Requested		Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)		9315_Ra226_9320_Ra228		9040C_9056A_ORGFM_28D	
WO #:		620A_7470A		2540C_Calcd - TDS					
Preservation Codes:		M - Hexane		N		D		N	
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		Other:					
M - Hexane		N - None		O - AsNaO2		P - Na2O4S		Q - Na2SO3	
R - Na2SO3		S - HZSO4		T - TSP Dodecahydrate		U - Acetone		V - MCAA	
W - pH 4-5		Z - other (specify)							
Special Instructions/Note:		Appendix III & Appendix IV		analytes needed; No Sb, Ve, Tl					
Total Number of containers		5							

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=soil, BT=Tissue, A=Air)	Preservation Code:	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226_9320_Ra228	9040C_9056A_ORGFM_28D	620A_7470A	2540C_Calcd - TDS	Analysis Requested	Carrier Tracking No(s)
CCR-AP-21	5-20-19	1500	G	Water				X	X				
CCR-AP-31	5-22-19	1320		Water									
CCR-AP-8	5-20-19	1335		Water									
CCR-AP-9	5-21-19	1305		Water									
CCR-AP-10	5-20-19	1155		Water									
CCR-AP-	5-20-19	1245		Water									
CCR-BK-1R	5-21-19	1135											
CCR-BK-2	5-21-19	1040											
CCR-AP-3R	5-22-19	1415											
CCR-AP-4R	5-22-19	1520											
CCR-AP-5	5-22-19	1130											

Possible Hazard Identification
 Non-Hazard Flammable Skin Irritant Poison B Unknown Radiological

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

Empty Kit Relinquished by: _____ Date: _____

Relinquished by: *Jacob Winseth* Date/Time: *5-22-19/1830* Company: *ATC*

Relinquished by: _____ Date/Time: _____ Company: _____

Relinquished by: _____ Date/Time: _____ Company: _____

Custody Seals Intact: Yes No Custody Seal No.: _____

Relinquished by: *Jacob Winseth* Date/Time: *5-23-19* Company: *TAPIT*

Relinquished by: *Juhlu Water* Date/Time: *900* Company: _____

Relinquished by: _____ Date/Time: _____ Company: _____

Special Instructions/QC Requirements: _____

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

Method of Shipment: _____

Time: _____

Received by: *Fedex* Date/Time: _____ Company: _____

Received by: *Juhlu Water* Date/Time: _____ Company: _____

Received by: _____ Date/Time: _____ Company: _____

Cooler Temperature(s) °C and Other Remarks: _____



ORIGIN ID:EVVA (812) 477-1176
BRIAN KLEEMAN

1149 WEDEKING AVENUE
BUILDING D, SUITE 2
EVANSVILLE, IN 47715
UNITED STATES US

C
BIL

100

TO VERONICA BORTOT
TESTAMERICA
301 ALPHA DRIVE

PITTSBURGH PA 15238

(412) 963-7058
INV. PN# 170LF00732
PO:

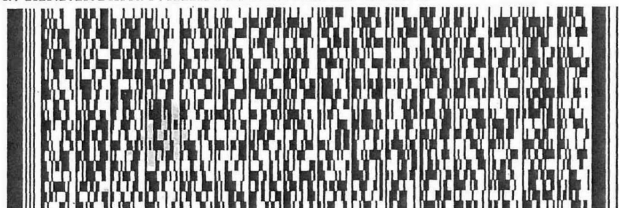
REF: PN# 170LF00732

DEPT:



555J1D66G123AD

FedEx Ship Manager - Print Your Label(s)



FedEx Express



415101501070100

THU - 23 MAY 3:00P

STANDARD OVERNIGHT

4 of 4

MPS# 7752 9010 3838

0263

Mstr# 7752 9010 3415

0201

15238

PA-US

PIT

NA AGCA

Uncorrected temp
Thermometer ID

4.3 °C
10

CF 0 Initials TS

PT-WI-SR-001 effective 11/8/18



5/22/2019

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ORIGIN ID:EVVA (812) 477-1176
 BRIAN KLEEMAN

1149 WEDEKING AVENUE
 BUILDING D, SUITE 2
 EVANSVILLE, IN 47715
 UNITED STATES US

SHIP DATE: 22MAY19
 ACTWGT: 45.00 LB
 CAD: 106997842/INET4100
 DIMS: 18x13x10 IN

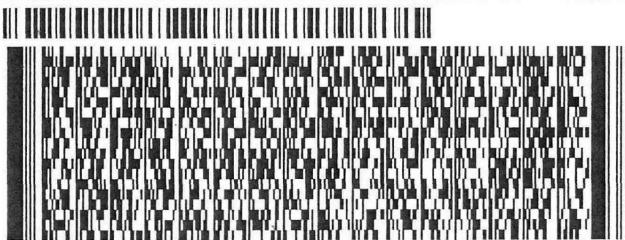
BILL SENDER

TO **VERONICA BORTOT**
TESTAMERICA
301 ALPHA DRIVE

PITTSBURGH PA 15238

(412) 963-7058 REF: PN# 170LF00732
 INV: PN# 170LF00732
 PO: DEPT:

565.J1/DG6C/23AD



FedEx Ship Manager - Print Your Label(s)

THU - 23 MAY 3:00P
 STANDARD OVERNIGHT

1 of 4
 TRK# 7752 9010 3415
 0201
 ## MASTER ##

NA AGCA

15238
 PA-US PIT

Uncorrected temp 17 °C
 Thermometer ID 12
 CF 0 Initials B
 PT-WI-SR-001 effective 11/8/18



5/22/2019

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- 13

ORIGIN ID:EVVA (812) 477-1176
 BRIAN KLEEMAN

1149 WEDEKING AVENUE
 BUILDING D, SUITE 2
 EVANSVILLE, IN 47715
 UNITED STATES US

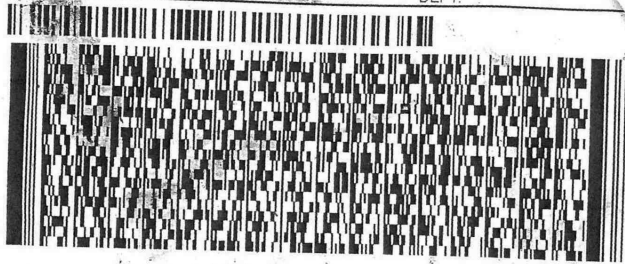
TO **VERONICA BORTOT**
TESTAMERICA
301 ALPHA DRIVE

PITTSBURGH PA 15238

(412) 963-7058
 INV. PN# 170LF00732

REF: PN# 170LF00732

DEPT:



3 of 4

THU - 23 MAY 3:00P
 STANDARD OVERNIGHT

MPS# 0263 **7752 9010 3194**

Mstr# 7752 9010 3415

0201

NA AGCA

15238
 PA-US PIT



Uncorrected temp
 Thermometer ID

CF 0 Initials B

PT-WI-SR-001 effective 11/8/18

Printer - Print Your Label(s)

ORIGIN ID:EVVA (812) 477-1176
BRIAN KLEEMAN

1149 WEDEKING AVENUE
BUILDING D, SUITE 2
EVANSVILLE, IN 47715
UNITED STATES US

SHIP DATE: 22MAY19
ACTWGT: 45.00 LB
CAD: 106997842/INET4100
DIMS: 18x13x10 IN

BILL SENDER

TO VERONICA BORTOT
TESTAMERICA
301 ALPHA DRIVE

PITTSBURGH PA 15238

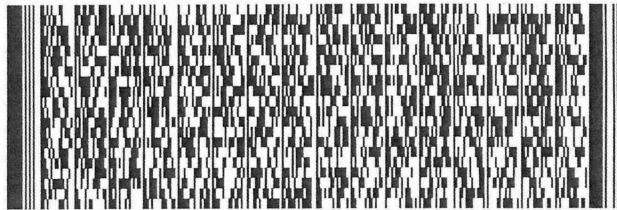
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INV: PN# 170LF00732
PO:

REF: PN# 170LF00732

DEPT:

565J1/D66C/23AD

FedEx Ship Manager - Print Your Label(s)



2 of 4

THU - 23 MAY 3:00P

STANDARD OVERNIGHT

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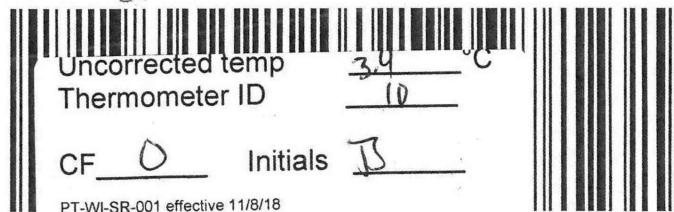
Mstr# 7752 9010 3415

0201

NA AGCA

15238

PA-US PIT



Uncorrected temp 3.4 °C
Thermometer ID 10
CF 0 Initials JB

PT-WI-SR-001 effective 11/8/18

5/22/2019

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Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler:	Lab PM:	Carrier Tracking No(s):	COC No:
Client Contact: Shipping/Receiving		Phone:	Bortol, Veronica	180-363768.1	180-363768.1
Company: TestAmerica Laboratories, Inc.		E-Mail:	veronica.bortol@testamericainc.com	State of Origin: Indiana	Page: Page 1 of 2
Address: 13715 Rider Trail North,		Accreditations Required (See note):	Job #: 180-90467-1		
City: Earth City	Due Date Requested: 6/5/2019	Analysis Requested			
State, Zip: MO, 63045	TAT Requested (days):	Perform MS/MSD (Yes or No)			
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:	Field Filtered Sample (Yes or No)			
Email:	WO #:	9315_Ra226/PreSep_21 Standard Target List			
Project Name: CCR Groundwater AB Brown	Project #: 18016014	9320_Ra226/PreSep_0 Standard Target List			
Site: CCR Groundwater AB Brown	SSOW#:	Ra226Ra228_GFPc			
Sample Identification - Client ID (Lab ID)		Total Number of Containers			
CCR-LF-1 (180-90467-1)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab) <small>BT-Tissue, A=Air</small>	Matrix (W=water, S=solid, O=waste/oil)	Preservation Code:
CCR-LF-2 (180-90467-2)	5/20/19	15:00 Eastern	Water	Water	X
CCR-LF-3 (180-90467-3)	5/22/19	13:20 Eastern	Water	Water	X
CCR-LF-4 (180-90467-4)	5/22/19	13:20 Eastern	DU	Water	X
CCR-LF-5 (180-90467-5)	5/20/19	13:35 Eastern	Water	Water	X
CCR-LF-6 (180-90467-6)	5/21/19	13:05 Eastern	Water	Water	X
CCR-BK-1R (180-90467-7)	5/20/19	11:55 Eastern	Water	Water	X
CCR-BK-2 (180-90467-8)	5/20/19	12:45 Eastern	Water	Water	X
	5/21/19	11:35 Eastern	Water	Water	X
	5/21/19	10:40 Eastern	Water	Water	X
<p>Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon 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/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.</p>					
Possible Hazard Identification					
Unconfirmed					
Deliverable Requested: I, II, III, IV, Other (specify)		Primary Deliverable Rank: 2			
Empty Kit Relinquished by:		Date:			
Relinquished by: <i>S. Samardes</i>		Date/Time: 5/24/19 1715		Company: <i>AAA</i>	
Relinquished by:		Date/Time:		Company:	
Relinquished by:		Date/Time:		Company:	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:	



Chain of Custody Record



Client Information (Sub Contract Lab)		Lab P/N: Bortol, Veronica	Carrier Tracking No(s):	COC No: 180-363768.2						
Shipping/Receiving		E-Mail: veronica.bortol@testamericainc.com	State of Origin: Indiana	Page: Page 2 of 2						
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):								
Address: 13715 Rider Trail North,		Job #: 180-90467-1								
City: Earth City		Preservation Codes:								
State, Zip: MO, 63045		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 Other:								
Phone: 314-298-8566(Tel) 314-298-8757(Fax)		M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2SO4 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)								
Email:										
Project Name: CCR Groundwater AB Brown										
Site: 18016014										
SSOW#:										
Due Date Requested: 6/5/2019		Analysis Requested								
TAT Requested (days):		Total Number of containers								
PO #:		9315_Ra226/PreSep_21 Standard Target List								
WO #:		9320_Ra228/PreSep_0 Standard Target List								
Project #:		Perform MS/MSD (Yes or No)								
18016014		Field Filtered Sample (Yes or No)								
SSOW#:		Ra228Ra228 GPC								
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=wastefall, BT=tissue, A=Ab)	Preservation Code:	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PreSep_21 Standard Target List	9320_Ra228/PreSep_0 Standard Target List	Special Instructions/Note:
CCR-AP-3R (180-90467-9)	5/22/19	14:15 Eastern		Water		X	X	X	X	
CCR-AP-4R (180-90467-10)	5/22/19	15:20 Eastern		Water		X	X	X	X	
CCR-AP-5 (180-90467-11)	5/22/19	11:30 Eastern		Water		X	X	X	X	
CCR-AP-6 (180-90467-12)	5/21/19	14:40 Eastern		Water		X	X	X	X	
CCR-AP-7R (180-90467-13)	5/21/19	16:00 Eastern		Water		X	X	X	X	
FIELD BLANK 1 (180-90467-14)	5/20/19	15:15 Eastern		Water		X	X	X	X	
FIELD BLANK 2 (180-90467-15)	5/21/19	14:50 Eastern		Water		X	X	X	X	
BLIND DUPLICATE 1 (180-90467-16)	5/20/19	Eastern		Water		X	X	X	X	
BLIND DUPLICATE 2 (180-90467-17)	5/22/19	Eastern		Water		X	X	X	X	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody, I

Possible Hazard Identification
Unconfirmed

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2

Empty Kit Relinquished by: *[Signature]* Date: 5/24/19 17:15
Relinquished by: *[Signature]* Date: 5/25/19 08:35
Relinquished by: *[Signature]* Date:
Relinquished by:
Custody Seals Intact: Yes No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks:

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:

Method of Shipment:
Received by: *[Signature]* Date/Time: 5/25/19 08:35 Company: *[Signature]*
Received by:
Received by:
Cooler Temperature(s) °C and Other Remarks:



Login Sample Receipt Checklist

Client: Vectren Corporation

Job Number: 180-90467-1

Login Number: 90467

List Source: Eurofins TestAmerica, Pittsburgh

List Number: 1

Creator: Watson, Debbie

Question	Answer	Comment
Radioactivity wasn't checked or is \leq 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.	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 <math><6\text{mm}</math> (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: Vectren Corporation

Job Number: 180-90467-1

Login Number: 90467

List Number: 2

Creator: Press, Nicholas B

List Source: Eurofins TestAmerica, St. Louis

List Creation: 05/25/19 11:27 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.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	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?	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	



Login Sample Receipt Checklist

Client: Vectren Corporation

Job Number: 180-90467-1

Login Number: 90467
List Number: 3
Creator: Press, Nicholas B

List Source: Eurofins TestAmerica, St. Louis
List Creation: 05/25/19 11:29 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.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	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?	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	



Login Sample Receipt Checklist

Client: Vectren Corporation

Job Number: 180-90467-1

Login Number: 90467
List Number: 4
Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis
List Creation: 06/28/19 04:52 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?	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	



ANALYTICAL REPORT

Eurofins TestAmerica, Pittsburgh
301 Alpha Drive
RIDC Park
Pittsburgh, PA 15238
Tel: (412)963-7058

Laboratory Job ID: 180-97385-1

Client Project/Site: CCR Groundwater Monitoring AB Brown

For:

Vectren Corporation
PO BOX 209
Evansville, Indiana 47702

Attn: Accounts Payable



Authorized for release by:
11/25/2019 9:58:37 AM

Veronica Bortot, Senior Project Manager
(412)963-2435

veronica.bortot@testamericainc.com

LINKS

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results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

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.

PA Lab ID: 02-00416



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Case Narrative

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

Job ID: 180-97385-1

Job ID: 180-97385-1

Laboratory: Eurofins TestAmerica, Pittsburgh

Narrative

Job Narrative 180-97385-1

Receipt

The samples were received on 10/17/2019 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.3° C, 1.8° C and 2.7° C.

Anions

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

Radiological 226/228

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

CCR-LF-1 (180-97385-1), CCR-LF-2 (180-97385-2), CCR-LF-2 (180-97385-2[DU]), CCR-LF-3 (180-97385-3), CCR-LF-4 (180-97385-4), CCR-LF-5 (180-97385-5), CCR-LF-6 (180-97385-6), BLIND DUPLICATE 2 (180-97385-7), FIELD BLANK 2 (180-97385-8), (LCS 160-447420/1-A) and (MB 160-447420/20-A)

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

Metals

Methods 6020A, 6020B: The following samples were diluted due to the nature of the sample matrix: CCR-LF-2 (180-97385-2), CCR-LF-2 (180-97385-2[MS]), CCR-LF-2 (180-97385-2[MSD]), CCR-LF-4 (180-97385-4), (180-97385-E-2-B PDS ^10) and (180-97385-E-2-B SD ^50). Elevated reporting limits (RLs) are provided.

Method 6020A: The post digestion spike % recovery for boron associated with batch 180-296189 was outside of control limits. The following sample is impacted: CCR-LF-2 (180-97385-2).

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

General Chemistry

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

Definitions/Glossary

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

Job ID: 180-97385-1

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

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

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.
α	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)

Accreditation/Certification Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

Job ID: 180-97385-1

Laboratory: Eurofins TestAmerica, Pittsburgh

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

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	19-033-0	06-27-20
California	State	2891	04-30-20
Connecticut	State	PH-0688	09-30-20
Florida	NELAP	E871008	06-30-20
Georgia	State	PA 02-00416	04-30-20
Illinois	NELAP	004375	06-30-20
Kansas	NELAP	E-10350	03-31-20
Kentucky (UST)	State	162013	04-30-20
Kentucky (WW)	State	KY98043	12-31-19
Louisiana	NELAP	04041	06-30-20
Minnesota	NELAP	042-999-482	12-31-19
Nevada	State	PA00164	07-31-20
New Hampshire	NELAP	2030	04-04-20
New Jersey	NELAP	PA005	06-30-20
New York	NELAP	11182	04-01-20
North Carolina (WW/SW)	State	434	12-31-19
North Dakota	State	R-227	04-30-20
Oregon	NELAP	PA-2151	02-06-20
Pennsylvania	NELAP	02-00416	04-30-20
Rhode Island	State	LAO00362	12-30-19
South Carolina	State	89014	04-30-20
Texas	NELAP	T104704528	03-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	Federal	P-Soil-01	06-26-22
USDA	US Federal Programs	P330-16-00211	06-26-22
Utah	NELAP	PA001462019-8	05-31-20
Virginia	NELAP	10043	09-15-20
West Virginia DEP	State	142	01-31-20
Wisconsin	State	998027800	08-31-20



Accreditation/Certification Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

Job ID: 180-97385-1

Laboratory: Eurofins TestAmerica, St. Louis

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

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-19
California	Los Angeles County Sanitation Districts	10259	06-30-20
California	State	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
HI - RadChem Recognition	State	n/a	06-30-20
Illinois	NELAP	004553	11-30-19
Iowa	State	373	09-17-20
Kansas	NELAP	E-10236	10-31-20
Kentucky (DW)	State	KY90125	12-31-19
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	State	LA011	12-31-19
Maryland	State	310	09-30-20
MI - RadChem Recognition	State	9005	06-30-20
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	04-01-20
North Dakota	State	R-207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-20
South Carolina	State	85002001	06-30-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-17-00028	02-02-20
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	10310	06-14-20
Washington	State	C592	08-30-20
West Virginia DEP	State	381	12-01-19

Sample Summary

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

Job ID: 180-97385-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
180-97385-1	CCR-LF-1	Water	10/15/19 12:35	10/17/19 09:30	
180-97385-2	CCR-LF-2	Water	10/15/19 11:50	10/17/19 09:30	
180-97385-3	CCR-LF-3	Water	10/15/19 09:40	10/17/19 09:30	
180-97385-4	CCR-LF-4	Water	10/16/19 09:35	10/17/19 09:30	
180-97385-5	CCR-LF-5	Water	10/14/19 11:30	10/17/19 09:30	
180-97385-6	CCR-LF-6	Water	10/14/19 12:15	10/17/19 09:30	
180-97385-7	BLIND DUPLICATE 2	Water	10/14/19 11:50	10/17/19 09:30	
180-97385-8	FIELD BLANK 2	Water	10/15/19 09:00	10/17/19 09:30	



Method Summary

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

Job ID: 180-97385-1

Method	Method Description	Protocol	Laboratory
EPA 9056A	Anions, Ion Chromatography	SW846	TAL PIT
EPA 6020A	Metals (ICP/MS)	SW846	TAL PIT
EPA 9040C	pH	SW846	TAL PIT
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL PIT
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 PIT
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 PIT = Eurofins TestAmerica, Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

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

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

Job ID: 180-97385-1

Client Sample ID: CCR-LF-1

Lab Sample ID: 180-97385-1

Date Collected: 10/15/19 12:35

Matrix: Water

Date Received: 10/17/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2100B		1			297483	11/09/19 04:25	MJH	TAL PIT
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2100B		10			297483	11/09/19 04:41	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	295709	10/22/19 17:45	MWW	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			296046	10/24/19 17:40	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	295709	10/22/19 17:45	MWW	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			296139	10/25/19 13:04	RSK	TAL PIT
Total/NA	Analysis	EPA 9040C Instrument ID: NOEQUIP		1			295978	10/24/19 17:09	PM	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	295368	10/18/19 11:42	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.56 mL	1.0 g	447420	10/23/19 09:13	EJQ	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			450354	11/14/19 13:09	CJQ	TAL SL
Total/NA	Prep	PrecSep_0			1000.56 mL	1.0 g	447441	10/23/19 11:46	EJQ	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCPROTEAN		1			449089	11/05/19 18:01	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			450875	11/18/19 08:43	SMP	TAL SL

Client Sample ID: CCR-LF-2

Lab Sample ID: 180-97385-2

Date Collected: 10/15/19 11:50

Matrix: Water

Date Received: 10/17/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2100B		25			297717	11/11/19 07:04	MJH	TAL PIT
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2100B		250			297717	11/11/19 07:20	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	295709	10/22/19 17:45	MWW	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			296046	10/24/19 17:43	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	295709	10/22/19 17:45	MWW	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			296139	10/25/19 13:07	RSK	TAL PIT
Total/NA	Analysis	EPA 9040C Instrument ID: NOEQUIP		1			295978	10/24/19 16:56	PM	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	5 mL	100 mL	295368	10/18/19 11:42	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.24 mL	1.0 g	447420	10/23/19 09:13	EJQ	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			450354	11/14/19 13:09	CJQ	TAL SL

Eurofins TestAmerica, Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

Job ID: 180-97385-1

Client Sample ID: CCR-LF-2

Lab Sample ID: 180-97385-2

Date Collected: 10/15/19 11:50

Matrix: Water

Date Received: 10/17/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep_0			1000.24 mL	1.0 g	447441	10/23/19 11:46	EJQ	TAL SL
Total/NA	Analysis	9320		1			449089	11/05/19 18:01	AJD	TAL SL
Instrument ID: GFPCPROTEAN										
Total/NA	Analysis	Ra226_Ra228		1			450875	11/18/19 08:43	SMP	TAL SL
Instrument ID: NOEQUIP										

Client Sample ID: CCR-LF-3

Lab Sample ID: 180-97385-3

Date Collected: 10/15/19 09:40

Matrix: Water

Date Received: 10/17/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		2.5			297717	11/10/19 23:08	MJH	TAL PIT
Instrument ID: CHICS2100B										
Total/NA	Analysis	EPA 9056A		25			297717	11/10/19 23:24	MJH	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	295718	10/22/19 21:13	MWW	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			296046	10/24/19 18:44	RSK	TAL PIT
Instrument ID: A										
Total Recoverable	Prep	3005A			50 mL	50 mL	295718	10/22/19 21:13	MWW	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			296189	10/25/19 15:06	RSK	TAL PIT
Instrument ID: A										
Total/NA	Analysis	EPA 9040C		1			295978	10/24/19 17:12	PM	TAL PIT
Instrument ID: NOEQUIP										
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	295368	10/18/19 11:42	AVS	TAL PIT
Instrument ID: NOEQUIP										
Total/NA	Prep	PrecSep-21			1000.34 mL	1.0 g	447420	10/23/19 09:13	EJQ	TAL SL
Total/NA	Analysis	9315		1			450354	11/14/19 16:49	CJQ	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Prep	PrecSep_0			1000.34 mL	1.0 g	447441	10/23/19 11:46	EJQ	TAL SL
Total/NA	Analysis	9320		1			449089	11/05/19 18:02	AJD	TAL SL
Instrument ID: GFPCPROTEAN										
Total/NA	Analysis	Ra226_Ra228		1			450875	11/18/19 08:43	SMP	TAL SL
Instrument ID: NOEQUIP										

Client Sample ID: CCR-LF-4

Lab Sample ID: 180-97385-4

Date Collected: 10/16/19 09:35

Matrix: Water

Date Received: 10/17/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		10			297483	11/08/19 14:58	MJH	TAL PIT
Instrument ID: CHICS2100B										
Total/NA	Analysis	EPA 9056A		100			297483	11/08/19 15:14	MJH	TAL PIT
Instrument ID: CHICS2100B										

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Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

Job ID: 180-97385-1

Client Sample ID: CCR-LF-4

Lab Sample ID: 180-97385-4

Date Collected: 10/16/19 09:35

Matrix: Water

Date Received: 10/17/19 09:30

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	295718	10/22/19 21:13	MWW	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			296046	10/24/19 18:47	RSK	TAL PIT
		Instrument ID: A								
Total Recoverable	Prep	3005A			50 mL	50 mL	295718	10/22/19 21:13	MWW	TAL PIT
Total Recoverable	Analysis	EPA 6020A		10			296189	10/25/19 15:16	RSK	TAL PIT
		Instrument ID: A								
Total/NA	Analysis	EPA 9040C		1			295978	10/24/19 17:14	PM	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Analysis	SM 2540C		1	15 mL	100 mL	295452	10/19/19 10:37	AVS	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Prep	PrecSep-21			1000.57 mL	1.0 g	447420	10/23/19 09:13	EJQ	TAL SL
Total/NA	Analysis	9315		1			450354	11/14/19 16:49	CJQ	TAL SL
		Instrument ID: GFPCBLUE								
Total/NA	Prep	PrecSep_0			1000.57 mL	1.0 g	447441	10/23/19 11:46	EJQ	TAL SL
Total/NA	Analysis	9320		1			449089	11/05/19 18:02	AJD	TAL SL
		Instrument ID: GFPCPROTEAN								
Total/NA	Analysis	Ra226_Ra228		1			450875	11/18/19 08:43	SMP	TAL SL
		Instrument ID: NOEQUIP								

Client Sample ID: CCR-LF-5

Lab Sample ID: 180-97385-5

Date Collected: 10/14/19 11:30

Matrix: Water

Date Received: 10/17/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		5			297483	11/09/19 05:28	MJH	TAL PIT
		Instrument ID: CHICS2100B								
Total/NA	Analysis	EPA 9056A		50			297483	11/09/19 05:44	MJH	TAL PIT
		Instrument ID: CHICS2100B								
Total Recoverable	Prep	3005A			50 mL	50 mL	295718	10/22/19 21:13	MWW	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			296046	10/24/19 18:51	RSK	TAL PIT
		Instrument ID: A								
Total Recoverable	Prep	3005A			50 mL	50 mL	295718	10/22/19 21:13	MWW	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			296189	10/25/19 15:20	RSK	TAL PIT
		Instrument ID: A								
Total/NA	Analysis	EPA 9040C		1			295978	10/24/19 17:17	PM	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	295368	10/18/19 11:42	AVS	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Prep	PrecSep-21			1000.70 mL	1.0 g	447420	10/23/19 09:13	EJQ	TAL SL
Total/NA	Analysis	9315		1			450354	11/14/19 16:49	CJQ	TAL SL
		Instrument ID: GFPCBLUE								
Total/NA	Prep	PrecSep_0			1000.70 mL	1.0 g	447441	10/23/19 11:46	EJQ	TAL SL
Total/NA	Analysis	9320		1			449089	11/05/19 18:02	AJD	TAL SL
		Instrument ID: GFPCPROTEAN								

Eurofins TestAmerica, Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

Job ID: 180-97385-1

Client Sample ID: CCR-LF-5

Lab Sample ID: 180-97385-5

Date Collected: 10/14/19 11:30

Matrix: Water

Date Received: 10/17/19 09:30

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			450875	11/18/19 08:43	SMP	TAL SL

Client Sample ID: CCR-LF-6

Lab Sample ID: 180-97385-6

Date Collected: 10/14/19 12:15

Matrix: Water

Date Received: 10/17/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2100B		1			297483	11/09/19 06:00	MJH	TAL PIT
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2100B		5			297483	11/09/19 06:17	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	295718	10/22/19 21:13	MWW	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			296046	10/24/19 18:54	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	295718	10/22/19 21:13	MWW	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			296189	10/25/19 15:23	RSK	TAL PIT
Total/NA	Analysis	EPA 9040C Instrument ID: NOEQUIP		1			295978	10/24/19 17:07	PM	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	295368	10/18/19 11:42	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			999.72 mL	1.0 g	447420	10/23/19 09:13	EJQ	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			450354	11/14/19 16:49	CJQ	TAL SL
Total/NA	Prep	PrecSep_0			999.72 mL	1.0 g	447441	10/23/19 11:46	EJQ	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCPROTEAN		1			449089	11/05/19 18:02	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			450875	11/18/19 08:43	SMP	TAL SL

Client Sample ID: BLIND DUPLICATE 2

Lab Sample ID: 180-97385-7

Date Collected: 10/14/19 11:50

Matrix: Water

Date Received: 10/17/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2100B		5			297483	11/09/19 06:33	MJH	TAL PIT
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2100B		50			297483	11/09/19 06:49	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	295718	10/22/19 21:13	MWW	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			296046	10/24/19 18:57	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	295718	10/22/19 21:13	MWW	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			296189	10/25/19 15:27	RSK	TAL PIT

Eurofins TestAmerica, Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

Job ID: 180-97385-1

Client Sample ID: BLIND DUPLICATE 2

Lab Sample ID: 180-97385-7

Date Collected: 10/14/19 11:50

Matrix: Water

Date Received: 10/17/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9040C		1			295978	10/24/19 17:04	PM	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	25 mL	100 mL	295368	10/18/19 11:42	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			999.89 mL	1.0 g	447420	10/23/19 09:13	EJQ	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			450354	11/14/19 16:49	CJQ	TAL SL
Total/NA	Prep	PrecSep_0			999.89 mL	1.0 g	447441	10/23/19 11:46	EJQ	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCPROTEAN		1			449089	11/05/19 18:02	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			450875	11/18/19 08:43	SMP	TAL SL

Client Sample ID: FIELD BLANK 2

Lab Sample ID: 180-97385-8

Date Collected: 10/15/19 09:00

Matrix: Water

Date Received: 10/17/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2100B		1			297483	11/08/19 15:30	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	295718	10/22/19 21:13	MWW	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			296046	10/24/19 19:01	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	295718	10/22/19 21:13	MWW	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			296189	10/25/19 15:30	RSK	TAL PIT
Total/NA	Analysis	EPA 9040C Instrument ID: NOEQUIP		1			295978	10/24/19 17:01	PM	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	295368	10/18/19 11:42	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.02 mL	1.0 g	447420	10/23/19 09:13	EJQ	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			450354	11/14/19 16:49	CJQ	TAL SL
Total/NA	Prep	PrecSep_0			1000.02 mL	1.0 g	447441	10/23/19 11:46	EJQ	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			449088	11/05/19 17:57	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			450875	11/18/19 08:43	SMP	TAL SL

Laboratory References:

TAL PIT = Eurofins TestAmerica, Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

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

Eurofins TestAmerica, Pittsburgh

Lab Chronicle

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

Job ID: 180-97385-1

Analyst References:

Lab: TAL PIT

Batch Type: Prep

MWW = Margaret Wanyoike

Batch Type: Analysis

AVS = Abbey Smith

MJH = Matthew Hartman

PM = Paloma Hoelzle

RSK = Robert Kurtz

Lab: TAL SL

Batch Type: Prep

EJQ = Erin Quinn

Batch Type: Analysis

AJD = Audra DeMariano

CJQ = Caleb Quinn

SMP = Siobhan Perry

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Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

Job ID: 180-97385-1

Client Sample ID: CCR-LF-1

Lab Sample ID: 180-97385-1

Date Collected: 10/15/19 12:35

Matrix: Water

Date Received: 10/17/19 09:30

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	18		1.0	0.32	mg/L			11/09/19 04:25	1
Fluoride	0.10		0.10	0.026	mg/L			11/09/19 04:25	1
Sulfate	1000		10	3.8	mg/L			11/09/19 04:41	10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00094	J	0.0010	0.00032	mg/L		10/22/19 17:45	10/24/19 17:40	1
Barium	0.055		0.010	0.0016	mg/L		10/22/19 17:45	10/24/19 17:40	1
Boron	ND		0.080	0.039	mg/L		10/22/19 17:45	10/25/19 13:04	1
Cadmium	ND		0.0010	0.00013	mg/L		10/22/19 17:45	10/24/19 17:40	1
Calcium	260		0.50	0.13	mg/L		10/22/19 17:45	10/24/19 17:40	1
Chromium	0.0032	B	0.0020	0.0015	mg/L		10/22/19 17:45	10/24/19 17:40	1
Cobalt	0.00041	J	0.00050	0.000075	mg/L		10/22/19 17:45	10/24/19 17:40	1
Lithium	4.8	J	5.0	3.4	ug/L		10/22/19 17:45	10/25/19 13:04	1
Molybdenum	0.0011	J	0.0050	0.00061	mg/L		10/22/19 17:45	10/24/19 17:40	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	1800		10	10	mg/L			10/18/19 11:42	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.7	HF	0.1	0.1	SU			10/24/19 17:09	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.271		0.127	0.129	1.00	0.162	pCi/L	10/23/19 09:13	11/14/19 13:09	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	80.8		40 - 110					10/23/19 09:13	11/14/19 13:09	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.169	U	0.266	0.266	1.00	0.506	pCi/L	10/23/19 11:46	11/05/19 18:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	80.8		40 - 110					10/23/19 11:46	11/05/19 18:01	1
Y Carrier	86.0		40 - 110					10/23/19 11:46	11/05/19 18:01	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.103	U	0.295	0.296	5.00	0.506	pCi/L		11/18/19 08:43	1

Eurofins TestAmerica, Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

Job ID: 180-97385-1

Client Sample ID: CCR-LF-2

Lab Sample ID: 180-97385-2

Date Collected: 10/15/19 11:50

Matrix: Water

Date Received: 10/17/19 09:30

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	350		25	8.0	mg/L			11/11/19 07:04	25
Fluoride	ND		2.5	0.66	mg/L			11/11/19 07:04	25
Sulfate	16000		250	95	mg/L			11/11/19 07:20	250

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0013		0.0010	0.00032	mg/L		10/22/19 17:45	10/24/19 17:43	1
Barium	0.013		0.010	0.0016	mg/L		10/22/19 17:45	10/24/19 17:43	1
Boron	0.48		0.080	0.039	mg/L		10/22/19 17:45	10/25/19 13:07	1
Cadmium	0.0045		0.0010	0.00013	mg/L		10/22/19 17:45	10/24/19 17:43	1
Calcium	370		0.50	0.13	mg/L		10/22/19 17:45	10/24/19 17:43	1
Chromium	0.0018	J B	0.0020	0.0015	mg/L		10/22/19 17:45	10/24/19 17:43	1
Cobalt	0.011		0.00050	0.000075	mg/L		10/22/19 17:45	10/24/19 17:43	1
Lithium	ND		5.0	3.4	ug/L		10/22/19 17:45	10/25/19 13:07	1
Molybdenum	0.0025	J	0.0050	0.00061	mg/L		10/22/19 17:45	10/24/19 17:43	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	22000		200	200	mg/L			10/18/19 11:42	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.5	HF	0.1	0.1	SU			10/24/19 16:56	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.362		0.133	0.136	1.00	0.146	pCi/L	10/23/19 09:13	11/14/19 13:09	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	85.0		40 - 110					10/23/19 09:13	11/14/19 13:09	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.75		0.405	0.436	1.00	0.476	pCi/L	10/23/19 11:46	11/05/19 18:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	85.0		40 - 110					10/23/19 11:46	11/05/19 18:01	1
Y Carrier	84.1		40 - 110					10/23/19 11:46	11/05/19 18:01	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	2.11		0.426	0.457	5.00	0.476	pCi/L		11/18/19 08:43	1

Eurofins TestAmerica, Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

Job ID: 180-97385-1

Client Sample ID: CCR-LF-3

Lab Sample ID: 180-97385-3

Date Collected: 10/15/19 09:40

Matrix: Water

Date Received: 10/17/19 09:30

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	56		2.5	0.80	mg/L			11/10/19 23:08	2.5
Fluoride	0.17	J	0.25	0.066	mg/L			11/10/19 23:08	2.5
Sulfate	1700	F1	25	9.5	mg/L			11/10/19 23:24	25

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00056	J	0.0010	0.00032	mg/L		10/22/19 21:13	10/24/19 18:44	1
Barium	0.020		0.010	0.0016	mg/L		10/22/19 21:13	10/24/19 18:44	1
Boron	0.16		0.080	0.039	mg/L		10/22/19 21:13	10/25/19 15:06	1
Cadmium	ND		0.0010	0.00013	mg/L		10/22/19 21:13	10/24/19 18:44	1
Calcium	370		0.50	0.13	mg/L		10/22/19 21:13	10/24/19 18:44	1
Chromium	0.0033	B	0.0020	0.0015	mg/L		10/22/19 21:13	10/24/19 18:44	1
Cobalt	0.00027	J	0.00050	0.000075	mg/L		10/22/19 21:13	10/24/19 18:44	1
Lithium	4.2	J	5.0	3.4	ug/L		10/22/19 21:13	10/25/19 15:06	1
Molybdenum	0.0016	J	0.0050	0.00061	mg/L		10/22/19 21:13	10/24/19 18:44	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	2900		20	20	mg/L			10/18/19 11:42	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.1	HF	0.1	0.1	SU			10/24/19 17:12	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0345	U	0.0958	0.0959	1.00	0.175	pCi/L	10/23/19 09:13	11/14/19 16:49	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	65.5		40 - 110					10/23/19 09:13	11/14/19 16:49	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.153	U	0.383	0.383	1.00	0.660	pCi/L	10/23/19 11:46	11/05/19 18:02	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	65.5		40 - 110					10/23/19 11:46	11/05/19 18:02	1
Y Carrier	82.2		40 - 110					10/23/19 11:46	11/05/19 18:02	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.188	U	0.395	0.395	5.00	0.660	pCi/L		11/18/19 08:43	1

Eurofins TestAmerica, Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

Job ID: 180-97385-1

Client Sample ID: CCR-LF-4

Lab Sample ID: 180-97385-4

Date Collected: 10/16/19 09:35

Matrix: Water

Date Received: 10/17/19 09:30

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	110		10	3.2	mg/L			11/08/19 14:58	10
Fluoride	ND		1.0	0.26	mg/L			11/08/19 14:58	10
Sulfate	7800		100	38	mg/L			11/08/19 15:14	100

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.018		0.0010	0.00032	mg/L		10/22/19 21:13	10/24/19 18:47	1
Barium	0.014		0.010	0.0016	mg/L		10/22/19 21:13	10/24/19 18:47	1
Boron	ND		0.80	0.39	mg/L		10/22/19 21:13	10/25/19 15:16	10
Cadmium	ND		0.0010	0.00013	mg/L		10/22/19 21:13	10/24/19 18:47	1
Calcium	350		0.50	0.13	mg/L		10/22/19 21:13	10/24/19 18:47	1
Chromium	0.0016	J B	0.0020	0.0015	mg/L		10/22/19 21:13	10/24/19 18:47	1
Cobalt	0.0013		0.00050	0.000075	mg/L		10/22/19 21:13	10/24/19 18:47	1
Lithium	75		50	34	ug/L		10/22/19 21:13	10/25/19 15:16	10
Molybdenum	0.022		0.0050	0.00061	mg/L		10/22/19 21:13	10/24/19 18:47	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	11000		67	67	mg/L			10/19/19 10:37	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.7	HF	0.1	0.1	SU			10/24/19 17:14	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	2.21		0.272	0.337	1.00	0.150	pCi/L	10/23/19 09:13	11/14/19 16:49	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.2		40 - 110					10/23/19 09:13	11/14/19 16:49	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.25		0.388	0.405	1.00	0.515	pCi/L	10/23/19 11:46	11/05/19 18:02	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.2		40 - 110					10/23/19 11:46	11/05/19 18:02	1
Y Carrier	80.4		40 - 110					10/23/19 11:46	11/05/19 18:02	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	3.46		0.474	0.527	5.00	0.515	pCi/L		11/18/19 08:43	1

Eurofins TestAmerica, Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

Job ID: 180-97385-1

Client Sample ID: CCR-LF-5

Lab Sample ID: 180-97385-5

Date Collected: 10/14/19 11:30

Matrix: Water

Date Received: 10/17/19 09:30

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	290		5.0	1.6	mg/L			11/09/19 05:28	5
Fluoride	0.21	J	0.50	0.13	mg/L			11/09/19 05:28	5
Sulfate	2700		50	19	mg/L			11/09/19 05:44	50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00043	J	0.0010	0.00032	mg/L		10/22/19 21:13	10/24/19 18:51	1
Barium	0.027		0.010	0.0016	mg/L		10/22/19 21:13	10/24/19 18:51	1
Boron	1.1		0.080	0.039	mg/L		10/22/19 21:13	10/25/19 15:20	1
Cadmium	0.00023	J	0.0010	0.00013	mg/L		10/22/19 21:13	10/24/19 18:51	1
Calcium	410		0.50	0.13	mg/L		10/22/19 21:13	10/24/19 18:51	1
Chromium	0.0020	B	0.0020	0.0015	mg/L		10/22/19 21:13	10/24/19 18:51	1
Cobalt	0.00035	J	0.00050	0.000075	mg/L		10/22/19 21:13	10/24/19 18:51	1
Lithium	20		5.0	3.4	ug/L		10/22/19 21:13	10/25/19 15:20	1
Molybdenum	0.00068	J	0.0050	0.00061	mg/L		10/22/19 21:13	10/24/19 18:51	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	4500		40	40	mg/L			10/18/19 11:42	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.9	HF	0.1	0.1	SU			10/24/19 17:17	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0526	U	0.0691	0.0693	1.00	0.157	pCi/L	10/23/19 09:13	11/14/19 16:49	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	81.4		40 - 110					10/23/19 09:13	11/14/19 16:49	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.370	U	0.301	0.303	1.00	0.594	pCi/L	10/23/19 11:46	11/05/19 18:02	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	81.4		40 - 110					10/23/19 11:46	11/05/19 18:02	1
Y Carrier	79.3		40 - 110					10/23/19 11:46	11/05/19 18:02	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	-0.423	U	0.309	0.311	5.00	0.594	pCi/L		11/18/19 08:43	1

Eurofins TestAmerica, Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

Job ID: 180-97385-1

Client Sample ID: CCR-LF-6

Lab Sample ID: 180-97385-6

Date Collected: 10/14/19 12:15

Matrix: Water

Date Received: 10/17/19 09:30

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	24		1.0	0.32	mg/L			11/09/19 06:00	1
Fluoride	0.26		0.10	0.026	mg/L			11/09/19 06:00	1
Sulfate	480		5.0	1.9	mg/L			11/09/19 06:17	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00047	J	0.0010	0.00032	mg/L		10/22/19 21:13	10/24/19 18:54	1
Barium	0.019		0.010	0.0016	mg/L		10/22/19 21:13	10/24/19 18:54	1
Boron	0.78		0.080	0.039	mg/L		10/22/19 21:13	10/25/19 15:23	1
Cadmium	0.00015	J	0.0010	0.00013	mg/L		10/22/19 21:13	10/24/19 18:54	1
Calcium	170		0.50	0.13	mg/L		10/22/19 21:13	10/24/19 18:54	1
Chromium	0.0022	B	0.0020	0.0015	mg/L		10/22/19 21:13	10/24/19 18:54	1
Cobalt	0.00033	J	0.00050	0.000075	mg/L		10/22/19 21:13	10/24/19 18:54	1
Lithium	16		5.0	3.4	ug/L		10/22/19 21:13	10/25/19 15:23	1
Molybdenum	0.0010	J	0.0050	0.00061	mg/L		10/22/19 21:13	10/24/19 18:54	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	1100		10	10	mg/L			10/18/19 11:42	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.0	HF	0.1	0.1	SU			10/24/19 17:07	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0661	U	0.0666	0.0669	1.00	0.160	pCi/L	10/23/19 09:13	11/14/19 16:49	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	77.1		40 - 110					10/23/19 09:13	11/14/19 16:49	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.101	U	0.316	0.316	1.00	0.547	pCi/L	10/23/19 11:46	11/05/19 18:02	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	77.1		40 - 110					10/23/19 11:46	11/05/19 18:02	1
Y Carrier	84.9		40 - 110					10/23/19 11:46	11/05/19 18:02	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0344	U	0.323	0.323	5.00	0.547	pCi/L		11/18/19 08:43	1

Eurofins TestAmerica, Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

Job ID: 180-97385-1

Client Sample ID: BLIND DUPLICATE 2

Lab Sample ID: 180-97385-7

Date Collected: 10/14/19 11:50

Matrix: Water

Date Received: 10/17/19 09:30

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	290		5.0	1.6	mg/L			11/09/19 06:33	5
Fluoride	0.23	J	0.50	0.13	mg/L			11/09/19 06:33	5
Sulfate	2700		50	19	mg/L			11/09/19 06:49	50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00046	J	0.0010	0.00032	mg/L		10/22/19 21:13	10/24/19 18:57	1
Barium	0.026		0.010	0.0016	mg/L		10/22/19 21:13	10/24/19 18:57	1
Boron	1.1		0.080	0.039	mg/L		10/22/19 21:13	10/25/19 15:27	1
Cadmium	0.00023	J	0.0010	0.00013	mg/L		10/22/19 21:13	10/24/19 18:57	1
Calcium	400		0.50	0.13	mg/L		10/22/19 21:13	10/24/19 18:57	1
Chromium	0.0020	B	0.0020	0.0015	mg/L		10/22/19 21:13	10/24/19 18:57	1
Cobalt	0.00032	J	0.00050	0.000075	mg/L		10/22/19 21:13	10/24/19 18:57	1
Lithium	19		5.0	3.4	ug/L		10/22/19 21:13	10/25/19 15:27	1
Molybdenum	0.00066	J	0.0050	0.00061	mg/L		10/22/19 21:13	10/24/19 18:57	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	4200		40	40	mg/L			10/18/19 11:42	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.9	HF	0.1	0.1	SU			10/24/19 17:04	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0199	U	0.0781	0.0781	1.00	0.145	pCi/L	10/23/19 09:13	11/14/19 16:49	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.3		40 - 110					10/23/19 09:13	11/14/19 16:49	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.374	U	0.338	0.340	1.00	0.546	pCi/L	10/23/19 11:46	11/05/19 18:02	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.3		40 - 110					10/23/19 11:46	11/05/19 18:02	1
Y Carrier	82.6		40 - 110					10/23/19 11:46	11/05/19 18:02	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.394	U	0.347	0.349	5.00	0.546	pCi/L		11/18/19 08:43	1

Eurofins TestAmerica, Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

Job ID: 180-97385-1

Client Sample ID: FIELD BLANK 2

Lab Sample ID: 180-97385-8

Date Collected: 10/15/19 09:00

Matrix: Water

Date Received: 10/17/19 09:30

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.0	0.32	mg/L			11/08/19 15:30	1
Fluoride	0.038	J	0.10	0.026	mg/L			11/08/19 15:30	1
Sulfate	ND		1.0	0.38	mg/L			11/08/19 15:30	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0010	0.00032	mg/L		10/22/19 21:13	10/24/19 19:01	1
Barium	ND		0.010	0.0016	mg/L		10/22/19 21:13	10/24/19 19:01	1
Boron	ND		0.080	0.039	mg/L		10/22/19 21:13	10/25/19 15:30	1
Cadmium	ND		0.0010	0.00013	mg/L		10/22/19 21:13	10/24/19 19:01	1
Calcium	0.16	J	0.50	0.13	mg/L		10/22/19 21:13	10/24/19 19:01	1
Chromium	0.0015	J B	0.0020	0.0015	mg/L		10/22/19 21:13	10/24/19 19:01	1
Cobalt	ND		0.00050	0.000075	mg/L		10/22/19 21:13	10/24/19 19:01	1
Lithium	ND		5.0	3.4	ug/L		10/22/19 21:13	10/25/19 15:30	1
Molybdenum	ND		0.0050	0.00061	mg/L		10/22/19 21:13	10/24/19 19:01	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	10	mg/L			10/18/19 11:42	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	5.8	HF	0.1	0.1	SU			10/24/19 17:01	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0789	U	0.0451	0.0457	1.00	0.129	pCi/L	10/23/19 09:13	11/14/19 16:49	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.1		40 - 110					10/23/19 09:13	11/14/19 16:49	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.400	U	0.269	0.271	1.00	0.412	pCi/L	10/23/19 11:46	11/05/19 17:57	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.1		40 - 110					10/23/19 11:46	11/05/19 17:57	1
Y Carrier	74.0		40 - 110					10/23/19 11:46	11/05/19 17:57	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.321	U	0.273	0.275	5.00	0.412	pCi/L		11/18/19 08:43	1

Eurofins TestAmerica, Pittsburgh

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

Job ID: 180-97385-1

Method: EPA 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 180-297483/45
Matrix: Water
Analysis Batch: 297483

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.0	0.32	mg/L			11/08/19 20:46	1
Fluoride	ND		0.10	0.026	mg/L			11/08/19 20:46	1
Sulfate	ND		1.0	0.38	mg/L			11/08/19 20:46	1

Lab Sample ID: MB 180-297483/6
Matrix: Water
Analysis Batch: 297483

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.0	0.32	mg/L			11/08/19 10:09	1
Fluoride	ND		0.10	0.026	mg/L			11/08/19 10:09	1
Sulfate	ND		1.0	0.38	mg/L			11/08/19 10:09	1

Lab Sample ID: LCS 180-297483/44
Matrix: Water
Analysis Batch: 297483

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	47.4		mg/L		95	80 - 120
Fluoride	2.50	2.37		mg/L		95	80 - 120
Sulfate	50.0	47.9		mg/L		96	80 - 120

Lab Sample ID: LCS 180-297483/5
Matrix: Water
Analysis Batch: 297483

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	47.2		mg/L		94	80 - 120
Fluoride	2.50	2.26		mg/L		90	80 - 120
Sulfate	50.0	47.9		mg/L		96	80 - 120

Lab Sample ID: MB 180-297717/44
Matrix: Water
Analysis Batch: 297717

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.0	0.32	mg/L			11/10/19 22:53	1
Fluoride	ND		0.10	0.026	mg/L			11/10/19 22:53	1
Sulfate	ND		1.0	0.38	mg/L			11/10/19 22:53	1

Lab Sample ID: LCS 180-297717/43
Matrix: Water
Analysis Batch: 297717

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	25.0	25.8		mg/L		103	80 - 120
Fluoride	1.25	1.22		mg/L		98	80 - 120
Sulfate	25.0	25.8		mg/L		103	80 - 120

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

Job ID: 180-97385-1

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

Lab Sample ID: 180-97385-2 MS
Matrix: Water
Analysis Batch: 297717

Client Sample ID: CCR-LF-2
Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier	Added	Result	Qualifier					
Chloride	370		12500	12000		mg/L		93	80 - 120	
Fluoride	ND		625	578		mg/L		93	80 - 120	
Sulfate	16000		12500	26300		mg/L		86	80 - 120	

Lab Sample ID: 180-97385-2 MSD
Matrix: Water
Analysis Batch: 297717

Client Sample ID: CCR-LF-2
Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	Limits	RPD	RPD Limit
	Result	Qualifier	Added	Result	Qualifier							
Chloride	370		12500	12000		mg/L		93	80 - 120	0	15	
Fluoride	ND		625	584		mg/L		93	80 - 120	1	15	
Sulfate	16000		12500	26500		mg/L		88	80 - 120	1	15	

Lab Sample ID: 180-97385-3 MS
Matrix: Water
Analysis Batch: 297717

Client Sample ID: CCR-LF-3
Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier	Added	Result	Qualifier					
Chloride	57		625	635		mg/L		92	80 - 120	
Fluoride	ND		31.3	28.5		mg/L		91	80 - 120	
Sulfate	1700	F1	625	2180	F1	mg/L		79	80 - 120	

Lab Sample ID: 180-97385-3 MSD
Matrix: Water
Analysis Batch: 297717

Client Sample ID: CCR-LF-3
Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	Limits	RPD	RPD Limit
	Result	Qualifier	Added	Result	Qualifier							
Chloride	57		625	632		mg/L		92	80 - 120	0	15	
Fluoride	ND		31.3	28.3		mg/L		91	80 - 120	1	15	
Sulfate	1700	F1	625	2160	F1	mg/L		77	80 - 120	1	15	

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

Lab Sample ID: MB 180-295709/1-A
Matrix: Water
Analysis Batch: 296046

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 295709

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	ND		0.0010	0.00032	mg/L		10/22/19 17:45	10/24/19 16:08	1
Barium	ND		0.010	0.0016	mg/L		10/22/19 17:45	10/24/19 16:08	1
Calcium	ND		0.50	0.13	mg/L		10/22/19 17:45	10/24/19 16:08	1
Cadmium	ND		0.0010	0.00013	mg/L		10/22/19 17:45	10/24/19 16:08	1
Cobalt	ND		0.00050	0.000075	mg/L		10/22/19 17:45	10/24/19 16:08	1
Chromium	0.00166	J	0.0020	0.0015	mg/L		10/22/19 17:45	10/24/19 16:08	1
Molybdenum	ND		0.0050	0.00061	mg/L		10/22/19 17:45	10/24/19 16:08	1

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QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

Job ID: 180-97385-1

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

Lab Sample ID: MB 180-295709/1-A
Matrix: Water
Analysis Batch: 296139

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 295709

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.080	0.039	mg/L		10/22/19 17:45	10/25/19 11:33	1
Lithium	ND		5.0	3.4	ug/L		10/22/19 17:45	10/25/19 11:33	1

Lab Sample ID: LCS 180-295709/2-A
Matrix: Water
Analysis Batch: 296046

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 295709

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.00	0.925		mg/L		92	80 - 120
Barium	1.00	1.06		mg/L		106	80 - 120
Calcium	25.0	25.0		mg/L		100	80 - 120
Cadmium	0.500	0.529		mg/L		106	80 - 120
Cobalt	0.500	0.470		mg/L		94	80 - 120
Chromium	0.500	0.513		mg/L		103	80 - 120
Molybdenum	0.500	0.509		mg/L		102	80 - 120

Lab Sample ID: LCS 180-295709/2-A
Matrix: Water
Analysis Batch: 296139

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 295709

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.25	1.19		mg/L		95	80 - 120
Lithium	500	489		ug/L		98	80 - 120

Lab Sample ID: MB 180-295718/1-A
Matrix: Water
Analysis Batch: 296046

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 295718

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0010	0.00032	mg/L		10/22/19 21:13	10/24/19 17:47	1
Barium	ND		0.010	0.0016	mg/L		10/22/19 21:13	10/24/19 17:47	1
Calcium	ND		0.50	0.13	mg/L		10/22/19 21:13	10/24/19 17:47	1
Cadmium	ND		0.0010	0.00013	mg/L		10/22/19 21:13	10/24/19 17:47	1
Cobalt	ND		0.00050	0.000075	mg/L		10/22/19 21:13	10/24/19 17:47	1
Chromium	0.00185	J	0.0020	0.0015	mg/L		10/22/19 21:13	10/24/19 17:47	1
Molybdenum	ND		0.0050	0.00061	mg/L		10/22/19 21:13	10/24/19 17:47	1

Lab Sample ID: MB 180-295718/1-A
Matrix: Water
Analysis Batch: 296189

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 295718

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.080	0.039	mg/L		10/22/19 21:13	10/25/19 14:36	1
Lithium	ND		5.0	3.4	ug/L		10/22/19 21:13	10/25/19 14:36	1

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

Job ID: 180-97385-1

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

Lab Sample ID: LCS 180-295718/2-A
Matrix: Water
Analysis Batch: 296046

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 295718

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Arsenic	1.00	0.954		mg/L		95	80 - 120
Barium	1.00	1.11		mg/L		111	80 - 120
Calcium	25.0	26.2		mg/L		105	80 - 120
Cadmium	0.500	0.544		mg/L		109	80 - 120
Cobalt	0.500	0.491		mg/L		98	80 - 120
Chromium	0.500	0.535		mg/L		107	80 - 120
Molybdenum	0.500	0.523		mg/L		105	80 - 120

Lab Sample ID: LCS 180-295718/2-A
Matrix: Water
Analysis Batch: 296189

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 295718

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Boron	1.25	1.39		mg/L		112	80 - 120
Lithium	500	493		ug/L		99	80 - 120

Lab Sample ID: 180-97385-2 MS
Matrix: Water
Analysis Batch: 296046

Client Sample ID: CCR-LF-2
Prep Type: Total Recoverable
Prep Batch: 295718

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Arsenic	0.0014		1.00	0.991		mg/L		99	75 - 125
Barium	0.017		1.00	1.10		mg/L		109	75 - 125
Calcium	380		25.0	389	4	mg/L		38	75 - 125
Cadmium	0.0047		0.500	0.508		mg/L		101	75 - 125
Cobalt	0.011		0.500	0.488		mg/L		95	75 - 125
Chromium	0.0022	B	0.500	0.491		mg/L		98	75 - 125
Molybdenum	0.0025	J	0.500	0.540		mg/L		107	75 - 125

Lab Sample ID: 180-97385-2 MS
Matrix: Water
Analysis Batch: 296189

Client Sample ID: CCR-LF-2
Prep Type: Total Recoverable
Prep Batch: 295718

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Boron	5.4		1.25	6.23	4	mg/L		65	75 - 125
Lithium	ND		500	437		ug/L		87	75 - 125

Lab Sample ID: 180-97385-2 MSD
Matrix: Water
Analysis Batch: 296046

Client Sample ID: CCR-LF-2
Prep Type: Total Recoverable
Prep Batch: 295718

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Arsenic	0.0014		1.00	1.02		mg/L		102	75 - 125	3	20
Barium	0.017		1.00	1.10		mg/L		109	75 - 125	0	20
Calcium	380		25.0	392	4	mg/L		47	75 - 125	1	20
Cadmium	0.0047		0.500	0.510		mg/L		101	75 - 125	0	20
Cobalt	0.011		0.500	0.497		mg/L		97	75 - 125	2	20
Chromium	0.0022	B	0.500	0.496		mg/L		99	75 - 125	1	20
Molybdenum	0.0025	J	0.500	0.552		mg/L		110	75 - 125	2	20

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QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

Job ID: 180-97385-1

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

Lab Sample ID: 180-97385-2 MSD
 Matrix: Water
 Analysis Batch: 296189

Client Sample ID: CCR-LF-2
 Prep Type: Total Recoverable
 Prep Batch: 295718

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits		
Boron	5.4		1.25	6.46	4	mg/L		84	75 - 125	4	20
Lithium	ND		500	451		ug/L		90	75 - 125	3	20

Method: EPA 9040C - pH

Lab Sample ID: LCS 180-295978/1
 Matrix: Water
 Analysis Batch: 295978

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

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

Lab Sample ID: 180-97385-2 DU
 Matrix: Water
 Analysis Batch: 295978

Client Sample ID: CCR-LF-2
 Prep Type: Total/NA

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
pH	6.5	HF	6.5	HF	SU		0	2

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

Lab Sample ID: MB 180-295368/2
 Matrix: Water
 Analysis Batch: 295368

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

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Total Dissolved Solids	ND		10	10	mg/L			10/18/19 11:42	1

Lab Sample ID: LCS 180-295368/1
 Matrix: Water
 Analysis Batch: 295368

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

Analyte	Spike Added	LCS Result	LCS	Unit	D	%Rec	%Rec.
			Qualifier				Limits
Total Dissolved Solids	188	208		mg/L		111	80 - 120

Lab Sample ID: 180-97385-2 DU
 Matrix: Water
 Analysis Batch: 295368

Client Sample ID: CCR-LF-2
 Prep Type: Total/NA

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Total Dissolved Solids	22000		23700		mg/L		7	10

Lab Sample ID: MB 180-295452/2
 Matrix: Water
 Analysis Batch: 295452

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

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Total Dissolved Solids	ND		10	10	mg/L			10/19/19 10:37	1

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QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

Job ID: 180-97385-1

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

Lab Sample ID: LCS 180-295452/1
 Matrix: Water
 Analysis Batch: 295452

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	188	222		mg/L		118	80 - 120

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-447420/20-A
 Matrix: Water
 Analysis Batch: 450354

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 447420

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.1264	U	0.0844	0.0851	1.00	0.226	pCi/L	10/23/19 09:13	11/14/19 16:49	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	68.9		40 - 110					10/23/19 09:13	11/14/19 16:49	1

Lab Sample ID: LCS 160-447420/1-A
 Matrix: Water
 Analysis Batch: 450354

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 447420

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.4	8.667		0.936	1.00	0.142	pCi/L	76	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	89.8		40 - 110						

Lab Sample ID: 180-97385-2 DU
 Matrix: Water
 Analysis Batch: 450352

Client Sample ID: CCR-LF-2
 Prep Type: Total/NA
 Prep Batch: 447420

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-226	0.362		0.1857		0.105	1.00	0.139	pCi/L	0.73	1
Carrier	DU %Yield	DU Qualifier	Limits							
Ba Carrier	86.7		40 - 110							

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-447441/20-A
 Matrix: Water
 Analysis Batch: 449088

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 447441

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.5451		0.352	0.356	1.00	0.538	pCi/L	10/23/19 11:46	11/05/19 17:58	1

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QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

Job ID: 180-97385-1

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

Lab Sample ID: MB 160-447441/20-A
Matrix: Water
Analysis Batch: 449088

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 447441

Carrier	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Yield	Qualifier				
Ba Carrier	68.9		40 - 110	10/23/19 11:46	11/05/19 17:58	1
Y Carrier	81.1		40 - 110	10/23/19 11:46	11/05/19 17:58	1

Lab Sample ID: LCS 160-447441/1-A
Matrix: Water
Analysis Batch: 449088

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 447441

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits

Carrier	LCS LCS		Limits
	%Yield	Qualifier	
Ba Carrier	89.8		40 - 110
Y Carrier	71.4		40 - 110

Lab Sample ID: 180-97385-2 DU
Matrix: Water
Analysis Batch: 449089

Client Sample ID: CCR-LF-2
Prep Type: Total/NA
Prep Batch: 447441

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit

Carrier	DU DU		Limits
	%Yield	Qualifier	
Ba Carrier	86.7		40 - 110
Y Carrier	85.2		40 - 110

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

Lab Sample ID: 180-97385-2 DU
Matrix: Water
Analysis Batch: 450875

Client Sample ID: CCR-LF-2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit

QC Association Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

Job ID: 180-97385-1

HPLC/IC

Analysis Batch: 297483

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-97385-1	CCR-LF-1	Total/NA	Water	EPA 9056A	
180-97385-1	CCR-LF-1	Total/NA	Water	EPA 9056A	
180-97385-4	CCR-LF-4	Total/NA	Water	EPA 9056A	
180-97385-4	CCR-LF-4	Total/NA	Water	EPA 9056A	
180-97385-5	CCR-LF-5	Total/NA	Water	EPA 9056A	
180-97385-5	CCR-LF-5	Total/NA	Water	EPA 9056A	
180-97385-6	CCR-LF-6	Total/NA	Water	EPA 9056A	
180-97385-6	CCR-LF-6	Total/NA	Water	EPA 9056A	
180-97385-7	BLIND DUPLICATE 2	Total/NA	Water	EPA 9056A	
180-97385-7	BLIND DUPLICATE 2	Total/NA	Water	EPA 9056A	
180-97385-8	FIELD BLANK 2	Total/NA	Water	EPA 9056A	
MB 180-297483/45	Method Blank	Total/NA	Water	EPA 9056A	
MB 180-297483/6	Method Blank	Total/NA	Water	EPA 9056A	
LCS 180-297483/44	Lab Control Sample	Total/NA	Water	EPA 9056A	
LCS 180-297483/5	Lab Control Sample	Total/NA	Water	EPA 9056A	

Analysis Batch: 297717

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-97385-2	CCR-LF-2	Total/NA	Water	EPA 9056A	
180-97385-2	CCR-LF-2	Total/NA	Water	EPA 9056A	
180-97385-3	CCR-LF-3	Total/NA	Water	EPA 9056A	
180-97385-3	CCR-LF-3	Total/NA	Water	EPA 9056A	
MB 180-297717/44	Method Blank	Total/NA	Water	EPA 9056A	
LCS 180-297717/43	Lab Control Sample	Total/NA	Water	EPA 9056A	
180-97385-2 MS	CCR-LF-2	Total/NA	Water	EPA 9056A	
180-97385-2 MSD	CCR-LF-2	Total/NA	Water	EPA 9056A	
180-97385-3 MS	CCR-LF-3	Total/NA	Water	EPA 9056A	
180-97385-3 MSD	CCR-LF-3	Total/NA	Water	EPA 9056A	

Metals

Prep Batch: 295709

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-97385-1	CCR-LF-1	Total Recoverable	Water	3005A	
180-97385-2	CCR-LF-2	Total Recoverable	Water	3005A	
MB 180-295709/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 180-295709/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 295718

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-97385-3	CCR-LF-3	Total Recoverable	Water	3005A	
180-97385-4	CCR-LF-4	Total Recoverable	Water	3005A	
180-97385-5	CCR-LF-5	Total Recoverable	Water	3005A	
180-97385-6	CCR-LF-6	Total Recoverable	Water	3005A	
180-97385-7	BLIND DUPLICATE 2	Total Recoverable	Water	3005A	
180-97385-8	FIELD BLANK 2	Total Recoverable	Water	3005A	
MB 180-295718/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 180-295718/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
180-97385-2 MS	CCR-LF-2	Total Recoverable	Water	3005A	
180-97385-2 MSD	CCR-LF-2	Total Recoverable	Water	3005A	

Eurofins TestAmerica, Pittsburgh

QC Association Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

Job ID: 180-97385-1

Metals

Analysis Batch: 296046

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-97385-1	CCR-LF-1	Total Recoverable	Water	EPA 6020A	295709
180-97385-2	CCR-LF-2	Total Recoverable	Water	EPA 6020A	295709
180-97385-3	CCR-LF-3	Total Recoverable	Water	EPA 6020A	295718
180-97385-4	CCR-LF-4	Total Recoverable	Water	EPA 6020A	295718
180-97385-5	CCR-LF-5	Total Recoverable	Water	EPA 6020A	295718
180-97385-6	CCR-LF-6	Total Recoverable	Water	EPA 6020A	295718
180-97385-7	BLIND DUPLICATE 2	Total Recoverable	Water	EPA 6020A	295718
180-97385-8	FIELD BLANK 2	Total Recoverable	Water	EPA 6020A	295718
MB 180-295709/1-A	Method Blank	Total Recoverable	Water	EPA 6020A	295709
MB 180-295718/1-A	Method Blank	Total Recoverable	Water	EPA 6020A	295718
LCS 180-295709/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020A	295709
LCS 180-295718/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020A	295718
180-97385-2 MS	CCR-LF-2	Total Recoverable	Water	EPA 6020A	295718
180-97385-2 MSD	CCR-LF-2	Total Recoverable	Water	EPA 6020A	295718

Analysis Batch: 296139

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-97385-1	CCR-LF-1	Total Recoverable	Water	EPA 6020A	295709
180-97385-2	CCR-LF-2	Total Recoverable	Water	EPA 6020A	295709
MB 180-295709/1-A	Method Blank	Total Recoverable	Water	EPA 6020A	295709
LCS 180-295709/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020A	295709

Analysis Batch: 296189

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-97385-3	CCR-LF-3	Total Recoverable	Water	EPA 6020A	295718
180-97385-4	CCR-LF-4	Total Recoverable	Water	EPA 6020A	295718
180-97385-5	CCR-LF-5	Total Recoverable	Water	EPA 6020A	295718
180-97385-6	CCR-LF-6	Total Recoverable	Water	EPA 6020A	295718
180-97385-7	BLIND DUPLICATE 2	Total Recoverable	Water	EPA 6020A	295718
180-97385-8	FIELD BLANK 2	Total Recoverable	Water	EPA 6020A	295718
MB 180-295718/1-A	Method Blank	Total Recoverable	Water	EPA 6020A	295718
LCS 180-295718/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020A	295718
180-97385-2 MS	CCR-LF-2	Total Recoverable	Water	EPA 6020A	295718
180-97385-2 MSD	CCR-LF-2	Total Recoverable	Water	EPA 6020A	295718

General Chemistry

Analysis Batch: 295368

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-97385-1	CCR-LF-1	Total/NA	Water	SM 2540C	
180-97385-2	CCR-LF-2	Total/NA	Water	SM 2540C	
180-97385-3	CCR-LF-3	Total/NA	Water	SM 2540C	
180-97385-5	CCR-LF-5	Total/NA	Water	SM 2540C	
180-97385-6	CCR-LF-6	Total/NA	Water	SM 2540C	
180-97385-7	BLIND DUPLICATE 2	Total/NA	Water	SM 2540C	
180-97385-8	FIELD BLANK 2	Total/NA	Water	SM 2540C	
MB 180-295368/2	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-295368/1	Lab Control Sample	Total/NA	Water	SM 2540C	
180-97385-2 DU	CCR-LF-2	Total/NA	Water	SM 2540C	

Eurofins TestAmerica, Pittsburgh

QC Association Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

Job ID: 180-97385-1

General Chemistry

Analysis Batch: 295452

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-97385-4	CCR-LF-4	Total/NA	Water	SM 2540C	
MB 180-295452/2	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-295452/1	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 295978

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-97385-1	CCR-LF-1	Total/NA	Water	EPA 9040C	
180-97385-2	CCR-LF-2	Total/NA	Water	EPA 9040C	
180-97385-3	CCR-LF-3	Total/NA	Water	EPA 9040C	
180-97385-4	CCR-LF-4	Total/NA	Water	EPA 9040C	
180-97385-5	CCR-LF-5	Total/NA	Water	EPA 9040C	
180-97385-6	CCR-LF-6	Total/NA	Water	EPA 9040C	
180-97385-7	BLIND DUPLICATE 2	Total/NA	Water	EPA 9040C	
180-97385-8	FIELD BLANK 2	Total/NA	Water	EPA 9040C	
LCS 180-295978/1	Lab Control Sample	Total/NA	Water	EPA 9040C	
180-97385-2 DU	CCR-LF-2	Total/NA	Water	EPA 9040C	

Rad

Prep Batch: 447420

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-97385-1	CCR-LF-1	Total/NA	Water	PrecSep-21	
180-97385-2	CCR-LF-2	Total/NA	Water	PrecSep-21	
180-97385-3	CCR-LF-3	Total/NA	Water	PrecSep-21	
180-97385-4	CCR-LF-4	Total/NA	Water	PrecSep-21	
180-97385-5	CCR-LF-5	Total/NA	Water	PrecSep-21	
180-97385-6	CCR-LF-6	Total/NA	Water	PrecSep-21	
180-97385-7	BLIND DUPLICATE 2	Total/NA	Water	PrecSep-21	
180-97385-8	FIELD BLANK 2	Total/NA	Water	PrecSep-21	
MB 160-447420/20-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-447420/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
180-97385-2 DU	CCR-LF-2	Total/NA	Water	PrecSep-21	

Prep Batch: 447441

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-97385-1	CCR-LF-1	Total/NA	Water	PrecSep_0	
180-97385-2	CCR-LF-2	Total/NA	Water	PrecSep_0	
180-97385-3	CCR-LF-3	Total/NA	Water	PrecSep_0	
180-97385-4	CCR-LF-4	Total/NA	Water	PrecSep_0	
180-97385-5	CCR-LF-5	Total/NA	Water	PrecSep_0	
180-97385-6	CCR-LF-6	Total/NA	Water	PrecSep_0	
180-97385-7	BLIND DUPLICATE 2	Total/NA	Water	PrecSep_0	
180-97385-8	FIELD BLANK 2	Total/NA	Water	PrecSep_0	
MB 160-447441/20-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-447441/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
180-97385-2 DU	CCR-LF-2	Total/NA	Water	PrecSep_0	

Chain of Custody Record



Client Information
 Company: Angela Casbon Scheller
 Lab PM: Bortol, Veronica
 Phone: (371) 671-3730
 E-Mail: veronica.bortol@testamericainc.com
 180-97385 Chain of Custody

Due Date Requested:
 TAT Requested (days): Standard
 PO #: Purchase Order Requested
 Project #: 18016014
 SOW#: AB Brown
 Address: PO BOX 209
 City: Evansville
 State, Zip: IN, 47702
 Phone: 864-214-8750(Tel)
 Email: acscheller@vectren.com
 Project Name: CCR Groundwater Monitoring - AB Brown
 Site: AB Brown

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=wastewater, BT=Tissue, A=air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226, 9320_Ra228	9040C, 9056A_ORGM_28D	6020A, 7470A	2540C_Calc'd - TDS	Analysis Requested	Preservation Codes:	Special Instructions/Note:
CCR-AP-21 CAR-LF-1	10/15/19	1235	G	Water	X	X	X	X	X	X		M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2SO4 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 X - EDTA Y - EDA Z - other (specify)	Appendix III & Appendix IV
CCR-AP-9 CAR-LF-2	10/15/19	1150	G	Water	X	X	X	X	X	X			Do not Refill!
CCR-AP-8 CAR-LF-3	10/15/19	0940	G	Water	X	X	X	X	X	X			Antimony
CCR-AP-9 CAR-LF-4	10/16/19	0935	G	Water	X	X	X	X	X	X			Beryllium
CCR-AP-10 CAR-LF-5	10/14/19	1130	G	Water	X	X	X	X	X	X			Lead
CCR-AP- CAR-LF-6	10/14/19	1215	G	Water	X	X	X	X	X	X			
MSMSD 1	10/15/19	1150	G	W	X	X	X	X	X	X			10 Mercury
Blind Duplicate 2	10/14/19	-	G		X	X	X	X	X	X			5 Selenium
Field Blank 2	10/15/19	0900	G		X	X	X	X	X	X			↓ Thallium

Possible Hazard Identification
 Non-Hazard Flammable Skin Irritant Poison B Unknown Radiological
 Deliverable Requested: I, II, III, IV, Other (specify)

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:

Empty Kit Relinquished by: _____ Date: _____
 Relinquished by: Jacob Winsett / ATC Date/Time: 10/16/19 1900 Company: ATC
 Relinquished by: _____ Date/Time: _____ Company: _____
 Relinquished by: _____ Date/Time: _____ Company: _____
 Custody Seals Intact: _____ Custody Seal No.: _____
 Δ Yes Δ No

Received by: Fedex Date/Time: 10-17-19 Company: ATC
 Received by: Jullian water Date/Time: 9:30 Company: ATC

Method of Shipment: _____
 Cooler Temperature(s) °C and Other Remarks: _____



- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

SHIP DATE: 16OCT19
 ACTWGT: 48.00 LB
 CAD: 106997842/INET4160
 DIMS: 24x15x16 IN
 BILL SENDER

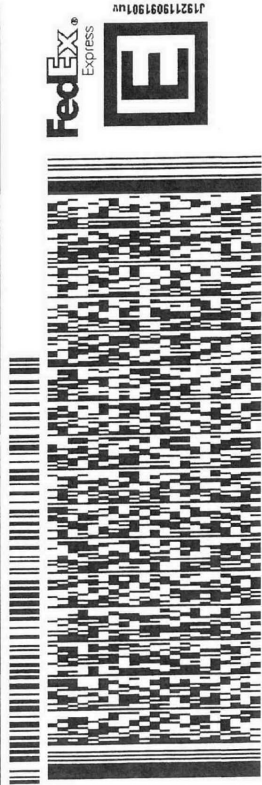
ORIGIN ID: EWA (812) 477-1176
 BRIAN KLEEMAN
 1149 WEDEKING AVENUE
 BUILDING D, SUITE 2
 EVANSVILLE, IN 47715
 UNITED STATES US

TO VERONICA BORTOT
 TESTAMERICA
 301 ALPHA DRIVE

567J3J2A3C05A2

PITTSBURGH PA 15238

(412) 963-7058 REF: PN: 170LF00739
 INV: PN: 170LF00739
 PO: PN: 170LF00739 DEPT:



THU - 17 OCT 3:00P
 STANDARD OVERNIGHT

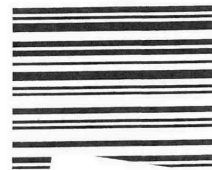
3 of 3
 MPS# 7767 3934 7878
 0263
 Mstr# 7767 3934 8304

15238
 PIT

PA-US

NA AGCA

Uncorrected temp 2.7 °C
 Thermometer ID CF 0 Initials JS
 PT-WI-SR-001 effective 11/8/18



PT-WI-SR-001 effective 11/8/18

After printing this label:
 1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
 2. Fold the printed page along the horizontal line.
 3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
 Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your shipment, and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including attorney's fees, costs, and other forms of damage whether direct, incidental, or consequential, is limited to the greater of \$100 or the actual declared value. Recovery cannot exceed actual documented loss of precious metals, negotiable instruments and other items listed in our Service Guide.

ORIGIN ID: EVVA (812) 477-1176
BRIAN KLEEMAN
1149 WEDEKING AVENUE
BUILDING D, SUITE 2
EVANSVILLE, IN 47715
UNITED STATES US

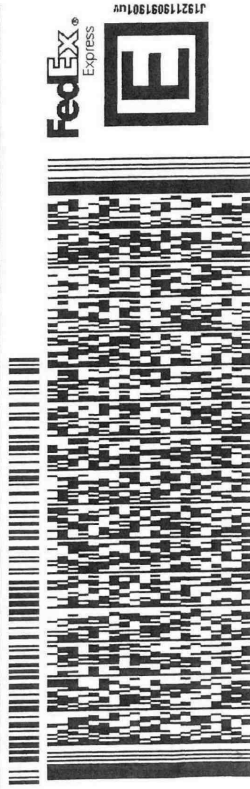
SHIP DATE: 16OCT19
ACTWGT: 48.00 LB
CAD: 106997842/NET4160
DIMS: 24x15x16 IN
BILL SENDER

TO **VERONICA BORTOT**
TESTAMERICA
301 ALPHA DRIVE

PITTSBURGH PA 15238

(412) 963-7058 REF: PN: 170LF00739
INV: PN: 170LF00739
PO: PN: 170LF00739 DEPT:

567J32A3C05A2



1 of 3
TRK# 7767 3934 8304
MASTER

THU - 17 OCT 3:00P
STANDARD OVERNIGHT

15238
PA-US
PIT



Uncorrected temp 4.3 °C
Thermometer ID 10

CF Initials D

PT-WI-SR-001 effective 11/6/18

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2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or information, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is \$1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits, see current FedEx Service Guide.



ORIGIN ID: EWA (812) 477-1176
BRIAN KLEEMAN
1149 WEDEKING AVENUE
BUILDING D, SUITE 2
EVANSVILLE, IN 47715
UNITED STATES US

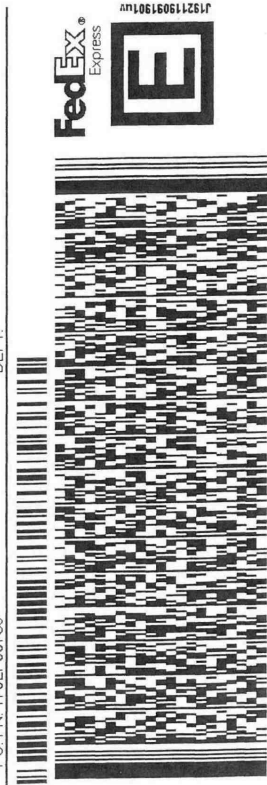
SHIP DATE: 16OCT19
ACTWGT: 48.00 LB
CAD: 106997842/INET4160
DIMS: 24x15x16 IN
BILL SENDER

TO **VERONICA BORTOT**
TESTAMERICA
301 ALPHA DRIVE

PITTSBURGH PA 15238

(412) 963-7058 REF: PN: 170LF00739
INV: PN: 170LF00739
PO: PN: 170LF00739

DEPT:



THU - 17 OCT 3:00P
STANDARD OVERNIGHT

MPS# 7767 3934 7856
0263
Mstr# 7767 3934 8304

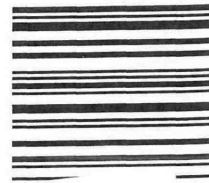
0201

15238
PIT

PA-US

NA AGCA

Uncorrected temp 1.8 °C
Thermometer ID 10
CF Initials JB
PT-WI-SR-001 effective 11/8/18



After printing this label:

1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number. Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including incidental, consequential, or special is limited to the greater of \$100 or the attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of \$1,000 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is \$1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.



Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler:	Lab PM: Bortot, Veronica		Carrier Tracking No(s):	COC No: 180-376670-1				
Client Contact: Shipping/Receiving		Phone:	E-Mail: veronica.bortot@testamericainc.com		State of Origin: Indiana			Page: Page 1 of 1		
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 180-97385-1				Preservation Codes: A - HCL M - Hexane N - None B - NaOH O - AsNaO2 C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: W - pH 4-5 Z - other (specify)		
Address: 13715 Rider Trail North, Earth City State, Zip: MO, 63045 Phone: 314-298-8566(Tel) 314-298-8757(Fax) Email:		Due Date Requested: 10/29/2019 TAT Requested (days):		Analysis Requested				Special Instructions/Note:		
Project Name: CCR Groundwater Monitoring AB Brown Site:		Project #: 18016014 SSOW#:		Total Number of Containers						
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=Comp, G=grab) (BT-Tissue, Analy)	Matrix (W=water, S=solid, O=wastewater)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PreSep_21 Standard Target List	9320_Ra228/PreSep_0 Standard Target List	Ra226Ra228_GFPCC
CCR-LF-1 (180-97385-1)	10/15/19	12:35 Eastern	Water	Water	X	X	X			2
CCR-LF-2 (180-97385-2)	10/15/19	11:50 Eastern	Water	Water	X	X	X			2
CCR-LF-2 (180-97385-2DU)	10/15/19	11:50 Eastern	DU	Water	X	X	X			4
CCR-LF-3 (180-97385-3)	10/15/19	09:40 Eastern	Water	Water	X	X	X			2
CCR-LF-4 (180-97385-4)	10/16/19	09:35 Eastern	Water	Water	X	X	X			2
CCR-LF-5 (180-97385-5)	10/14/19	11:30 Eastern	Water	Water	X	X	X			2
CCR-LF-6 (180-97385-6)	10/14/19	12:15 Eastern	Water	Water	X	X	X			2
BLIND DUPLICATE 2 (180-97385-7)	10/14/19	11:50 Eastern	Water	Water	X	X	X			2
FIELD BLANK 2 (180-97385-8)	10/15/19	09:00 Eastern	Water	Water	X	X	X			2
<p>Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our 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/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.</p>										
Possible Hazard Identification										
Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify) _____ Empty Kit Relinquished by: _____ Date: _____ Primary Deliverable Rank: 2 Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months Special Instructions/QC Requirements: _____										
Relinquished by: _____ Date/Time: _____ Method of Shipment: _____ Relinquished by: _____ Date/Time: _____ Relinquished by: _____ Date/Time: _____ Custody Seals Intact: _____ Custody Seal No.: _____ Cooler Temperature(s) °C and Other Remarks: _____										



Login Sample Receipt Checklist

Client: Vectren Corporation

Job Number: 180-97385-1

Login Number: 97385

List Source: Eurofins TestAmerica, Pittsburgh

List Number: 1

Creator: Watson, Debbie

Question	Answer	Comment
Radioactivity wasn't checked or is \leq 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.	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 <math><6\text{mm}</math> (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: Vectren Corporation

Job Number: 180-97385-1

Login Number: 97385
List Number: 2
Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis
List Creation: 10/19/19 11:49 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.	N/A	
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	



ATTACHMENT 4
Statistical Analyses



HALEY & ALDRICH, INC.
6500 Rockside Road
Suite 200
Cleveland, OH 44131
216.739.0555

MEMORANDUM

14 January 2019
File No. 129420

TO: Southern Indiana Gas and Electric Company

FROM: Haley & Aldrich, Inc.
Steven F. Putrich, P.E., Project Principal
Mark Miesfeldt, P.G., Lead Hydrogeologist

SUBJECT: Summary of 2018 Appendix IV Groundwater Monitoring
Results Pursuant to 40 CFR § 257.93 and 40 CFR § 257.95
A.B. Brown Generating Station

The Southern Indiana Gas and Electric Company (SIGECO) is implementing the 17 April 2015 U.S. Environmental Protection Agency (U.S. EPA) Federal Coal Combustion Residuals (CCR) Rule (40 CFR § 257 and 261) for the A.B. Brown Generating Station, located in Posey County near the community of West Franklin, Indiana. SIGECO provided Haley & Aldrich, Inc. with groundwater monitoring data collected from a groundwater monitoring system that meets the requirements of 40 CFR §257.91 and 40 CFR §257.93. This memorandum documents the results of statistical tests conducted to determine if Appendix IV groundwater monitoring constituents detected in downgradient wells are at levels that exhibit a statistically significant level (SSL) above groundwater protection standards consistent with the requirements in 40 CFR § 257.95.

Collection dates of groundwater samples from the CCR Unit from June 2018 through August 2018. The data satisfy the CCR Rule requirement of collecting 2 rounds of hydrological and groundwater quality data from the groundwater monitoring network. The groundwater protection standards (GWPS) and, if necessary, the confidence interval method statistical analysis were used to evaluate SSLs as specified in the certification statement of January 14, 2019.

GWPS, pursuant to 40 CFR § 257.95(d)(2) and in accordance with Phase I, Part 1 CCR Rule Revisions dated 17 July 2018, effective 16 August 2018, were generated for each Appendix IV constituent detected during assessment monitoring. The GWPS was set at the maximum contaminant level (MCL) or risk screening level (RSL) or set at the background concentration for each analyte based on a tolerance limit procedure. Analytical results from downgradient wells were compared to each respective GWPS. If a constituent is greater than the GWPS for that Unit, pursuant to 40 CFR § 257.93 (f)(5), the confidence interval method was used to evaluate if that Appendix IV constituent was present at a statistically significant level (SSL).

Based on the comparisons outlined above indicated the following SSLs:

Ash Pond: Molybdenum and lithium from one or more downgradient sample(s) indicated a statistically significant level.

Landfill: Lithium, cobalt and arsenic from one or more downgradient sample(s) indicated a statistically significant level.

Sedimentation Pond: Downgradient monitoring wells did not exhibit SSLs for Appendix IV constituents.

Location Id	Frequency of Detection	Percent Non-Detects	Range of Non-Detect	Mean	50th Percentile (Median)	95th Percentile	Maximum Detect	Variance	Standard Deviation	Coefficient of Variance	CCR MCL/RSL	Report Result Unit	MCL Comparison		Entire Data					Inter-well Analysis					GWPS			
													Detection Exceedances (Y/N)	Number of Detection Exceedances	Outlier Detected	Outlier Removed	Trend	Distribution Group*	Distribution Well*	Aug 2018 Concentration (mg/L)	Detect?	Upper Tolerance Limit (mg/L)	Lower Confidence Limit (LCL)	SSI (Exceedance above Background at Individual Well)	Groundwater Protection Standard (Higher of MCL/RSL or Upper Tolerance Limit)	Exceedance above GWPS at Individual Well	SSL	
CCR-LF-3	2/11	82%	5-50	39.3	50	50	18	341.6	18.48	0.4698	40	µg/L	N	0	N	N	Stable		Non-parametric	0.0098	Y			N		N	No	
CCR-LF-4	11/11	0%	-	93.6	93	115	120	203.1	14.25	0.1522	40	µg/L	Y	11	N	N	Stable		Normal	0.0960	Y			Y		Y	Yes	
CCR-LF-5	11/11	0%	-	24.7	24	31	31	15.22	3.901	0.1578	40	µg/L	N	0	N	N	Stable		Normal	0.0310	Y			N		N	No	
CCR-LF-6	11/11	0%	-	19.2	19	23	23	8.164	2.857	0.149	40	µg/L	N	0	N	N	Stable		Normal	0.0210	Y			N		N	No	
Appendix-IV: Molybdenum, Total (µg/L)																												
CCR-BK-1	8/10	20%	5-5	2.58	2.1	5	3.4	2.06	1.435	0.5562	100	µg/L	N	0	N	N	Stable		Non-parametric			0.005				0.100		
CCR-BK-2	4/11	64%	5-5	3.5	5	5	1.7	4.418	2.102	0.6004	100	µg/L	N	0	N	N	Stable		Non-parametric									
CCR-LF-1	9/11	18%	5-5	1.96	1.5	5	1.6	2.33	1.526	0.7806	100	µg/L	N	0	Y	N	Stable		Non-parametric	0.00120	Y			N		N	No	
CCR-LF-2	6/10	40%	50-50	21.7	4.1	50	4.8	593.2	24.36	1.121	100	µg/L	N	0	N	N	Stable		Non-parametric	0.05000	N			Y		N	No	
CCR-LF-3	9/10	10%	5-5	1.77	1.35	3.92	2.6	1.526	1.235	0.699	100	µg/L	N	0	N	N	Stable		Log-transformed	0.00110	Y			N		N	No	
CCR-LF-4	10/11	9%	5-5	19.5	21	25	26	34.67	5.888	0.3013	100	µg/L	N	0	Y	N	Stable		Normal	0.02100	Y			Y		N	No	
CCR-LF-5	5/11	55%	5-5	3.19	5	5	2.3	4.545	2.132	0.6687	100	µg/L	N	0	N	N	Stable		Non-parametric	0.00063	Y			N		N	No	
CCR-LF-6	7/10	30%	5-5	2.32	1.35	5	1.6	3.484	1.867	0.8035	100	µg/L	N	0	N	N	Stable		Non-parametric	0.00150	Y			N		N	No	
Appendix-IV: Radium-226 & 228 (µg/L)																												
CCR-BK-1	5/8	38%	0.366-0.907	0.512	0.4695	0.7831	0.553	0.02935	0.1713	0.3347	5	µg/L	N	0	Y	N	Stable		Non-parametric			5.0				5.000		
CCR-BK-2	3/10	70%	0.356-5	3.18	4.065	5	3.13	4.295	2.072	0.6525	5	µg/L	N	0	N	N	Stable		Non-parametric									
CCR-LF-1	9/9	0%	-	0.847	0.747	1.31	1.47	0.0877	0.2961	0.3497	5	µg/L	N	0	N	N	Stable		Normal	1.060	Y			N		N	No	
CCR-LF-2	11/11	0%	-	1.93	2.01	2.325	2.33	0.1539	0.3923	0.2037	5	µg/L	N	0	N	N	Stable		Normal	2.320	Y			N		N	No	
CCR-LF-3	7/10	30%	0.399-0.524	0.579	0.5235	0.9362	1.1	0.05056	0.2248	0.3881	5	µg/L	N	0	N	N	Stable		Normal	0.432	Y			N		N	No	
CCR-LF-4	11/11	0%	-	5.3	4.95	7.36	8.14	1.512	1.23	0.2322	5	µg/L	Y		N	N	Stable		Normal	4.380	Y			N		N	No	
CCR-LF-5	3/11	73%	0.323-5	2.12	0.641	5	0.641	5.239	2.289	1.081	5	µg/L	N	0	N	N	Stable		Non-parametric	0.465	Y			N		N	No	
CCR-LF-6	3/11	73%	0.358-5	2.54	0.619	5	0.619	5.533	2.352	0.9245	5	µg/L	N	0	N	N	Stable		Non-parametric	0.615	Y			N		N	No	
Appendix-IV: Selenium, Total (µg/L)																												
CCR-BK-1	3/11	73%	5-5	3.78	5	5	0.67	4.39	2.095	0.5547	50	µg/L	N	0	N	N	Stable		Non-parametric			0.005				0.050		
CCR-BK-2	2/11	82%	5-5	4.22	5	5	0.98	3.004	1.733	0.4104	50	µg/L	N	0	Y	N	Stable		Non-parametric									
CCR-LF-1	4/11	64%	5-5	3.57	5	5	1.3	3.936	1.984	0.5554	50	µg/L	N	0	N	N	Stable		Non-parametric	0.0050	N			N		N	No	
CCR-LF-2	7/11	36%	50-50	19.7	2.7	50	3.4	577.3	24.03	1.22	50	µg/L	N	0	N	N	Stable		Non-parametric	0.0500	N			Y		N	No	
CCR-LF-3	10/11	9%	5-5	2.14	2	3.7	2.4	1.047	1.023	0.4789	50	µg/L	N	0	N	N	Decrease		Log-transformed	0.0014	Y			N		N	No	
CCR-LF-4	3/11	73%	5-50	16.1	5	50	0.7	478.3	21.87	1.36	50	µg/L	N	0	N	N	Stable		Non-parametric	0.0050	N			N		N	No	
CCR-LF-5	1/11	91%	5-5	4.59	5	5	0.54	1.808	1.345	0.2927	50	µg/L	N	0	N	N	Stable		Non-parametric	0.0050	N			N		N	No	
CCR-LF-6	2/11	82%	5-5	4.34	5	5	2	2.236	1.495	0.3445	50	µg/L	N	0	Y	N	Stable		Non-parametric	0.0020	Y			N		N	No	

N/A - Not available NT - Not tested

* - Determined using the Shapiro-Wilks statistical test at a 5% significance level and a residual probability plot.



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21 November 2019

File No. 129420

TO: Southern Indiana Gas and Electric Company (SIGECO)

FROM: Haley & Aldrich, Inc.
[Steven F. Putrich, P.E., Project Principal
Mark Miesfeldt, P.G., Lead Hydrogeologist]

SUBJECT: Notification of Statistically Significant Levels of Appendix IV Constituents
Pursuant to 40 CFR§ 257.95(g) and 40 CFR § 257.105(h)(8)
A.B. Brown Generating Station – FGD Landfill - West Franklin, Indiana

Southern Indiana Gas and Electric Company (SIGECO) is implementing the 17 April 2015 U.S. Environmental Protection Agency (U.S. EPA) Federal Coal Combustion Residuals (CCR) Rule (40 CFR § 257 and 261) for the A.B. Brown Generating Station, in Posey County near West Franklin, Indiana. Detection monitoring events occurred in 2016 and 2017. The results of the sampling events were compared to background using appropriate statistical methods to determine if Appendix III constituents were present at concentrations above background. The result of the statistical analysis identified a statistically significant increase (SSI) downgradient of the FGD Landfill thereby triggering Assessment Monitoring and respective notification of the same.

During the Assessment Monitoring phase, groundwater samples were collected from the coal combustion residuals (CCR) monitoring well network. Samples were collected in June, and August 2018 and subsequently analyzed for the Appendix III and Appendix IV constituents as required by 40 CFR §257.95(b) and 40 CFR §257.95(d)(1). Concurrent with the second assessment sampling round, and as required by 40 CFR §257.95(h), groundwater protection standards (GWPS) were established for the detected Appendix IV constituents. The assessment monitoring sampling results were compared to the GWPS to determine if statistically significant levels (SSLs) of Appendix IV constituents were present downgradient of the FGD Landfill. The results of this evaluation indicated that an SSL for cobalt was present at monitoring well CCR-LF-2, and SSL's of arsenic and lithium were present at monitoring well CCR-LF-4.

As a result of this determination, and in accordance with 40 CFR §257.95(g)(3), Haley & Aldrich evaluated the occurrence of Appendix IV constituents detected in groundwater downgradient of the FGD Landfill. In July 2019, an alternate source demonstration (ASD) was completed which focused on the operational history of the FGD Landfill, the spatial distribution of the detected Appendix IV constituents, subsurface conditions encountered around and beneath the FGD Landfill, and groundwater quality conditions downgradient of the FGD Landfill compared to leachable Appendix IV constituent concentrations in naturally occurring coal seams and FGD waste streams placed in the FGD Landfill.

Haley & Aldrich concluded that neither the FGD Landfill nor the FGD sludge contained within the FGD Landfill are the source of cobalt detected at CCR-LF-2 or the arsenic and lithium detected at CCR-LF-4 which were identified at SSLs over GWPSs. Haley & Aldrich has also concluded the coal seam intersecting the screened interval at CCR-LF-4 is a potential alternate source of arsenic and lithium identified at SSLs at CCR-LF-4.

As required by 40 CFR § 257.95(b) and 40 CFR § 257.95(d)(1), semiannual groundwater sampling and analysis continued for the FGD Landfill. The first round of semiannual groundwater sampling was conducted in May 2019 but due to laboratory turn-around issues associated with the radium analyses this sampling round was not completed until the end of August 2019.

For the FGD Landfill, which continued in Assessment Monitoring in 2019, an intrawell statistical analysis of the August 2019 analytical results from downgradient wells was completed, taking into account the certified ASD for cobalt, arsenic, and lithium. This analysis did not identify Appendix IV constituents downgradient of the FGD Landfill at statistically significant levels above GWPS and as a result the FGD Landfill will remain in assessment monitoring.

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Location Id	Frequency of Detection	Percent Non-Detects	Range of Non-Detect	Mean	50th Percentile (Median)	95th Percentile	Maximum Detect	Variance	Standard Deviation	Coefficient of Variance	CCR MCL/SSL	Report Result Unit	Detection Exceedances (Y/N)	Number of Detection Exceedances	Number of Non-Detection Exceedances	Outlier Detected	Outlier Removed	Trend	Distribution Group*	Distribution Well*	Inter-well Analysis				
																					May 2019 Concentration (mg/L)	Lower Confidence Limit (LCL) (mg/L)	Upper Tolerance Limit (mg/L)	Background Limit (Higher of MCL/SSL or Upper Tolerance Limit) mg/L	Exceedance above Background at Individual Well
CCR Appendix-IV: Antimony, Total (mg/L)																									
CCR-BK-1	2/11	82%	0.002-0.002	0.00168	0.002	0.002	0.00045	5.072E-07	0.0007122	0.4233	0.006	mg/L	N	0	0	Y	N	NA	Non-parametric	Non-parametric	0.002	0.006	N	No	
CCR-BK-2	1/11	91%	0.002-0.002	0.00186	0.002	0.002	0.00048	0.0000021	0.0004583	0.2462	0.006	mg/L	N	0	0	N	N	NA	Non-parametric	Non-parametric					
CCR-LF-1	1/11	91%	0.002-0.002	0.00187	0.002	0.002	0.00059	1.807E-07	0.0004251	0.2271	0.006	mg/L	N	0	0	N	N	NA	Non-parametric	Non-parametric					
CCR-LF-2	1/11	91%	0.002-0.02	0.00855	0.002	0.02	0.0021	0.00008234	0.009074	1.061	0.006	mg/L	N	0	4	N	N	NA	Non-parametric	Non-parametric					
CCR-LF-3	2/11	82%	0.002-0.002	0.0018	0.002	0.002	0.0011	2.149E-07	0.0004636	0.2581	0.006	mg/L	N	0	0	Y	N	NA	Non-parametric	Non-parametric					
CCR-LF-4	0/11	100%	0.002-0.02	0.00855	0.002	0.02		0.00008247	0.009081	1.063	0.006	mg/L	N	0	4	N	N	NA	Non-parametric	Non-parametric					
CCR-LF-5	1/11	91%	0.002-0.02	0.0035	0.002	0.011	0.00055	0.00003012	0.005488	1.566	0.006	mg/L	N	0	1	Y	N	NA	Non-parametric	Non-parametric					
CCR-LF-6	1/11	91%	0.002-0.002	0.00192	0.002	0.002	0.0011	7.364E-08	0.0002714	0.1415	0.006	mg/L	N	0	0	N	N	NA	Non-parametric	Non-parametric					
CCR Appendix-IV: Arsenic, Total (mg/L)																									
CCR-BK-1	10/11	9%	0.001-0.001	0.000947	0.00095	0.002	0.0025	4.312E-07	0.0006567	0.6932	0.01	mg/L	N	0	0	N	N	Stable	Log-transformed	Normal	0.003	0.01	N	No	
CCR-BK-2	7/12	42%	0.001-0.001	0.00118	0.001	0.003115	0.0035	9.747E-07	0.0009873	0.8373	0.01	mg/L	N	0	0	Y	N	Stable	Log-transformed	Non-parametric					
CCR-LF-1	8/12	33%	0.001-0.001	0.000911	0.001	0.001335	0.0015	9.726E-08	0.0003119	0.3424	0.01	mg/L	N	0	0	N	N	Stable	Log-transformed	Normal					
CCR-LF-2	7/12	42%	0.01-0.01	0.00566	0.0045	0.01	0.0062	0.00001625	0.004031	0.7123	0.01	mg/L	N	0	0	N	N	Stable	Log-transformed	Normal					
CCR-LF-3	8/12	33%	0.001-0.001	0.0013	0.000545	0.00451	0.0088	0.000005681	0.002384	1.841	0.01	mg/L	N	0	0	Y	N	Stable	Log-transformed	Non-parametric					
CCR-LF-4	12/12	0%	-	0.0156	0.016	0.02505	0.03	0.00005073	0.007123	0.4576	0.01	mg/L	Y	10	0	N	N	Stable	Log-transformed	Normal					
CCR-LF-5	7/12	42%	0.001-0.01	0.00284	0.001	0.01225	0.015	0.00002193	0.004683	1.649	0.01	mg/L	Y	1	0	Y	N	Stable	Log-transformed	Non-parametric					
CCR-LF-6	6/12	50%	0.001-0.001	0.00145	0.001	0.004915	0.0097	0.00000686	0.002619	1.806	0.01	mg/L	N	0	0	Y	N	Stable	Log-transformed	Non-parametric					
CCR Appendix-IV: Barium, Total (mg/L)																									
CCR-BK-1	12/12	0%	-	0.0415	0.038	0.06385	0.082	0.0002035	0.01427	0.3438	2	mg/L	N	0	0	Y	N	Stable	Non-parametric	Non-parametric	0.150	2.0	N	No	
CCR-BK-2	12/12	0%	-	0.0476	0.0365	0.0939	0.15	0.00107	0.03271	0.6874	2	mg/L	N	0	0	Y	N	Stable	Non-parametric	Non-parametric					
CCR-LF-1	12/12	0%	-	0.0461	0.0435	0.0682	0.088	0.000219	0.0148	0.3211	2	mg/L	N	0	0	Y	N	Stable	Non-parametric	Non-parametric					
CCR-LF-2	9/10	10%	0.1-0.1	0.0212	0.0125	0.0613	0.014	0.0007673	0.0277	1.307	2	mg/L	N	0	0	N	N	Stable	Non-parametric	Non-parametric					
CCR-LF-3	12/12	0%	-	0.0263	0.026	0.03	0.03	0.000008568	0.002927	0.1115	2	mg/L	N	0	0	N	N	Stable	Non-parametric	Normal					
CCR-LF-4	9/10	10%	0.1-0.1	0.021	0.0125	0.0622	0.016	0.0007759	0.02786	1.328	2	mg/L	N	0	0	Y	N	Stable	Non-parametric	Non-parametric					
CCR-LF-5	12/12	0%	-	0.0263	0.026	0.03045	0.031	0.000005333	0.002309	0.0877	2	mg/L	N	0	0	N	N	Stable	Non-parametric	Normal					
CCR-LF-6	12/12	0%	-	0.0189	0.0175	0.0267	0.03	0.00001808	0.004252	0.2248	2	mg/L	N	0	0	Y	N	Increase	Non-parametric	Non-parametric					
CCR Appendix-IV: Beryllium, Total (mg/L)																									
CCR-BK-1	1/11	91%	0.001-0.001	0.00092	0.001	0.001	0.00012	7.04E-08	0.0002653	0.2884	0.004	mg/L	N	0	0	N	N	NA	Non-parametric	Non-parametric	0.001	0.004	N	No	
CCR-BK-2	2/11	82%	0.001-0.001	0.000871	0.001	0.001	0.0004	8.491E-08	0.0002914	0.3346	0.004	mg/L	N	0	0	Y	N	NA	Non-parametric	Non-parametric					
CCR-LF-1	0/11	100%	0.001-0.001	0.001	0.001	0.001		0	0	0.004	0.004	mg/L	N	0	0	NA	NA	NA	Non-parametric	Non-parametric					
CCR-LF-2	4/11	64%	0.001-0.01	0.00316	0.001	0.01	0.00028	0.00001946	0.004411	1.397	0.004	mg/L	N	0	3	N	N	Stable	Non-parametric	Non-parametric					
CCR-LF-3	0/11	100%	0.001-0.001	0.001	0.001	0.001		0	0	0.004	0.004	mg/L	N	0	0	NA	NA	NA	Non-parametric	Non-parametric					
CCR-LF-4	4/11	64%	0.001-0.01	0.00316	0.001	0.01	0.00028	0.00001945	0.00441	1.397	0.004	mg/L	N	0	3	N	N	Stable	Non-parametric	Non-parametric					
CCR-LF-5	0/11	100%	0.001-0.001	0.001	0.001	0.001		0	0	0.004	0.004	mg/L	N	0	0	NA	NA	NA	Non-parametric	Non-parametric					
CCR-LF-6	0/11	100%	0.001-0.001	0.001	0.001	0.001		0	0	0.004	0.004	mg/L	N	0	0	NA	NA	NA	Non-parametric	Non-parametric					
CCR Appendix-IV: Cadmium, Total (mg/L)																									
CCR-BK-1	0/12	100%	0.001-0.001	0.001	0.001	0.001		0	0	0.005	0.005	mg/L	N	0	0	NA	NA	NA	Non-parametric	Non-parametric	0.001	0.005	N	No	
CCR-BK-2	0/12	100%	0.001-0.001	0.001	0.001	0.001		0	0	0.005	0.005	mg/L	N	0	0	NA	NA	NA	Non-parametric	Non-parametric					
CCR-LF-1	0/12	100%	0.001-0.001	0.001	0.001	0.001		0	0	0.005	0.005	mg/L	N	0	0	NA	NA	NA	Non-parametric	Non-parametric					
CCR-LF-2	12/12	0%	-	0.00353	0.0039	0.004535	0.0047	0.000001184	0.001088	0.3083	0.005	mg/L	N	0	0	N	N	Stable	Non-parametric	Normal					
CCR-LF-3	3/12	75%	0.001-0.001	0.000775	0.001	0.001	0.00011	1.651E-07	0.0004063	0.524	0.005	mg/L	N	0	0	N	N	NA	Non-parametric	Non-parametric					
CCR-LF-4	1/12	92%	0.001-0.01	0.00392	0.001	0.01	0.000092	0.0000202	0.004494	1.145	0.005	mg/L	N	0	4	N	N	NA	Non-parametric	Non-parametric					
CCR-LF-5	10/12	17%	0.001-0.01	0.00108	0.000195	0.00505	0.00025	0.000007953	0.00282	2.621	0.005	mg/L	N	0	1	Y	N	Stable	Non-parametric	Non-parametric					
CCR-LF-6	9/12	25%	0.001-0.001	0.000361	0.00016	0.001	0.00021	1.497E-07	0.0003869	1.072	0.005	mg/L	N	0	0	N	N	Stable	Non-parametric	Non-parametric					
CCR Appendix-IV: Chromium, Total (mg/L)																									
CCR-BK-1	10/11	9%	0.002-0.002	0.00249	0.0025	0.0053	0.0076	0.000003719	0.001928	0.7759	0.1	mg/L	N	0	0	Y	N	Stable	Log-transformed	Non-parametric	0.007	0.1	N	No	
CCR-BK-2	4/11	64%	0.002-0.002	0.00295	0.002	0.0067	0.0087	0.000004906	0.002215	0.7506	0.1	mg/L	N	0	0	N	N	Stable	Log-transformed	Non-parametric					
CCR-LF-1	9/12	25%	0.002-0.002	0.00187	0.00165	0.00389	0.0062	0.000002047	0.001431	0.7641	0.1	mg/L	N	0	0	Y	N	Stable	Log-transformed	Non-parametric					
CCR-LF-2	6/11	45%	0.02-0.02	0.00968	0.0018	0.02	0.0018	0.00009779	0.009889	1.022	0.1	mg/L	N	0	0	N	N	Stable	Log-transformed	Non-parametric					
CCR-LF-3	8/11	27%	0.002-0.0035	0.00217	0.002	0.003	0.0025	2.642E-07	0.000514	0.2366	0.1	mg/L	N	0	0	N	N	Stable	Log-transformed	Normal					
CCR-LF-4	3/11	73%	0.002-0.02	0.00815	0.002	0.02	0.00076	0.00008856	0.00941	1.154	0.1	mg/L	N	0	0	N	N	Stable	Log-transformed	Non-parametric					
CCR-LF-5	7/11	36%	0.002-0.02	0.00481	0.0011	0.021	0.022	0.00006459	0.008037	1.671	0.1	mg/L	N	0	0	Y	N	Stable	Log-transformed	Non-parametric					
CCR-LF-6	2/11	82%	0.002-0.0023	0.00176	0.002	0.00215	0.00066	0.000000395	0.0006285	0.358	0.1	mg/L	N	0	0	N	N	Stable	Log-transformed	Non-parametric					
CCR Appendix-IV: Cobalt, Total (mg/L)																									
CCR-BK-1	10/11	9%	0.0005-0.0005	0.00104	0.0008	0.0025	0.0028	6.181E-07	0.0007862	0.758	0.006	mg/L	N	0	0	N	N	Stable	Log-transformed	Log-transformed	0.004	0.006	N	No	
CCR-BK-2	7/12	42%	0.0005-0.0005	0.00102	0.0005	0.003615	0.0062	0.000002843	0.001686	1.659	0.006	mg/L	Y	1	0	N	N	Stable	Log-transformed	Log-transformed					
CCR-LF-1	10/12	17%	0.0005-0.0005	0.000318	0.00028	0.000669	0.00068	4.939E-08	0.0002222	0.6987	0.006	mg/L	N	0	0	N	N	Stable	Log-transformed	Normal					
CCR-LF-2	12/12	0%	-	0.00853	0.0076	0.01235	0.014	0.000005221	0.002285	0.2678	0.006	mg/L	Y	12	0	N	N	Stable	Log-transformed	Normal					
CCR-LF-3	9/11	18%	0.0005-0.0005	0.000447	0.00044	0.000655	0.00071	1.692E-08	0.0001301	0.2908	0.006	mg/L	N	0	0	N	N	Stable	Log-transformed	Normal					
CCR-LF-4	12/12	0%	-	0.00117	0.0012	0.0018	0.0018	1.917E-07	0.0004378	0.3742	0.006	mg/L	N	0	0	N	N	Stable	Log-transformed	Normal					
CCR-LF-5	8/12	33%	0.0005-0.005	0.001	0.00042	0.004065	0.0033	0.000002323	0.001524	1.522	0.006	mg/L	N	0	0	Y	N	Stable	Log-transformed	Non-parametric					
CCR-LF-6	9/11	18%	0.0005-0.0005	0.000324	0.00022	0.00068	0.00086	5.443E-08	0.0002333	0.7191	0.006	mg/L	N	0	0	N	N	Stable	Log-transformed	Non-parametric					
CCR Appendix-IV: Fluoride (mg/L)																									
CCR-BK-1	10/11	9%	0.23-0.23	1.296	1.28	1.518	1.52	0.006876	0.16588	0.5124	4	mg/L	N	0	0	Y	N	Stable	Non-parametric	Non-parametric	0.380	4.0	N	No	
CCR-BK-2	9/10	10%	0.12-0.12	0.588	0.56	0.8	0.8	0.0021096	0.09184	0.6248	4	mg/L	N	0	0	N	N	Decrease	Non-parametric	Normal					
CCR-LF-1	11/11	0%	-	0.972	1	1.194	1.2	0.004808	0.13868	0.5712	4	mg/L	N	0	0	N	N								

A.B. Brown Generating Station

Landfill

Assessment Monitoring Statistical Analysis Summary

Prepared: November 15, 2019

CCR-LF-2	0/11	100%	1-5	8.72	10	19.5		5.384	4.64	2.1272	4	mg/L	N	0	4	NA	NA	NA	Non-parametric	2.5		N	No	
CCR-LF-3	9/9	0%	-	0.864	0.84	1.36	1.36	0.01554	0.24932	1.1568	4	mg/L	N	0	0	N	N	Stable	Normal	0.34		N	No	
CCR-LF-4	3/12	75%	1-2.5	4.88	4	10	2.04	2.5184	3.174	2.5908	4	mg/L	N	0	0	N	N	Stable	Non-parametric	0.34		N	No	
CCR-LF-5	8/10	20%	0.5-1	1.236	0.9	4	1.36	0.27456	1.048	3.3904	4	mg/L	N	0	0	Y	N	Stable	Log-transformed	0.34		N	No	
CCR-LF-6	11/11	0%	-	1.436	1.48	2.032	2.04	0.04392	0.4192	1.1672	4	mg/L	N	0	0	N	N	Increase	Normal	0.34		N	No	
CCR Appendix-IV: Lead, Total (mg/L)																								
CCR-BK-1	11/12	8%	0.001-0.001	0.000613	0.000715	0.001045	0.0011	1.461E-07	0.0003822	0.6236	0.015	mg/L	N	0	0	N	N	Stable	Non-parametric	Normal	0.011	0.015		
CCR-BK-2	5/12	58%	0.001-0.001	0.00198	0.001	0.00649	0.011	0.00008612	0.002935	1.48	0.015	mg/L	N	0	0	Y	N	Stable	Non-parametric	Non-parametric				
CCR-LF-1	7/12	42%	0.001-0.001	0.000694	0.00084	0.001045	0.0011	1.457E-07	0.0003817	0.5503	0.015	mg/L	N	0	0	N	N	Stable	Normal	0.001		N	No	
CCR-LF-2	6/12	50%	0.001-0.001	0.00457	0.0012	0.01	0.0014	0.00002307	0.004803	1.051	0.015	mg/L	N	0	0	N	N	Stable	Non-parametric	0.01		N	No	
CCR-LF-3	2/12	83%	0.001-0.001	0.000844	0.001	0.001	0.000074	0.00000132	0.0003634	0.4303	0.015	mg/L	N	0	0	Y	N	Stable	Non-parametric	0.001		N	No	
CCR-LF-4	5/12	58%	0.001-0.001	0.00949	0.001	0.04105	0.079	0.0004967	0.02229	2.347	0.015	mg/L	Y	1	0	Y	N	Stable	Non-parametric	0.01		N	No	
CCR-LF-5	6/12	50%	0.001-0.001	0.00144	0.001	0.00516	0.0012	0.00007439	0.002727	1.894	0.015	mg/L	N	0	0	N	N	Stable	Non-parametric	0.01		N	No	
CCR-LF-6	3/12	75%	0.001-0.001	0.00078	0.001	0.001	0.00017	1.586E-07	0.0003983	0.5103	0.015	mg/L	N	0	0	N	N	Stable	Non-parametric	0.001		N	No	
CCR Appendix-IV: Lithium, Total (mg/L)																								
CCR-BK-1	3/12	75%	0.0065-0.05	0.0353	0.05	0.05	0.0086	0.0004733	0.02176	0.6164	0.04	mg/L	N	0	0	N	N	NA	Non-parametric	Non-parametric	0.050	0.05		
CCR-BK-2	0/12	100%	0.005-0.05	0.0429	0.05	0.05		0.0002778	0.01667	0.3888	0.04	mg/L	N	0	0	N	N	NA	Non-parametric	Non-parametric				
CCR-LF-1	4/12	67%	0.0059-0.05	0.0323	0.05	0.05	0.01	0.0004833	0.02198	0.6815	0.04	mg/L	N	0	0	N	N	Stable	Non-parametric	0.0059		N	No	
CCR-LF-2	9/12	25%	0.05-0.25	0.0499	0.0295	0.14	0.041	0.004073	0.06382	1.279	0.04	mg/L	N	0	0	Y	N	Stable	Non-parametric	0.05		N	No	
CCR-LF-3	2/12	83%	0.005-0.05	0.0367	0.05	0.05	0.018	0.0003956	0.01989	0.5422	0.04	mg/L	N	0	0	N	N	Stable	Non-parametric	0.0074		N	No	
CCR-LF-4	12/12	0%	-	0.092	0.0925	0.1145	0.12	0.0002167	0.01472	0.16	0.04	mg/L	Y	12	0	N	N	Stable	Normal	0.074	0.084	Y	Yes	
CCR-LF-5	11/12	8%	0.05-0.05	0.0268	0.0245	0.03955	0.031	0.0006706	0.008189	0.3052	0.04	mg/L	N	0	0	N	N	Stable	Normal	0.05		N	No	
CCR-LF-6	12/12	0%	-	0.0192	0.019	0.023	0.023	0.00007424	0.002725	0.1422	0.04	mg/L	N	0	0	N	N	Stable	Normal	0.019		N	No	
CCR Appendix-IV: Mercury, Total (mg/L)																								
CCR-BK-1	0/12	100%	0.0002-0.0002	0.0002	0.0002	0.0002		0	0	0	0.002	mg/L	N	0	0	NA	NA	NA	Non-parametric	NA	0.0002	0.002		
CCR-BK-2	1/12	92%	0.0002-0.0002	0.000192	0.0002	0.0002	0.0001	8.333E-10	0.00002887	0.1506	0.002	mg/L	N	0	0	NA	NA	NA	Non-parametric	NA				
CCR-LF-1	0/12	100%	0.0002-0.0002	0.0002	0.0002	0.0002		0	0	0	0.002	mg/L	N	0	0	NA	NA	NA	Non-parametric	NA	0.0002		N	No
CCR-LF-2	0/12	100%	0.0002-0.0002	0.0002	0.0002	0.0002		0	0	0	0.002	mg/L	N	0	0	NA	NA	NA	Non-parametric	NA	0.0002		N	No
CCR-LF-3	0/12	100%	0.0002-0.0002	0.0002	0.0002	0.0002		0	0	0	0.002	mg/L	N	0	0	NA	NA	NA	Non-parametric	NA	0.0002		N	No
CCR-LF-4	0/12	100%	0.0002-0.0002	0.0002	0.0002	0.0002		0	0	0	0.002	mg/L	N	0	0	NA	NA	NA	Non-parametric	NA	0.0002		N	No
CCR-LF-5	8/12	33%	0.0002-0.0002	0.000131	0.00012	0.0002	0.00015	3.252E-09	0.00005703	0.4367	0.002	mg/L	N	0	0	NA	NA	NA	Non-parametric	NA	0.0002		N	No
CCR-LF-6	0/12	100%	0.0002-0.0002	0.0002	0.0002	0.0002		0	0	0	0.002	mg/L	N	0	0	NA	NA	NA	Non-parametric	NA	0.0002		N	No
CCR Appendix-IV: Molybdenum, Total (mg/L)																								
CCR-BK-1	9/11	18%	0.005-0.005	0.0024	0.0017	0.005	0.0034	0.000002199	0.001483	0.6172	0.1	mg/L	N	0	0	N	N	Decrease	Non-parametric	Normal	0.005	0.1		
CCR-BK-2	5/12	58%	0.005-0.005	0.00342	0.005	0.005	0.0025	0.0000041	0.002025	0.5925	0.1	mg/L	N	0	0	N	N	Stable	Non-parametric	Non-parametric				
CCR-LF-1	10/12	17%	0.005-0.005	0.00187	0.00135	0.005	0.0016	0.000002211	0.001487	0.7962	0.1	mg/L	N	0	0	Y	N	Stable	Non-parametric	0.0009		N	No	
CCR-LF-2	6/11	45%	0.05-0.05	0.0243	0.0048	0.05	0.0048	0.0006066	0.02463	1.014	0.1	mg/L	N	0	0	N	N	Stable	Non-parametric	0.05		N	No	
CCR-LF-3	10/11	9%	0.005-0.005	0.00212	0.0014	0.0053	0.0056	0.000002709	0.001646	0.778	0.1	mg/L	N	0	0	Y	N	Increase	Non-parametric	0.0056		N	No	
CCR-LF-4	11/12	8%	0.005-0.005	0.0197	0.021	0.0249	0.026	0.0000317	0.00563	0.2863	0.1	mg/L	N	0	0	Y	N	Stable	Normal	0.021		N	No	
CCR-LF-5	5/12	58%	0.005-0.005	0.00709	0.005	0.02525	0.0023	0.0001867	0.01367	1.928	0.1	mg/L	N	0	0	N	N	Stable	Non-parametric	0.05		N	No	
CCR-LF-6	8/11	27%	0.005-0.005	0.00217	0.0012	0.005	0.0016	0.000003403	0.001845	0.8511	0.1	mg/L	N	0	0	N	N	Stable	Non-parametric	0.00061		N	No	
CCR Appendix-IV: Radium-226 & 228 (mg/L)																								
CCR-BK-1	8/12	33%	0.366-5	0.899	0.484	2.749	0.795	1.695	1.302	1.448	5	pCi/L	N	0	0	N	N	Increase	Non-parametric	Normal	5.000	5.0		
CCR-BK-2	4/12	67%	0.356-5	3.09	4.065	5	3.13	4.552	2.134	0.6905	5	pCi/L	N	0	0	N	N	Increase	Non-parametric	Normal				
CCR-LF-1	12/12	0%	-	0.824	0.746	1.25	1.47	0.08149	0.2855	0.3463	5	pCi/L	N	0	0	N	N	Stable	Normal	0.466		N	No	
CCR-LF-2	12/12	0%	-	2.01	2.08	2.586	2.9	0.2189	0.4679	0.2331	5	pCi/L	N	0	0	N	N	Stable	Normal	2.9		N	No	
CCR-LF-3	8/12	33%	0.399-5	0.943	0.5245	2.855	1.1	1.674	1.294	1.372	5	pCi/L	N	0	0	N	N	Stable	Normal	5		N	No	
CCR-LF-4	12/12	0%	-	5.11	4.785	7.282	8.14	1.773	1.332	0.2604	5	pCi/L	Y	5	0	N	N	Stable	Normal	3.11		N	No	
CCR-LF-5	3/12	75%	0.323-5	2.36	0.678	5	0.641	5.455	2.336	0.991	5	pCi/L	N	0	0	N	N	NA	Non-parametric	5		N	No	
CCR-LF-6	3/12	75%	0.358-5	2.75	2.809	5	0.619	5.533	2.352	0.8556	5	pCi/L	N	0	0	N	N	NA	Non-parametric	5		N	No	
CCR Appendix-IV: Selenium, Total (mg/L)																								
CCR-BK-1	3/12	75%	0.005-0.005	0.00388	0.005	0.005	0.00067	0.000004116	0.002029	0.523	0.05	mg/L	N	0	0	N	N	NA	Non-parametric	Non-parametric	0.005	0.05		
CCR-BK-2	2/12	83%	0.005-0.005	0.00429	0.005	0.005	0.00098	0.000002781	0.001668	0.3889	0.05	mg/L	N	0	0	Y	N	NA	Non-parametric	Non-parametric				
CCR-LF-1	4/12	67%	0.005-0.005	0.00369	0.005	0.005	0.0013	0.000003748	0.001936	0.5245	0.05	mg/L	N	0	0	N	N	Stable	Non-parametric	0.005		N	No	
CCR-LF-2	7/12	42%	0.05-0.05	0.0222	0.00305	0.05	0.0034	0.0006013	0.02452	1.103	0.05	mg/L	N	0	5	N	N	Stable	Non-parametric	0.05		N	No	
CCR-LF-3	10/12	17%	0.005-0.005	0.00238	0.002	0.005	0.0024	0.000001635	0.001279	0.5384	0.05	mg/L	N	0	0	N	N	Stable	Normal	0.005		N	No	
CCR-LF-4	3/12	75%	0.005-0.005	0.0189	0.005	0.05	0.0007	0.0005307	0.02304	1.219	0.05	mg/L	N	0	4	N	N	Stable	Non-parametric	0.05		N	No	
CCR-LF-5	1/12	92%	0.005-0.005	0.00838	0.005	0.02525	0.00054	0.0001734	0.01317	1.572	0.05	mg/L	N	0	1	N	N	Stable	Non-parametric	0.05		N	No	
CCR-LF-6	2/12	83%	0.005-0.005	0.00439	0.005	0.005	0.002	0.000002069	0.001438	0.3273	0.05	mg/L	N	0	0	Y	N	NA	Non-parametric	0.005		N	No	
CCR Appendix-IV: Thallium, Total (mg/L)																								
CCR-BK-1	1/11	91%	0.001-0.001	0.000913	0.001	0.001	0.000038	8.413E-08	0.0002901	0.3179	0.002	mg/L	N	0	0	N	N	NA	Non-parametric	Non-parametric	0.001	0.002		
CCR-BK-2	1/11	91%	0.001-0.001	0.000914	0.001	0.001	0.000059	8.05E-08	0.0002837	0.3103	0.002	mg/L	N	0	0	N	N	NA	Non-parametric	Non-parametric				
CCR-LF-1	1/11	91%	0.001-0.001	0.000914	0.001	0.001	0.000055	8.118E-08	0.0002849	0.3117	0.002	mg/L	N	0	0	N	N	NA	Non-parametric	0.001		N	No	
CCR-LF-2	5/11	55%	0.001-0.001	0.00401	0.001	0.01	0.00065	0.00002262	0.004756	1.186	0.002	mg/L	N	0	4	N	N	Stable	Non-parametric	0.01		Y	No	
CCR-LF-3	5/11	55%	0.001-0.001	0.000603	0.001	0.001	0.00027	2.118E-07	0.0004603	0.763	0.002	mg/L	N	0	0	N	N	Stable	Non-parametric	0.001		N	No	
CCR-LF-4	3/11	73%	0.001-0.001	0.00402	0.001	0.01	0.00012																	